General Information

The journal is produced by the Faculty of Business Management at The Open University of Tanzania. It will accept theoretical, conceptual and research-based papers on a wide range of topics on business management in Africa and the world at large. It also accepts cases, book reviews and summaries of dissertations.

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EDITORIAL NOTE

Dear our esteemed readers,

On behalf of the Board of the **Pan African Journal of Business Management (PAJBM)** and my co-editor, I am glad to present Volume 7, Issue 2 of the journal. This is a bi-annual journal of the Faculty of Business Management (FBM) of the Open University of Tanzania (OUT). The journal encourages the submission of high-quality and original research papers that match the scope of the journal.

Once again, I am pleased to announce to our esteemed readers that the journal is now indexed in African Journals Online (AJOL). This is a promising sign for the performance of our journal. This would not have been possible without the constant support of board members and the intellectual generosity of readers and contributors (authors and reviewers).

May I take this opportunity to acknowledge the contribution of Dr. Henry L. Mambo for the grammar and content editing. Special thanks should go to Mr. Augustine Kitulo (our webmaster) for engineering the posting of the journal articles on our website. Furthermore, I would like to thank Mr. Thomas Kilumbi for his tireless effort in typesetting all the articles to meet the journals' acceptable standards. Additionally, I would like to express my gratitude to my fellow editor, Dr. Nasra Kara, for all the hard work she has put into making this issue possible. Last but not least, I would also like to express my sincere vote of thanks to all the authors, reviewers, the publisher, the advisory board, and the editorial board of PAJBM for their support in bringing out yet another volume of PAJBM. We look forward to their unrelenting support in bringing out Volume 7 Issue 2 in the scheduled time.

The current issue will have ten scholarly articles in a range of different disciplines other than business management. The current issue address matters pertaining to financial development: the role of GDP per capita dynamics in low and middle-income economies, the influence of mobile payment customer experiences on attitudinal and behavioral loyalty: evidence from Tanzania, efficiency of mutual funds and portfolio performance measurement: A case of selected mutual funds in Tanzania. Others include, the relationship between board characteristics and level of corporate disclosure among listed companies in Tanzania, relationship between ownership structures and level of corporate disclosure among listed companies in Tanzania, malmquist productivity change of mutual funds in Tanzania, determinants of broilers production in per urban areas in Dar es Salaam, Tanzania, the role of servant leadership conglomerate conflict

behaviour on Team performance, conflict resolution efficacy, and turnover intention in Tanzania's higher learning institutions, intrinsic motivation towards entrepreneurs' intention to adopt crowdfunding: the case of Kiva lending crowdfunding and adoption of international financial reporting standards and financial performance of listed manufacturing firms in Nigeria.

Needless to say, any scholarly papers that you wish to submit, either individually or collaboratively, are much appreciated and will make a substantial contribution to the early development and success of the journal. Best wishes, and thank you in advance for your contribution to our journal.

Dr. Bukaza Chachage
Chief Editor: Pan African Journal of Business Management

Financial Development: The Role of GDP per Capita Dynamics in Low- & Middle-Income Economies

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Abstract
This study delves into the complex role of economic growth on financial development within low- and middle-income economies (LMIE). It analyzes a dataset spanning 85 countries from 1980 to 2020, collapsed into 9 periods, yielding 765 observations. Employing General Method of Moments (GMM), including two-step system GMM and forward-orthogonal deviations IV/GMM methods, the research uncovers intriguing dynamics. Positive shifts in GDP per capita are found to correspond with heightened financial development, whereas negative changes exhibit an adverse relationship. Government consumption yields mixed results, and inflation negatively impacts financial development, while trade openness and favorable terms of trade exhibit positive associations. These findings underscore the significance of economic development, price stability, trade openness, and financial sector stability in nurturing financial development in LMIE. Therefore, policymakers are encouraged to prioritize strategies aimed at fostering economic growth, income augmentation, and economic resilience, particularly in times of economic turmoil. This research offers a unique contribution by dissecting economic growth into positive and negative changes, providing insights into their distinct impacts on financial development using GMM estimation. It empowers policymakers to leverage economic growth shifts and trade reforms for inclusive financial development.

Keywords: *Non-Linear Dynamics, Financial Development, Low- and Middle-Income, GMM*

Introduction

The relationship between GDP per capita and financial development has been a topic of significant interest in the field of economics. However, understanding the non-linear dynamics of this relationship, particularly in the context of low- and middle -income economies (LMIE), is crucial for policymakers, researchers, and stakeholders. This section provides an overview of the background and significance of studying the non-linear dynamics of GDP per capita changes on financial development in LMIE. LMIE face distinct challenges and opportunities in their pursuit of sustainable

economic development. While the developing countries possess abundant natural resources and a growing population, limited access to finance, underdeveloped financial markets, and institutional constraints can hinder economic progress (Kapaya, 2020). Understanding the non-linear dynamics between GDP per capita changes and financial development in LMIE is essential for designing targeted policies and strategies to overcome these challenges and leverage the potential for inclusive and sustainable growth. Financial development plays a crucial role in promoting positive economic changes and development. It facilitates capital mobilization, efficient allocation of resources, and access to financial services, thereby fostering investment, entrepreneurship, and innovation (Levine, 2005). The non-linear dynamics of GDP per capita changes can have profound implications for the pace and sustainability of financial development stability in LMIE.

Empirical studies have highlighted the non-linear nature of the relationship between economic development and financial development. The existence of an inverted U-shaped relationship, indicating that financial development initially and positively impacts economic growth but reaches a point of diminishing returns, has been found in various contexts; (Rousseau & Wachtel, 2011). Studying the non-linear dynamics of this relationship in LMIE provides insights into the optimal level of both financial development andeconomic development. This study has crucial policy implications. Policymakers can utilize these insights to design effective strategies that promote inclusive economic development, financial inclusion, strengthen financial systems, and improve regulatory frameworks (Kou, et al., 2019). By fostering the optimal level of financial development, LMIE can stimulate investment and encourage entrepreneurship. While the relationship between GDP per capita growth and financial development has been extensively studied, there remains a research gap specific to LMIE. The majority of empirical studies have primarily focused on developed economies or emerging markets, with limited research dedicated to LMIE. Examining the non-linear dynamics of this relationship in this context fills this research gap and provides a deeper understanding of the unique dynamics, challenges, and opportunities within the financial systems of LMIE by focusing on the positive and negative changes in GDP per capita on financial development indicators.

The objective of this study was to investigate the non-linear dynamics of the relationship between GDP per capita changes and financial development in low- and middle-income economies (LMIE) using the General Method of Moments (GMM) estimation technique. The unanswered research question in

the academic literature is this: what are the non-linear dynamics of the relationship between GDP per capita changes and financial development in LMIE, and how can these insights inform policies and strategies for promoting financial development?

Literature Review

A. Theoretical Perspectives

Financial intermediation theory suggests that financial development plays a vital role in facilitating economic growth and enhancing GDP per capita. According to this perspective, as financial institutions become more developed, they efficiently allocate capital, mobilize savings, and provide funding for productive investments (Gurley & Shaw, 1960), this theory lead to the supply-leading hypothesis. The supply-leading hypothesis suggests that financial development drives economic growth, indicating a unidirectional causality from finance to economic growth. For instance, Tripathy and Mishra (2021) confirmed the supply leading hypothesis, showing unidirectional causality from financial development to economic growth in the Indian economy. The demand-following hypothesis presents an alternative viewpoint to the supply-leading hypothesis. Unlike the supply-leading hypothesis, which asserts that financial development fuels economic growth, the demand-following hypothesis suggests that financial development is a response to economic growth. Thus, "finance follows growth" means that financial development and expansion tend to occur as a result of economic growth. In other words, when an economy experiences growth and prosperity, there is an increased demand for financial services and products to support the expanding economic activities.

Ibrahim and Acquah (2021) opine that under the demand-following hypothesis, financial institutions and services expand in tandem with increased economic activities and a rising demand for financial services generated by economic growth. As businesses flourish and the economy prospers, the demand for financial products such as loans, investments, and insurance rises, prompting financial institutions to expand to meet these growing needs. Moreover, economic growth often leads to higher incomes and accumulated wealth for individuals and households, encouraging greater saving and investment activity, thus boosting the demand for financial services (Tripathy & Mishra, 2021). Furthermore, the improved economic climate can stimulate a heightened risk appetite, motivating people to seek investment opportunities and financial products that offer potentially higher returns. Additionally, governments may also respond to economic growth by

introducing policies that support and promote financial development to sustain and further accelerate economic expansion (Hyera & Mutasa, 2016).

Odhiambo (2009) and Ibrahim and Acquah (2021) support the views that in essence, the demand-following hypothesis posits that financial development follows the path of economic growth, reflecting the notion that a flourishing economy stimulates the demand for financial services and products, leading to their expansion and development. These contrasting perspectives on the relationship between financial development and economic growth have been extensively studied in economic literature to better understand the complex dynamics between the two phenomena. Comparable to these hypotheses is the feedback hypothesis, where each variable influences the other in a continuous cycle. In the context of finance and economic growth, it suggests that the development of economic growth and the financial sector can mutually reinforce each other (Kchikeche&Khallouk, 2021). As the financial sector develops, it provides better access to financial resources, supporting economic growth through increased entrepreneurship and investment. In turn, economic growth leads to higher demand for financial services, prompting further expansion of the financial sector. This positive feedback loop can enhance economic growth and stability, while negative feedback loops may occur during economic downturns. Understanding these mechanisms is crucial for policymakers and economists to develop effective strategies for sustainable growth and financial stability (Ibrahim & Acquah, 2021).

Former theorists indicate that, non-linear GDP per capita growth occurs with financial development, initially positively impacting economic growth, but reaching a threshold beyond which the impact diminishes. The institutional economics perspective emphasizes the role of legal and regulatory frameworks, property rights protection, and contract enforcement in promoting economic growth and financial development. Non-linear dynamics between GDP per capita growth and financial development may arise due to variations in institutional quality across countries and over time (Demetriades & Andrianova, 2004). Financial institutions facilitate fund flow to productive sectors, fostering entrepreneurship and the adoption of new technologies (Aghion & Howitt, 1992), resulting in non-linearities in GDP per capita growth and financial development across different stages of economic development (Rousseau & Wachtel, 2011).These theoretical perspectives provide insights into the relationship between non-linear GDP per capita growth and financial development, endogenous growth factors in driving economic growth,and underscoring the positive role of financial intermediation, financial deepening and institutional quality. Policymakers

must understand these non-linear dynamics to design effective strategies fostering sustainable financial development and inclusive economic growth.

B. Empirical Review

Empirical evidence suggests that the relationship between GDP per capita growth and financial development is non-linear. Traditional linear models may not capture the full picture, as the impact of GDP per capita growth on financial development varies across different stages of economic development. Non-linear effects reveal critical thresholds and turning points that significantly influence the relationship. Threshold effects signify critical points in the relationship between GDP per capita growth and financial development. Empirical studies identify specific thresholds where the impact of GDP per capita growth on financial development changes significantly. Below the threshold, financial development may have limited effects on economic growth, while above it, increasing GDP per capita can positively stimulate financial development, thus exhibiting non-linearities (Furceri et al., 2019). Non-linear effects between GDP per capita growth and financial development arise from various mechanisms. Some of these include; financial deepening, institutional quality, and absorptive capacity. Initially, as GDP per capita grows, financial deepening expands access to financial services, improving resource allocation and investment efficiency. However, beyond the threshold, further financial deepening may lead to potential risks and challenges that require careful management.

Factors that are important determinants of financial development are numerous. Some of the common ones are; institutional quality, which include the efficiency and effectiveness of legal and regulatory frameworks. Studies have found out that weaker institutions can hinder the positive impact of GDP per capita growth on financial development in LMIE (Huang, 2011). Strengthening institutions and improving governance are crucial for promoting financial development in the region. Many African countries have implemented financial sector reforms aimed at enhancing financial intermediation and inclusion. These reforms, such as liberalizing interest rates, expanding banking networks, and improving regulatory frameworks, have contributed to increased financial development and facilitated the positive impact of GDP per capita growth. (Naceur, et al., 2014). Inadequate infrastructure, limited banking penetration, and low levels of financial literacy pose challenges to financial development in many African countries (Huang, 2011). Enhancing physical and digital infrastructure, expanding branch networks, and promoting financial literacy are crucial for improving access to financial services. Macroeconomic stability, characterized by low

inflation and fiscal discipline, is vital for fostering financial development. High inflation and unstable macroeconomic conditions can undermine the positive impact of GDP per capita growth on financial development in LMIE. Sound macroeconomic policies and prudent fiscal management are essential for creating a conducive environment for financial development. (Kagochi, 2019).

Empirical studies investigating the non-linear dynamics of the relationship between GDP per capita growth and financial development have gained significant attention in recent years. These studies employ various methodologies to capture the non-linear dynamics between GDP per capita growth and financial development. The methodologies include most panel data analysis models, threshold regression models, and non-linear autoregressive distributed lag models (NARDL). These methodologies allow researchers to account for the non-linearity and dynamic nature of the relationship, capturing threshold effects, asymmetric effects, and potential feedback loops. Studies have explored non-linear relationships between GDP per capita and various factors(Ibrahim and Acquah, 2021). For example, research has examined the inverted U-shaped relationship between GDP per capita and financial development (Mujtaba & Jena, 2021), where an initial increase in financial development leads to faster economic growth but diminishing returns occur at higher levels of financial development. (Rousseau & Wachtel, 2011). Another area of study is the non-linear relationship between GDP per capita and income inequality. Research suggests that initially, as GDP per capita rises, income inequality may increase. However, beyond a certain threshold, further increases in GDP per capita can lead to a reduction in income inequality.

Empirical evidence suggests the presence of non-linear relationships between GDP per capita growth and financial development (Farouq, et al. (2020). Several studies have found evidence of threshold effects, indicating that the impact of financial development on GDP per capita growth changes once a certain threshold is reached. Beyond this threshold, further financial development may have diminishing returns or even negative effects on economic growth. Empirical studies have also explored asymmetric effects between GDP per capita growth and financial development. These studies examine whether the relationship between the two variables differs during periods of economic expansion versus contraction or during episodes of financial booms versus busts. (Ahmed, et al. 2021). Such asymmetries highlight the importance of considering both positive and negative shocks when assessing the impact of financial development on GDP per capita

growth (Conceição& Kim, 2010). Also, research has investigated the presence of feedback effects between GDP per capita growth and financial development. These studies examine how changes in GDP per capita growth influence financial development, and vice versa. The findings indicate the existence of a feedback mechanism, suggesting that financial development can both drive and be driven by GDP per capita growth. (Manta, et al., 2020).

In this current study, efforts are devoted to confirm non-linearity of economic growth (Figure 1, Table 1) and how it may impact financial development in LMIE. Financial inclusion and inclusive growth theoretical frameworks highlight the role of financial inclusion in shaping the relationship between non-linear GDP per capita growth and financial development. Financial inclusion, which involves providing access to financial services for all segments of society, is seen as a mechanism to foster inclusive growth and reduce income inequality (Demirgüç-Kunt&Klapper, 2012). By enhancing financial access and promoting entrepreneurship and investment opportunities, financial inclusion can contribute to non-linear patterns in GDP per capita and financial development. Using the current study LMIE sample, a closer analysis of GDP per capita values, starting with the smallest values (Table 1 and Figure 1), the 1st percentile corresponds to a GDP per capita of 321.2147, indicating that only 1% of the observations have a lower GDP per capita than this value. The 5th percentile is 431.7792, implying that 5% of the observations have a GDP per capita lower than this threshold. These values represent the lower end of the GDP per capita distribution. Moving to the largest values, the largest observation in the dataset is 13,857.34, representing the maximum GDP per capita recorded. Additionally, the 75th percentile indicates a GDP per capita of 3,961.508, meaning that 75% of the observations have a lower GDP per capita than this value. Finally, the 99th percentile is 11,871.88, suggesting that 99% of the observations have a lower GDP per capita than this threshold. These values represent the upper end of the GDP per capita distribution. This is typical of a non-normal distribution of GDP per capita in the sample, implying differential growth over time and space due to possible factors highlighted before.

Table 1: GDP Per Capita - Original Measurement

Percentiles		*Smallest*		
1%	321.2147	262.1902	*Obs*	765
5%	431.7792	278.9129	*Sum of wgt.*	765
10%	501.6931	298.2266	*Mean*	2880.99
25%	993.4154	301.2698	*Std. dev.*	2553.394
			Variance	6519821
50%	2053.01		*Skewness*	1.544704
		Largest	*Kurtosis*	5.351598
75%	3961.508	12707.02		
90%	6245.537	13115.1		
95%	8565.426	13313.19		
99%	11871.88	13857.34		

Source: Author's computation.

In Table 1 and Figure 1, considering the measures of skewness and kurtosis, the skewness value is 1.544704. Positive skewness suggests that the distribution of GDP per capita is skewed to the right, with a longer tail on the right side. The kurtosis value is 5.351598, indicating that the distribution has heavy tails and is more peaked than a normal distribution. These statistics offer a comprehensive evidence for possible differential changes in the variable over time and space which cements the inspiration for non-linear dynamic analysis of GDP per capita (INV) against financial development (FIN) variables. Some studies have already conformed the non-linear behavior of GDP per capita on other variables. For example, Mujtaba and Jena (2021) results show that increase in economic growth would decrease carbon dioxide emissions, while a reduction in economic growth would increase carbon dioxide emissions which implies an inverted U-shaped link between economic growth and carbon dioxide emissions. Ampofo, et al. (2021) results show long-run asymmetric effect outcomes indicate a definite boom in economic growth, significantly increases carbon emission in Turkey, and a decline in Vietnam.Conceição and Kim (2010) study reveals that periods of decelerating economic growth are associated with poorer health and education outcomes, while growth accelerations are linked to improvements in these indicators globally. However, the effects are asymmetric, as the benefits during good times are not as significant as the drawbacks during bad times. They note that, developing countries, particularly least developed countries (LDCs), experience severe negative consequences during growth collapses and minimal improvements during favorable periods. De Neve, et al. (2018) findings show that, individuals exhibit greater sensitivity to losses compared to gains in terms of economic growth. Subjective well-being measures are more than twice as responsive to negative economic growth as they are to positive economic growth.

Numerous studies have documented the linear effect of economic growth on financial development. For example Song, et al. (2021) estimations show a positive impact of economic growth on financial development. The policy implication is that fostering economic growth in developing countries can contribute to promoting financial development. Akinci, et al. (2014) shows that economic output has positive impacts on domestic credits, broad money, total bank deposits, financial system deposits, and Fetai (2018) shows that economic output has positive impacts on market capitalization, private sector credit and liquid liabilities. However, the work of Farouq, et al. (2020) confirms an asymmetric impact of economic growth on financial development, they support a uni-directional non-linear causality effect of the variables. Since evidence support an impact of economic outputs on financial development indicators and non-linear effects of growth indicators are important in these other related economic areas, understanding the non-linear effects of GDP per capita growth on financial development is essential for policymakers and researchers seeking to grasp the complexities of this relationship. Traditional linear models may oversimplify the dynamics at play, making it crucial to explore the potential non-linearities. Interestingly, Ahmed, et al. (2021) demonstrate that the asymmetric model presents a totally different picture, indicating that the results of symmetric models can be unreliable in the presence of asymmetries.

Several studies have documented kinds of demand-following symmetrical impacts of economic growth on financial development or the mutual feedback impacts on either variable. There are numerous studies supporting either the demand following hypothesis or feedback hypothesis. Nasreen, et al. (2020) studying European economies found a positive impact of growth on financial development. Rajan and Zingales (1998) found a positive relationship with mutual re-enforcements between economic growth and financial system development. Their analysis suggests that economic growth fosters the expansion and strengthening of the financial system, encouraging increased household savings and investment in the banking sector. As a result, credit creation policies lead to enhanced credit supply for businesses, ultimately contributing to further economic growth. Odhiambo (2009) found a causal link between economic growth and financial depth in South Africa. Wolde-Rufael (2009) discovered bidirectional causality between economic growth and financial development in Kenya. And, Lawal, et al. (2016) results show that a two-way cointegration exists between economic growth and financial development in Nigeria.

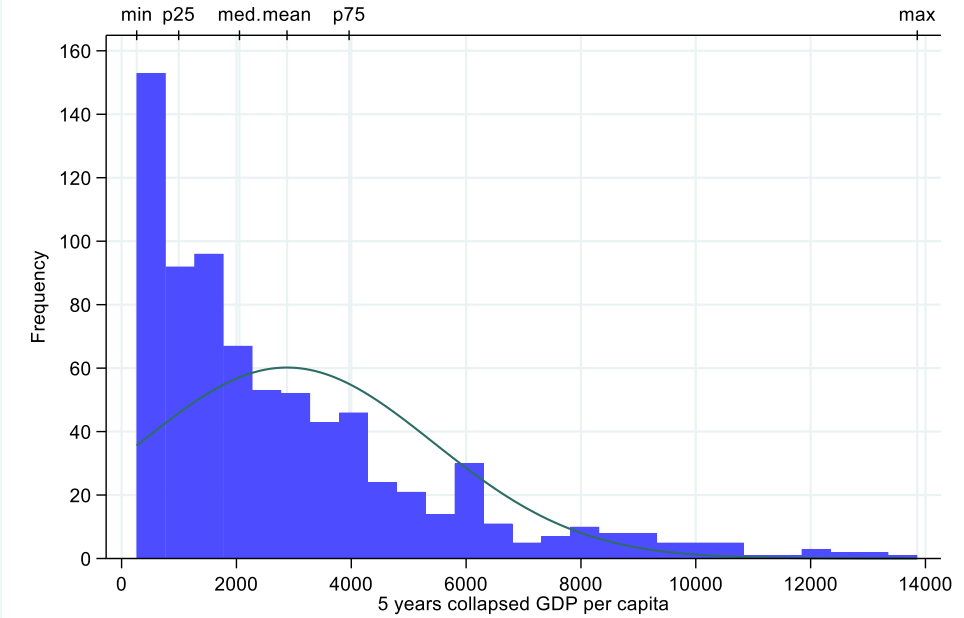

Figure 1: GDP per capita
Source: Author's computation.

Furthermore, Demetriades and Hussein (1996) observed a bidirectional causal relationship between economic growth and financial development in 16 developing countries. Abu-Badar and Abu-Qarn (2008) identified a feedback effect between economic growth and financial development in Egypt. Calderón and Liu (2003) support a bidirectional granger causality between economic growth and financial development among 109 developing and industrial economies. Ibrahim and Acquah (2021) in their study, used panel data from 45 African countries. They found out a feedback causality between financial sector development and economic growth, which held true regardless of the proxy used to measure finance and economic growth. Kchikeche and Khallouk (2021) explore the causal relationship between bank-based financial development and economic growth in Morocco. The findings indicate that in the long run, economic growth is the driving force behind bank-based financial development. Manta, et al. (2020) conducted a study on ten central and eastern European countries to examine economic growth and financial development. They found bidirectional causality between economic growth and financial development indicators, indicating that increasing economic growth leads to rising financial development. It is

reasonable to expect that the negative and positive changes in these variables may lead to effects of different magnitude or direction (Ahmed, et al., 2021).

C. Channels of Influence and Hypotheses

Asymmetric growth impacts on financial development through diverse channels. Geographical variation, sectoral disparities, and income inequality contribute to uneven economic development changes among economies, leading to imbalanced financial development across regions, sectors and over time. In urban areas experiencing faster growth, financial infrastructure and services tend to develop at a quicker pace, while rural regions may face limited financial access. Moreover, concentrated growth in specific sectors, such as technology and finance, can direct investment and capital flows, affecting the development of financial markets and institutions. Furthermore, asymmetric economic changes influence on financial development extends to financial inclusion and the emergence of asset bubbles and risks. Higher-income individuals benefit more from positive economic changes, widening income disparities and hindering financial inclusion for vulnerable populations. As a result, certain segments of the population may lack access to essential financial services. Additionally, disproportionate growth in specific sectors can lead to asset bubbles and increased financial risks, posing challenges to the stability and efficiency of the financial system. Therefore, since these influences are possibly dominant in LMIE, the approach adopted is to decompose GDP per capita into positive and negative changes, mimicking expansion and contraction separately but simultaneously. Thus, the following two testable hypotheses are posed:

H1: Positive changes in GDP per capita have positive effects on financial development indicators
H2: Negative changes in GDP per capita have negative effects on financial development indicators

Methodology

A. Data Sources and Variables

The World Bank is a reliable, widely recognized and reputable data source for various economic indicators. All data was sourced from it (World Bank, 2023). The data covers 16 lower income, 42 lower middle-income and 27 upper middle-income countries (LMIE), making a total of 85 countries, for a time period ranging from 1980 to 2020. The panels are collapsed to make 9 periods, of 5 years each, and produced 765 number of observations. (Table 1). Collapsing panels in GMM estimation allows for the exploitation of the full information potential from a larger dataset, leading to more efficient

parameter estimation (Arellano & Bond, 1991). This technique significantly improves estimation efficiency, particularly in the presence of heteroscedasticity (Hansen, Heaton, & Yaron, 1996). Larger panel sizes also amplify the benefits of the finite sample correction, enhancing the precision of GMM estimation (Windmeijer, 2005). Moreover, collapsing panels facilitates better instrument selection and strengthens tests for overidentifying restrictions (Blundell & Bond, 1998). The utilization of larger panel sizes empowers GMM overidentification tests to better discern weak instruments and identify potential misspecifications. Collapsing panels enhances the robustness of GMM estimates, particularly when dealing with datasets characterized by limited time-series observations or significant missing data.

The variables used are summarized in Table 2, are log transformed and briefly expanded as follows: comprehensive alternative measures of financial institutions based financial development are used. FIN(1) represents domestic credit provided to the private sector by banks as the percentage of a country's GDP. It indicates the level of financial intermediation and the availability of credit for private sector activities. Higher values of FIN(1) suggest a greater degree of access to bank financing for businesses and individuals. Similar to FIN(1), FIN(2) represents the domestic credit provided to the private sector, expressed as a percentage of the country's GDP. However, unlike FIN(1), FIN(2) includes credit from both banks and non-bank financial institutions. It provides a broader measure of the availability of credit to support private sector activities. FIN(3) specifically refers to the credit provided by the monetary sector, including the central bank and other monetary authorities, to the private sector. It is expressed as a percentage of the country's GDP. It captures the role of monetary policy in influencing the credit availability and financial conditions for private sector borrowers. FIN(4) measures the broad money supply as a percentage of the country's GDP. It includes currency in circulation, demand deposits, and other liquid assets. A higher value of FIN(4) indicates a larger money supply relative to the size of the economy and reflects the availability of money for transactions and economic activities. FIN(5) represents the domestic debt of a country as a percentage of its GDP. It includes government debt, corporate debt, and household debt held domestically. It provides an indication of the level of debt burden on the domestic economy and its potential impact on economic stability and sustainability.

The following are sets of independent variables. INC represents the gross domestic product (GDP) per capita adjusted for inflation, denominated in constant 2015 US dollars. It serves as a measure of average economic output

per person and provides insights into the standard of living and economic well-being of individuals within a country. INC(+) refers to positive changes in GDP per capita over time. It signifies an increase in economic output per person and suggests positive economic changes and improvement in living standards. INC(-) represents negative changes in GDP per capita, indicating a decline in economic output per person. It suggests economic contraction or a decrease in living standards. GOV measures the proportion of GDP that is accounted for by government final consumption expenditure. It reflects the share of economic output utilized by the government for providing public goods and services, such as; healthcare, education, and infrastructure development. POG indicates the annual percentage change in a country's population. It reflects the rate at which the population is growing or shrinking and provides insights into demographic trends and challenges, such as workforce dynamics and resource allocation. INF measures the annual percentage change in the GDP deflator, which is an indicator of overall price levels within an economy. It captures the rate of inflation and reflects changes in the general price level. TRA represents the total value of a country's exports and imports of goods and services, expressed as a percentage of its GDP. It provides an indication of the degree of openness and integration of an economy with global markets. Trade related variables are included for model stability as follows; TER represents term of trade, the ratio of a country's export prices to its import prices. It measures the relative strength of a country's export sector compared to its import sector and reflects changes in trade competitiveness. Finally, SDE refers to the standard deviations of the variable TRA, which represents the total value of exports and imports as a percentage of GDP. SDE provides insights into the volatility/stability and variability of a country's trade activities over time, indicating the fluctuations in the value of international trade. The following general model is estimated:

$$y_{i,t} = \alpha + \beta^{+} * INC_{i,t}^{+} + \beta^{-} * INC_{i,t}^{-} + X_{i,t} * \beta + Z_{i,t} * \gamma + \mu_{i,t} \quad ----------(1)$$

where $INC_{i,t}^{+}$ is equal to positive GDP per capitachanges in country-years, 0 otherwise; and $INC_{i,t}^{-}$ is equal to the negative GDP per capita changes, 0 otherwise. $X_{i,t}$ represents the set of exogenous variables, $Z_{i,t}$ represent the set of instrumental variables.$INC_{i,t}^{+}$ and $INC_{i,t}^{-}$ are decomposed from $INC_{i,t} = INC_0 + INC_{i,t}^{+} + INC_{i,t}^{-}$ where $INC_{i,t}^{+}$ and $INC_{i,t}^{-}$ are partial sum processes of positive and negative changes in $INC_{i,t}$. This decomposition approach has been used by many researchers such as Ngoc (2020) on asymmetric effects of inflation on growth and Asandului, et al. (2021)on

fiscal policy on inflation and economic activities. The decomposition issummarized in equation 2.

$$INC_{i,t}^{+} = \sum_{n=1,j=1}^{q+} \Delta INC_{n,j}^{+} = \sum_{n=1,j=1}^{q+} max(\Delta INC_{n,j}, 0); \; INC_{i,t}^{-} = \sum_{n=1,j=1}^{q-} \Delta INC_{n,j}^{-}$$
$$= \sum_{n=1,j=1}^{q-} min(\Delta INC_{n,j}, 0) \quad (2)$$

B. The General Method of Moments

The General Method of Moments (GMM) is an econometric estimation technique widely used in empirical research to estimate parameters in models with moment conditions (Hansen & Singleton, 1982). It provides a flexible framework for estimating models when assumptions about functional form and distributional properties are not precisely known (Windmeijer, 2005). It is suitable for studying the non-linear dynamics. GMM estimation is a powerful approach based on moment matching. It equates sample moments with theoretical moments from the economic model, providing flexibility and efficiency in parameter estimation. GMM is particularly suitable for addressing endogeneity, measurement error, heteroscedasticity, and serial correlation issues. (Hansen, 1982). Endogeneity, or the potential mutual relationship as is the case for the analysis between GDP per capita growth and financial development, can bias estimation results. GMM addresses this concern by incorporating instrumental variables that are correlated with the explanatory variables but not with the error term. (Arellano & Bond, 1991). These instrumental variables help identify the causal relationship between GDP per capita growth and financial development.

The GMM estimation technique offers several advantages. First, it provides flexibility by allowing estimation of models without imposing strict assumptions about functional forms or distributional properties (Arellano &Bover, 1995). This flexibility makes GMM suitable for a wide range of economic applications. Second, GMM estimators can be more efficient than traditional estimators, such as ordinary least squares (OLS), by using moment conditions efficiently and accounting for potential endogeneity, heteroscedasticity, and serial correlation in the errors (Hansen, et al. 1996). Third, under appropriate assumptions, GMM estimators are consistent and asymptotically normal, allowing for valid statistical inference (Hansen, 1982). The GMM estimation technique has been extended and applied in various econometric models. For example, the system GMM estimator has been developed for dynamic panel data models (Arellano & Bond, 1991), and can be adapted into a non-linear GMM estimation.

As stated earlier, the GMM estimation technique is based on the method of moments principle, which aims to match theoretical moments of a model with their sample counterparts. Moment conditions are derived from the theoretical model and serve as the building blocks for estimation. These conditions capture the relationships between the model's variables and parameters (Hansen & Singleton, 1982). The GMM estimation process involves two stages: the moment estimation stage and the efficient estimation stage. In the moment estimation stage, moment conditions are constructed using the model's assumptions. These moment conditions typically take the form of sample averages of functions of observed variables and model parameters. The objective is to choose parameters that minimize the distance between the sample moments and the population moments implied by the model. (Hansen, 1982). In the efficient estimation stage, the estimated moments from the first stage are used to construct a criterion function that measures the discrepancy between the sample moments and the model's implied moments. (Hansen, et al. 1996). This criterion function is minimized to obtain efficient estimates of the model's parameters. The optimization process involves weighting the moment conditions to improve efficiency and account for potential heteroscedasticity or correlation in the errors.

The GMM estimator seeks to find the values of θ that minimize the criterion function J(θ), indicating the best fit between the sample moments and the theoretical moments implied by the model. This estimation technique allows for consistent and efficient estimation of parameters in models where assumptions about functional form and distributional properties are not precisely known. The estimator's equation can be represented as follows:

$$\hat{\theta} = \arg\_min\left(J(\theta)\right) ------------------------------(3)$$

where: $\hat{\theta}$represents the estimated parameters. $J(\theta)$ is the criterion function that measures the discrepancy between the sample moments and the model's implied moments.

The criterion function $J(\theta)$ is defined as:

$$J(\theta) = n * g(\theta)' * W * g(\theta) -------------------------(4)$$

where: n is the sample size. g(θ) is a vector of moment conditions, which are functions of the observed variables and parameters of the model. W is a positive definite weighting matrix that accounts for the heteroscedasticity and potential correlation in the errors.

C. Justification for Using GMM in Capturing the Non-linear Dynamics

GMM estimation is well-suited for capturing non-linear dynamics relationship. By specifying appropriate moment conditions that reflect the non-linear relationship, GMM allows for the examination of the shape and magnitude of the effects across different levels of a variable. (Roodman, 2009). GMM is particularly useful for analyzing panel data, which combines cross-sectional and time series observations. Panel data analysis allows for the exploration of both within-country and between-country variations in the relationship. (Arellano &Bover, 1995; Windmeijer, 2005).

For robustness check purposes the two-step system GMM of Blundell and Bond (1998) is applied in comparative analysis with the forward-orthogonal deviations (FOD) IV/GMM estimation method of Hayakawa, Qi, and Breitung (2019).The first estimation is based on Blundell and Bond (1998) who introduced the concept of two-step system GMM estimators with collapsed instruments and robust standard errors. This approach addresses the issue of weak instrument bias and provides more efficient and robust estimates in dynamic panel data models. It addresses the endogeneity problem in panel data models by utilizing a set of moment conditions based on the first-difference transformation of the variables. This approach accounts for both the contemporaneous and dynamic relationships between the variables.In their study, Blundell and Bond (1998) demonstrated that the collapsed instruments in the GMM framework, where predetermined variables are used as instruments, lead to more efficient estimation compared to traditional GMM methods. Furthermore, they provided a robust variance estimator to account for potential heteroscedasticity and autocorrelation in the error terms, ensuring valid statistical inference. The two-step system GMM estimator with collapsed instruments and robust standard errors proposed by Blundell and Bond (1998) has several advantages. First, it addresses the weak instrument problem commonly encountered in dynamic panel data models, improving the efficiency of parameter estimates. Second, it allows for valid statistical inference by considering potential heteroscedasticity and autocorrelation in the errors. Third, it accommodates a wide range of dynamic panel data specifications, making it applicable to various economic applications. In short, by incorporating collapsed instruments and robust standard errors, this technique improves the accuracy and reliability of parameter estimation in empirical research. (Blundell and Bond, 1998).

The two-step system GMM estimator has two steps. The first step uses instrumental variables to estimate the parameters of the model, while the

second step employs the differenced form of the endogenous variable to account for the dynamic nature of the panel data. This two-step process allows for consistent and efficient estimation, particularly in the presence of endogeneity and autocorrelation.

Step 1: First-Stage Equation

$$y_{i,t} = X_{i,t} * \beta + Z_{i,t} * \gamma + \mu_{i,t} \quad ----------(5)$$

In the first step, a dynamic panel data model is estimated using instrumental variables (IV). The dependent variable $y_{i,t}$ represents the endogenous variable of interest, $X_{i,t}$ represents the set of exogenous variables, $Z_{i,t}$ represents the set of instrumental variables, βrepresents the coefficients of the exogenous variables, γ represents the coefficients of the instrumental variables, and $\mu_{i,t}$ represents the error term.

Step 2: Second-Stage Equation

$$\Delta y_{i,t} = \Pi * \Delta y_{i,t-1} + X_{i,t} * \theta + v_{i,t} \quad ----------(6)$$

In the second step, the differenced form of the endogenous variable, $\Delta y_{i,t}$, is regressed on its lagged difference, $\Delta y_{i,t-1}$, the set of exogenous variables $X_{i,t}$, and the estimated coefficients θ. Πrepresents the coefficient matrix capturing the dynamic relationship between the endogenous variable and its lagged difference, and $v_{i,t}$represents the error term.Blundell and Bond (1998) proposed this two-step system GMM estimator to address the potential bias arising from endogeneity in dynamic panel data models. By incorporating lagged differences and instrumental variables, their estimator provides a robust approach to estimating parameters and controlling for endogeneity concerns in panel data settings.It is argued by Krifpganz (2019) that in dynamic models incorporating unobserved group-specific effects, the lagged dependent variable inherently acts as an endogenous regressor. In cases such as of this study, the traditional fixed-effects estimator, when analyzed under fixed-T asymptotics, is prone to bias and inconsistency. To address this issue, reliance on the system GMM estimators is prevalent among practitioners. In this study, inspiration is drawn from Blundell and Bond's (1998) system GMM estimator, which effectively tackles the aforementioned problem in practical applications.

The second estimation is based on Hayakawa, Qi, and Breitung (2019) who

introduced the forward-orthogonal deviations (FOD) IV/GMM estimation method, which combines instrumental variable (IV) estimation with GMM estimation. The approach addresses the endogeneity issue in econometric models by utilizing forward-orthogonal deviations as instruments. In the estimation, the first step involves generating forward-orthogonal deviations by regressing the endogenous variables on predetermined instruments. These forward-orthogonal deviations capture the exogenous component of the endogenous variables, allowing for consistent estimation of the model parameters (Hayakawa, et al. 2019). The second step involves constructing moment conditions based on the FODs and estimating the model parameters using the GMM framework. The moment conditions are formed by taking the orthogonality conditions between the FODs and the instruments, as well as between the FODs and the model errors (Hayakawa, et al. 2019). The estimation method provides several advantages. First, it addresses endogeneity concerns by using forward-orthogonal deviations as instruments, which helps alleviate bias in parameter estimation. Second, it combines the strengths of both IV and GMM estimation methods, leading to efficient and consistent parameter estimates. Third, theapproach accommodates various econometric models and can handle different forms of endogeneity. Hayakawa, et al. (2019) demonstrated the effectiveness of themethod through simulations and empirical applications. Their results showed that the approach outperformed other estimation methods in terms of bias reduction and efficiency improvement.

Therefore, the final implemented model follows the following form:

$$\Delta y_{i,t} = \sum_{j=1}^{q_y} \delta_j \Delta y_{i,t-j} + \sum_{j=0}^{q_x} \Delta X'_{i,t-j} \beta_j + [\Delta \mu_{i,t} = \Delta \varepsilon_{i,t}] - - - - - - - - - - - - - - - - (7)$$

Where $\Delta y_{i,t}$ represents the alternative financial development differenced measures, and $\Delta X'_{i,t-j}$ represent all differenced regressors which can be exogenous, weakly exogenous (predetermined) or endogenous.

Finally, the analysis followed a sequential implementation procedure, as adopted from Krifpganz (2019), which helps in the identification of the models their optimal lags that best fit the data based on different information criteria. It includes steps such as; the specification of an initial candidate statistical model and the computation of one-step estimation. During this estimation, tests for serial correlation (up to order two) and overidentification are examined. If any of these tests are not satisfied, the procedure is repeated

using the initial candidate model. Additionally, the model undergoes the removal of lags with the highest p-values, followed by model re-estimation. Ultimately, the model with the lowest values of the Akaike information criterion (AIC), Bayesian information criterion (BIC), and Hannan–Quinn information criterion (HQC) is selected.

IV. Empirical Analysis and Results

A. Presentation and Interpretation of the Empirical Findings

In this analysis, several economic indicators were examined. (Table 2). The mean values for the domestic credit variables, FIN(1) and FIN(2), are relatively close, with FIN(2) slightly higher at 30.4215 compared to FIN(1) at 28.5622. Higher values indicate greater credit availability to support private sector activities. Additionally, FIN(3) shows a mean value of 28.9123. This aligns closely with the domestic credit variables, signifying the significant role played by the monetary sector in extending credit to the private sector. Secondly,FIN(4) has a relatively higher mean value of 43.6737, indicating a larger money supply relative to the size of the economies. On the other hand, FIN(5) with a mean value of 9.5939, suggests a smaller debt burden relative to the size of the economies, encompassing government, corporate, and household debt.Thirdly, INC, the mean value of 2880.9900, reflects the standard of living and economic well-being of individuals within the sample which is within the LMIE. Examining INC(+), and INC(-), we gain insights into economic changes. INC(+) has a mean value of 236.3099, this suggests economic expansions and improved living standards. Conversely, INC(-) has a mean value of -72.7318, reflects less economic contraction or a decrease in living standards.

Fourthly, macroeconomic indicators, GOV with a mean value of 14.4076, reflects a low share of economic output used by the government for providing public goods and services. POG with a mean value of 1.9873 which is high, shedding light on demographic trends and challenges, such as workforce dynamics and resource allocation. INF with a mean value of 40.5314. It portrays high changes in the general price level within the economies. Lastly, trade-related variables: TRA, TER, and SDE. TRA represents the total of exports and imports, with a mean value of 67.3455. This indicates a significant degree of openness and integration of the economy with global markets. TER, the terms of trade, has a mean value of 0.8229. It provides insights into the relative strength of the country's export sector compared to its import sector, which in this case low with more imports than exports. Lastly, SDE, with a mean value of 6.3805reflects high volatility and variability of the countries' trade activities over time.

Table 2: Descriptive Statistics

Variable	Variable Definition	Obs.	Mean	SD	Min	Max
FIN(1)	Domestic credit to private sector by banks (% of GDP)	765	28.56	22.58	0.697	157.4
FIN(2)	Domestic credit to private sector (% of GDP)	765	30.42	23.47	0.740	157.4
FIN(3)	Monetary sector credit to private sector (% of GDP)	765	28.91	22.63	0.740	157.4
FIN(4)	Broad money (% of GDP)	765	43.67	29.76	3.484	239.8
FIN(5)	Domestic debt (% of GDP)	765	9.59	18.94	-83.24	240.5
INC	GDP per capita (constant 2015 US$)	765	2881	2553	262.2	13857
INC(+)	Positive changes of INC	765	236.3	456.6	0.000	6609
INC(-)	Negative changes of INC	765	-72.73	234.4	-2785	0.000
GOV	Government final consumption expenditure (% of GDP)	765	14.40	5.586	0.000	42.94
POG	Population growth (annual %)	765	1.98	1.060	-1.676	5.125
INF	Inflation, GDP deflator: linked series (annual %)	765	40.53	284.0	-5.902	6945
TRA	Total of exports and imports (% of GDP)	765	67.34	32.92	1.387	221.5
TER	Terms of trade, ratio of export to imports	765	0.82	0.307	0.150	2.709
SDE	Standard deviations of TRA	765	6.38	5.960	0.000	56.68

Source: Author's computation.

In terms of domestic credit variables variability, FIN(1), FIN(2), and FIN(3) show consistent levels of credit to the private sector as a percentage of GDP, with standard deviations of 22.5806, 23.4729, and 22.6342, respectively. But, financial indicators, FIN(4) indicates a higher level of variability in the money supply (29.7608), while FIN(5) suggests relatively smaller variability in domestic debt (18.9441). INC shows significant variability (2553.3940), with INC(+) indicating higher variability in positive changes (456.6103) and INC(-) showing slightly lower variability in negative changes (234.4985). Government expenditure (GOV) demonstrates a more stable level (5.5869), while population growth (POG) and inflation (INF) have relatively lower (1.0604) and higher (284.0167) variability, respectively. Trade-related variables, TRA (32.9254) and TER (0.3079), suggest moderate and lower variability in openness to global markets and export-to-import price ratio, respectively. Finally, SDE (5.9604) indicates a moderate level of variability in the countries' trade activities.

First, the domestic credit variables (FIN), strong positive correlations between FIN(1), FIN(2), and FIN(3) with correlation coefficients ranging from 0.933 to 0.988 are evidenced. (Table 3). This indicates a high degree of association between these variables, suggesting that they capture similar aspects of credit provision to the private sector. Furthermore, FIN(4) shows moderate to strong positive correlations with FIN(1), FIN(2), and FIN(3), ranging from 0.775 to 0.824. This indicates a positive relationship between broad money and domestic credit provided by banks and financial institutions.

Table 3: Correlation Matrix

Log(Var.)	FIN(1)	FIN(2)	FIN(3)	FIN(4)	FIN(5)	INC	INC(+)	INC(-)	GOV	POG	INF	TRA	TER	SDE
FIN(1)	1.0000													
FIN(2)	0.933***	1.0000												
FIN(3)	0.988***	0.946***	1.0000											
FIN(4)	0.820***	0.775***	0.824***	1.0000										
FIN(5)	0.204***	0.231***	0.202***	0.343***	1.0000									
INC	0.538***	0.552***	0.528***	0.486***	0.198***	1.0000								
INC(+)	0.268***	0.243***	0.268***	0.283***	0.0120	0.197***	1.0000							
INC(-)	0.138***	0.088**	0.115***	0.106***	-0.0260	0.121***	0.220***	1.0000						
GOV	0.237***	0.247***	0.238***	0.301***	0.116***	0.213***	-0.066*	-0.0190	1.0000					
POG	-0.26***	-0.26***	-0.26***	-0.28***	-0.14***	-0.29***	-0.131***	0.0520	-0.077**	1.0000				
INF	-0.25***	-0.19***	-0.24***	-0.23***	0.085**	-0.10***	-0.240***	-0.212***	-0.046	0.067*	1.0000			
TRA	0.295***	0.283***	0.293***	0.334***	0.0050	0.241***	0.168***	0.0470	0.315***	-0.14***	-0.18***	1.0000		
TER	0.137***	0.131***	0.118***	0.078**	-0.0030	0.474***	0.112***	0.0180	-0.0450	0.0210	0.0270	0.134***	1.0000	
SDE	-0.0330	-0.0300	-0.0350	0.063*	0.089**	0.0060	0.0300	-0.104***	0.112***	-0.11***	0.122***	0.371***	0.0280	1.0000

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

Source: Author's Computation

However, FIN(5) shows weak positive correlations with the other financial variables, suggesting a relatively weaker association with domestic debt. Second, INC, which represents GDP per capita, moderate positive correlations with the domestic credit variables FIN(1), FIN(2), and FIN(3), ranging from 0.528 to 0.552 were observed.

This suggests a positive relationship between GDP per capita and credit provision to the private sector. Importantly, INC showed weak positive correlations with FIN(4) and FIN(5), indicating a potential association between GDP per capita and broad money and domestic debt. The positive correlations of INC(+) with the financial variables further highlights the relationship between positive changes in GDP per capita and credit provision. However, INC(-) shows weaker positive correlations, suggesting a weaker relationship with negative changes in GDP per capita. This implied that during periods of economic expansion and increased GDP per capita, there is a higher likelihood of credit being extended to the private sector. However, it is worth noting that the weaker positive correlations seen with INC(-) suggest a less pronounced relationship with negative changes in GDP per capita, indicating that economic downturns may not have as strong of an impact on credit provision.

Third, GOV, representing government final consumption expenditure, weak positive correlations with the financial variables, ranging from 0.237 to 0.301 was observed (Table 3). This suggests a positive association between government expenditure and credit provision, broad money, and domestic debt. However, GOV showed negative correlations with POG and INF, indicating a potential trade-off between government spending and population growth and inflation. POG, reflecting population growth, showed negative correlations with the financial variables, ranging from -0.263 to -0.287. This suggested an inverse relationship between population growth and credit provision, broad money, and domestic debt. Similarly, INF, representing inflation, shows negative correlations with the financial variables, indicating a potential inverse relationship between inflation and credit provision, broad money, and domestic debt.

Fourth, examining the trade-related variables, the study observed positive correlations between TRA (total of exports and imports) and the financial variables FIN(1), FIN(2), FIN(3), and FIN(4), ranging from 0.283 to 0.334. This indicated a positive relationship between trade and credit provision, broad money, and domestic debt. TER, representing the terms of trade, showed weak positive correlations with some financial variables, suggesting

a potential association between export-to-import price ratios and credit provision and domestic debt. Lastly, SDE, representing the standard deviations of total exports and imports, suggested a relatively weaker association with the financial variables.

Table 4: Fod/Iv Gmm Estimations

	Model 1a	Model 2a	Model 3a	Model 4a	Model 5a	Model 1b	Model 2b	Model 3b	Model 4b	Model 5b
D.INC(+)	1.0229***	0.6359*	1.2680***	0.9497***	0.0716	2.5023***	1.4312***	1.8254***	1.4364*	0.0297
	[0.3260]	[0.3263]	[0.3755]	[0.2762]	[1.2898]	[0.5185]	[0.3226]	[0.4391]	[0.7785]	[0.8635]
D.INC(-)	-0.5309*	-0.6078	-0.7016**	-0.9127**	-5.7533*	-1.3298***	-1.3164*	-1.6911***	-4.4040**	-9.6036***
	[0.3176]	[0.3847]	[0.3250]	[0.4337]	[3.4913]	[0.4834]	[0.6773]	[0.6049]	[1.7403]	[2.9378]
D.GOV	0.2466	0.0071	0.1587	0.4745**	-0.5929	-0.1842	0.9509***	0.5796***	-0.3978	0.3340
	[0.2761]	[0.2544]	[0.2441]	[0.1941]	[0.8603]	[0.3092]	[0.2271]	[0.1891]	[0.2971]	[0.5492]
D.POG	0.0189	-0.0137	0.0274	0.0661	0.2206	-0.1682	-0.0023	-0.0239	-0.0392	0.6185*
	[0.0754]	[0.0593]	[0.1016]	[0.0763]	[0.3618]	[0.1290]	[0.0326]	[0.0487]	[0.1373]	[0.3461]
D.INF	-0.0818	-0.1092	-0.1075	-0.1431	-0.7678***	-0.6788***	-0.0435	-0.4156***	-0.8012***	-0.9207***
	[0.1334]	[0.1172]	[0.1441]	[0.1385]	[0.2516]	[0.1569]	[0.0911]	[0.1156]	[0.2575]	[0.2289]
D.TRA	0.5364***	0.5400***	0.4648***	0.0654	-0.0875	1.8454***	1.3694***	0.4638***	-0.1252	0.2121
	[0.1764]	[0.1850]	[0.1629]	[0.1797]	[0.3424]	[0.3671]	[0.2998]	[0.1449]	[0.2822]	[0.3443]
D.TER	-0.0290	-0.0474	0.0914	0.8470***	1.3214	0.7927**	0.0394	1.0186***	3.3094***	2.1060***
	[0.3371]	[0.3158]	[0.4001]	[0.2867]	[0.8235]	[0.3464]	[0.2420]	[0.3225]	[0.9631]	[0.6622]
D.SDE	-0.0079**	-0.0051**	-0.0081***	-0.0027	0.0082	-0.0193***	0.0040	-0.0165***	-0.0045	0.0128
	[0.0032]	[0.0026]	[0.0030]	[0.0031]	[0.0103]	[0.0072]	[0.0056]	[0.0062]	[0.0064]	[0.0079]
Constant	-0.2437***	-0.1681**	-0.2684***	-0.1610*	-0.3775*	-0.6827***	-0.4225***	-0.4925***	-0.4809**	-0.4057*
	[0.0799]	[0.0738]	[0.0958]	[0.0905]	[0.2013]	[0.1345]	[0.1348]	[0.0958]	[0.1989]	[0.2214]
LD.FIN(1)	0.0136					0.1134				
	[0.0923]					[0.0724]				
LD.FIN(2)		0.0454					0.6114***			
		[0.1096]					[0.1138]			
LD.FIN(3)			0.0522					0.0966		
			[0.1258]					[0.0695]		
LD.FIN(4)				-0.0636					0.2010	
				[0.1263]					[0.1918]	
LD.FIN(5)					-0.4262***					-0.3817***
					[0.0579]					[0.0653]
Observations	425	425	425	425	425	425	510	425	425	425

	Model 1a	Model 2a	Model 3a	Model 4a	Model 5a	Model 1b	Model 2b	Model 3b	Model 4b	Model 5b
No. of groups	85	85	85	85	85	85	85	85	85	85
No. of instruments	58	58	58	58	58	58	59	58	58	58
Wald Chi2	129.03***	84.95***	265.09***	164.37***	315.72***	134.46***	159.23***	290.78***	33.79*	309.38***
S-H.	44.7785	40.9338	42.0381	42.1147	21.6542	29.1448	43.9446	22.3322	27.3313	19.2506
A-B Ar(1)	-2.1787*	-2.6699***	-2.4293	-2.8674***	-1.9528	-3.8199***	-1.4150	-4.3139***	-2.5821***	-2.2228*
A-B Ar(2)	-1.7111	-0.0683	-0.0649	-0.5566	0.6527	-1.0398	0.1082	-0.5631	-0.0829	1.2538
Estimator	twostep	twostep	twostep	twostep	twostep	cugmm	cugmm	cugmm	cugmm	cugmm
VCE Type	WC-Robust	WC-Robust	WC-Robust	WC-Robust	WC-Robust	Robust	Robust	Robust	Robust	Robust

Standard errors in brackets, $^{*}p<0.10$, $^{**}p<0.05$, $^{***}p<0.01$.

Source: Author's computation.

Notes: Presentation of Hayakawa, Qi, and Breitung (2019)-forward-orthogonal deviations (FOD) IV / GMM estimation results. The following are models and their respective dependent variables: Models 1a & 1b, FIN(1); Models 2a & 2b, FIN(2); Models 3a & 3b, FIN(3); Models 4a & 4b, FIN(4); Models 5a & 5b, FIN(5). A-B Ar(1) and Ar(2) are Arellano-Bond tests for autocorrelation for order 1 and 2 respectively of the first-differenced residuals, under H0: no autocorrelation of order 1 and 2. S-H is Sargan-Hansen test of the overidentifying restrictions, under H0: overidentifying restrictions are valid. WC-Robust refers to Windmeijer-corrected standard errors.

A. Regression Results and Discussion

The regression results for Models 1a to 5a and Models 1b to 5b provide estimates of the coefficients for each independent variable, along with their standard errors in square brackets. (Table 4 and Table 5). In the regression models, the coefficient for D.INC(+) consistently showed a positive relationship with the dependent variables, indicating that an increase in positive changes in GDP per capita is associated with increases in the corresponding financial development indicators. However, the statistical significance of the coefficient varies across the models and financial development indicators. In some cases, such as FIN(1), FIN(3), and FIN(4), the coefficient for D.INC(+) is statistically significant at the 1% level, indicating a robust relationship. For FIN(2) and FIN(5), the coefficient was statistically significant in some models only.

The magnitude of the coefficients and the significance levels also differed across the models. In Model 3a, for example, the coefficients are larger compared to Models 1a and 2a, suggesting a stronger relationship between positive changes in GDP per capita and the financial development indicators. The results for Models 1b to 5b generally aligned with the patterns observed in Models 1a to 5a, but with some variations in the significance levels and coefficient magnitudes. Overall, the findings highlighted the importance of positive changes in GDP per capita in relation to the financial development indicators, though the specific impact and statistical significance can vary depending on the model and financial development indicator under consideration.

The findings from Models 1b to 5b generally aligned with Models 1a to 5a, indicating a positive relationship between D.INC(+) and the financial development indicators.(Table 4 and Table 5). However, there were variations in the significance levels and coefficient magnitudes across models. The relationship is consistent for FIN(1), FIN(3), and FIN(4) supporting robustness of the results in these models, but not as strong or statistically significant for FIN(2) and FIN(5).In Model 1a, the coefficient for D.INC(+) is estimated to be 1.02, indicating a positive relationship with the financial development indicators. The 95% confidence interval [0.38, 1.66] suggested that the true population coefficient is likely to fall within this range with 95% confidence. Similarly, in Model 2a, the coefficient for D.INC(+) is estimated to be 0.64, which indicated a positive relationship. The comparable confidence interval [0.00, 1.28] indicated robustness in estimating the true population coefficient. (Table 6). These interpretations and comparisons can be extended to the remaining models (Model 3a to Model 5a) and their

corresponding confidence intervals for D. INC(+).

The regression results from Models 1a to 5a and Models 1b to 5b provided estimates for the coefficient of D.INC(-). In general, the results indicated some models significant relationship for D.INC(-) and financial development indicators. However, in Model 1a, a negative relationship is found for FIN(1) and FIN(3), while in Model 5a, a negative relationship is observed for FIN(5) with statistical significance at the 1% level thus supporting the robustness of the results. For robustness comparison purposes Models 1c to 5c, and 1d to 5d estimates and confidence intervals are included for both variables are included in Table 7.

In Model 2a, only FIN(2) exhibits a significant positive relationship with LD.FIN(2). Model 4a reveals a significant negative relationship between FIN(4) and LD.FIN(4). The results for Models 1b to 5b follow a similar pattern but with variations in the significance levels and coefficient magnitudes for the lagged independent variables. Overall, the impact of the lagged independent variables on the financial development indicators was not consistently statistically significant across the models. While some models and financial development indicators showed significant relationships, the significance levels and magnitudes differed. These findings should be interpreted considering the specific financial development indicator.

The regression results provided significant findings on the relationships between various economic indicators and the dependent variables related to domestic credit (FIN(1), FIN(2), and FIN(3)), broad money (FIN(4)), and domestic debt (FIN(5)). For the domestic credit variables, the regression coefficients indicate that changes in government final consumption expenditure (D.GOV), trade activities (D.TRA), and the terms of trade (D.TER) are positively associated with changes in credit provided by banks to the private sector. Additionally, inflation (D.INF) exhibits a negative relationship with these domestic credit variables, indicating that higher inflation is associated with decreased credit provision.

Table 5: System Gmm Estimations

	Model 1c	Model 2c	Model 3c	Model 4c	Model 5c	Model 1d	Model 2d	Model 3d	Model 4d	Model 5d
D.INC(+)	0.7447***	0.6943***	0.7527***	0.2510**	0.1070	0.9234***	0.3799*	1.3516***	1.6853***	1.0060***
	[0.1668]	[0.1914]	[0.2282]	[0.1220]	[0.4946]	[0.2545]	[0.2266]	[0.1916]	[0.3596]	[0.3701]
D.INC(-)	-0.4224	-0.1699	-0.0597	-0.3269	-2.2436**	-2.1063***	-1.8518***	-2.1327***	-0.3426	-3.1059***
	[0.3214]	[0.3853]	[0.4536]	[0.2871]	[0.9877]	[0.3261]	[0.3456]	[0.4595]	[0.3986]	[0.7545]
D.GOV	0.1564	0.2840**	0.2282	0.1515*	-0.0903	0.4387***	0.6874***	0.4381***	-0.2736**	-0.0790
	[0.1307]	[0.1345]	[0.1552]	[0.0855]	[0.2165]	[0.0686]	[0.1233]	[0.0822]	[0.1255]	[0.1615]
D.POG	-0.0398	-0.0077	-0.0154	-0.0190	-0.0055	-0.0418***	-0.1473***	-0.0218	-0.0992***	0.8688***
	[0.0253]	[0.0239]	[0.0315]	[0.0158]	[0.0920]	[0.0101]	[0.0242]	[0.0214]	[0.0342]	[0.2694]
D.INF	-0.1707**	-0.0424	-0.1029	-0.1115**	-0.0130	-0.2373***	-0.4502***	-0.2188***	0.0466	0.1703*
	[0.0757]	[0.0666]	[0.1042]	[0.0463]	[0.1097]	[0.0658]	[0.1005]	[0.0601]	[0.0998]	[0.0949]
D.TRA	0.3921***	0.2523**	0.3816**	0.3323***	-0.1380	0.5726***	0.1088	0.4663***	1.1462***	-0.4489***
	[0.1046]	[0.1080]	[0.1608]	[0.0963]	[0.2025]	[0.1198]	[0.1162]	[0.0800]	[0.1596]	[0.1461]
D.TER	-0.2218	-0.0699	-0.2746	0.0519	0.6918**	0.1380	1.4135***	0.1781	-0.2155	0.2895
	[0.2740]	[0.2292]	[0.2924]	[0.1122]	[0.3177]	[0.1385]	[0.3283]	[0.1359]	[0.2339]	[0.1979]
D.SDE	-0.0093***	-0.0067*	-0.0074**	-0.0041**	-0.0087	-0.0086***	-0.0083***	-0.0108***	-0.0199***	0.0122***
	[0.0023]	[0.0036]	[0.0037]	[0.0017]	[0.0072]	[0.0022]	[0.0025]	[0.0016]	[0.0060]	[0.0046]
Constant	-0.2392***	-0.0892	-0.1709	-0.1092**	-0.0677	-0.1816***	-0.1691***	-0.4072***	-0.4585***	0.1271
	[0.0665]	[0.1166]	[0.1598]	[0.0512]	[0.1425]	[0.0587]	[0.0596]	[0.0864]	[0.1309]	[0.1249]
LD.FIN(1)	-0.1343*					-0.2105***				
	[0.0709]					[0.0723]				
LD.FIN(2)		-0.0739					0.1876*			
		[0.1685]					[0.1096]			
LD.FIN(3)			-0.0773					0.0301		
			[0.1609]					[0.0758]		
LD.FIN(4)				-0.1634*					-1.0003***	
				[0.0951]					[0.2357]	
LD.FIN(5)					-0.7292***					-1.2831***
					[0.0871]					[0.1057]
Observations	425	510	510	425	425	425	425	425	425	425
No. of groups	85	85	85	85	85	85	85	85	85	85
No. of	67	68	68	67	67	67	67	67	67	67

	Model 1c	Model 2c	Model 3c	Model 4c	Model 5c	Model 1d	Model 2d	Model 3d	Model 4d	Model 5d
instruments										
Wald Chi2	218.03***	92.92***	165.35***	141.38***	186.36***	865.37***	284.60***	832.96***	173.79***	709.03***
S-H.	67.5305	59.9317	60.7216	65.5214	52.4988	48.4916	45.1504	43.9159	37.0356	47.4313
A-B Ar(1)	-2.2355*	-1.0290	-0.9911	-1.2383	-1.1780	-0.6963	-4.5999***	-10.5591***	-9.6668***	-1.1861
A-B Ar(2)	-1.5663	-0.2287	0.2915	-0.1087	0.4600	-1.6592	-1.3193	-0.4461	1.2631	-1.5493
Estimator	twostep	twostep	twostep	twostep	twostep	cugmm	cugmm	cugmm	cugmm	cugmm
VCE Type	WC-Robust	WC-Robust	WC-Robust	WC-Robust	WC-Robust	Robust	Robust	Robust	Robust	Robust

Standard errors in brackets $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$
Source: Author's computation.

Notes: Presentation of Blundell and Bond (1998) two-step system GMM estimators with collapsed instruments and robust standard errors. The following are models and their respective dependent variables: Models 1c & 1d, FIN(1); Models 2c & 2d, FIN(2); Models 3c & 3d, FIN(3); Models 4c & 4d, FIN(4); Models 5c & 5d, FIN(5). A-B Ar(1) and Ar(2) are Arellano-Bond tests for autocorrelation for order 1 and 2 respectively of the first-differenced residuals, under H0: no autocorrelation of order 1 and 2. S-H is Sargan-Hansen test of the overidentifying restrictions, under H0: overidentifying restrictions are valid. WC-Robust refers to Windmeijer-corrected standard errors

However, population growth and the standard deviation of exports and imports show no robust relationship with domestic credit variables. Regarding broad money, the regression results suggest that changes in government expenditure and the terms of trade positively impact changes in broad money. Conversely, inflation shows a negative relationship with broad money, indicating that higher inflation leads to decreased broad money. Population growth and the standard deviation of exports and imports are statistically insignificant in their association with broad money. For domestic debt, the regression coefficients reveal that changes in government final consumption expenditure, population growth, and the terms of trade are positively associated with changes in domestic debt. In contrast, inflation shows a negative relationship with domestic debt, implying that higher inflation is associated with decreased domestic debt. The standard deviation of exports and imports does not significantly influence domestic debt.

Table 6: Confidence Intervals: Fod Iv/Gmm Estimations

	Model 1a	Model 2a	Model 3a	Model 4a	Model 5a	Model 1b	Model 2b	Model 3b	Model 4b	Model 5b
D.INC(+)	1.02***	0.64*	1.27***	0.95***	0.07	2.50***	1.43***	1.83***	1.44*	0.03
	[0.38,1.66]	[0.00,1.28]	[0.53,2.00]	[0.41,1.49]	[-2.46,2.60]	[1.49,3.52]	[0.80,2.06]	[0.96,2.69]	[-0.09,2.96]	[-1.66,1.72]
D.INC(-)	-0.53*	-0.61	-0.70**	-0.91**	-5.75*	-1.33***	-1.32*	-1.69***	-4.40**	-9.60***
	[-1.15,0.09]	[-1.36,0.15]	[-1.34,-0.06]	[-1.76,-0.06]	[-12.60,1.09]	[-2.28,-0.38]	[-2.64,0.01]	[-2.88,-0.51]	[-7.81,-0.99]	[-15.36,-3.85]
Obs.	425	425	425	425	425	425	510	425	425	425

95% confidence intervals in brackets. $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$
Source: Author's computation.
Notes: Presentation of Hayakawa, Qi, and Breitung (2019)-forward-orthogonal deviations (FOD) IV / GMM estimators.

Table 7: Confidence Intervals: System Gmm Estimations

	Model 1c	Model 2c	Model 3c	Model 4c	Model 5c	Model 1d	Model 2d	Model 3d	Model 4d	Model 5d
D.INC(+)	0.74***	0.69***	0.75***	0.25**	0.11	0.92***	0.38*	1.35***	1.69***	1.01***
	[0.42,1.07]	[0.32,1.07]	[0.31,1.20]	[0.01,0.49]	[-0.86,1.08]	[0.42,1.42]	[-0.06,0.82]	[0.98,1.73]	[0.98,2.39]	[0.28,1.73]
D.INC(-)	-0.42	-0.17	-0.06	-0.33	-2.24**	-2.11***	-1.85***	-2.13***	-0.34	-3.11***
	[-1.05,0.21]	[-0.92,0.59]	[-0.95,0.83]	[-0.89,0.24]	[-4.18,-0.31]	[-2.75,-1.47]	[-2.53,-1.17]	[-3.03,-1.23]	[-1.12,0.44]	[-4.58,-1.63]
Observations	425	510	510	425	425	425	425	425	425	425

95% confidence intervals in brackets. $^{*}p< 0.10$, $^{**}p< 0.05$, $^{***}p< 0.01$.
Source: Author's computation
Notes: Presentation of Blundell and Bond (1998) two-step system GMM estimators.

V. Conclusion and Recommendations

The empirical analysis revealed several key findings. Positive changes in GDP per capita consistently showed a positive association with financial development indicators, while negative changes in GDP per capita exhibit a negative relationship, although the later exhibits lesser magnitudes across models. Government final consumption expenditure displays mixed results, while inflation demonstrates a negative relationship with financial development indicators. Trade openness and favorable terms of trade are generally associated with higher levels of financial development. Moreover, lagged values of financial development indicators have a positive impact on current values. These findings emphasized the significance of positive economic changes, stable prices, trade openness, and financial sector stability for fostering financial development. However, further research is needed to validate and expand upon these results, considering specific country contexts and potential limitations of the analysis. There are several areas for future research based on the findings of this empirical analysis. Firstly, it would be beneficial to explore the causal relationships between the independent variables and financial development indicators using alternative research designs such as non-linear autoregressive distributed lag approach. Additionally, conducting country-specific studies and considering regional variations could help capture the heterogeneity in the relationship between economic factors and financial development. Finally, investigating the role of institutional factors, such as regulatory frameworks and governance structures, could provide valuable insights into the mechanisms through which economic variables affect financial development.

Based on the implications of the results obtained from the analysis, policymakers have several potential actions and considerations to undertake. First, they should focus on strengthening credit access to support private sector activities, considering the relatively close mean values of domestic credit. This may involve enhancing lending mechanisms and facilitating credit access for businesses and individuals. Second, they need to monitor money supply and debt levels, as indicated by the higher mean valueto maintain economic stability. Prudent fiscal management is crucial to avoid unsustainable levels of debt, highlighted by the relatively smaller debt burden. Third, with a positive mean value for GDP per capita growth, policymakers should continue to stimulate positive economic changes through investments in infrastructure, education, and research and development to improve living standards. Fourth, they must address economic contraction, reflected in the negative mean value of GDP per capita growth, with targeted measures such as fiscal stimulus or structural reforms.

Fifth, to manage inflationary pressures indicated by the high mean value of inflation, appropriate measures like monetary policy adjustments and supply-side interventions should be taken to ensure stable and sustainable price levels. Sixth, governments should continue to promote trade openness and explore opportunities for diversifying trade partners and products, as shown by the relatively high mean value of total exports and imports. Additionally, policymakers need to address trade volatility, considering the high mean value of the variability in trade activities, by promoting economic diversification and implementing policies to manage trade-related shocks. Seventh, to achieve a more balanced trade position and improve the competitiveness of the export sector, policymakers should address trade imbalance, represented by the mean value of the terms of trade being less than one. Finally, policymakers may consider targeted investments in public goods and services, such as healthcare, education, and infrastructure, to enhance overall well-being and productivity, given the relatively low mean value of government expenditure. To ensure effective implementation, specific strategies must be tailored to each economy's unique characteristics and challenges, and consultation with relevant stakeholders is essential to foster sustainable positive economic changes and development.

Based on the variability observed in the domestic credit variables, financial indicators, GDP per capita, government expenditure, population growth, inflation, and trade-related variables (i.e. TRA, TER and SDE), several policy recommendations can be considered. First, to maintain credit market stability, policymakers should monitor and regulate lending practices and financial institutions. Second, central banks should implement effective monetary policies to manage fluctuations in the money supply and control inflationary pressures. Third, prudent fiscal management is crucial to avoid unsustainable debt levels. Fourth, policymakers should focus on measures that stimulate positive economic changes and enhance the well-being of citizens, such as investments in education, healthcare, infrastructure, and research and development. Fifth, fiscal discipline is essential to ensure stable and sustainable public finances. Sixth, addressing demographic challenges through targeted policies can support population management and workforce development. Seventh, central banks should implement effective inflation targeting measures to maintain stable inflation rates. Eighth, policymakers should work to enhance trade resilience by diversifying trade partners and products, promoting export competitiveness, and managing trade-related risks effectively. Lastly, strengthening trade activities and supporting trade facilitation measures can contribute to more stable and thriving trade. These policy recommendations aim to promote economic stability, sustainable

growth, and enhanced resilience to economic fluctuations, requiring careful implementation and continuous monitoring for their effectiveness and adaptability to changing economic conditions.

Empirical studies provide valuable insights into the non-linear dynamics of the relationship between GDP per capita growth and financial development. The presence of asymmetric effects highlights the complexity and interdependence of these variables. Policymakers should consider the non-linear nature of this relationship when formulating strategies for sustainable positive economic changes and financial stability. Economic, institutional, and cultural factors influence the non-linear dynamics in different contexts. The following policy recommendations applicable to developing countries are based on regression findings in this work. Promoting positive changes in GDP per capita: The coefficient estimates consistently show a positive relationship between positive changes in GDP per capita and various financial development indicators across different models. Therefore, policymakers should focus on implementing policies and initiatives that stimulate positive economic changes and increase income levels in the country. This can be achieved through strategies such as promoting entrepreneurship, attracting foreign direct investment, fostering innovation and technological advancement, and providing support to small and medium-sized enterprises. By creating an enabling environment for positive economic changes, countries can enhance their financial development and create opportunities for wealth creation and poverty reduction.

Addressing negative changes in GDP per capita: The negative coefficient estimates for negative changes in GDP per capita suggest a detrimental effect on financial development indicators. Policymakers should prioritize measures aimed at mitigating negative shocks to the economy and ensuring stability during economic downturns. Implementing countercyclical fiscal and monetary policies, such as targeted fiscal stimulus programs, interest rate adjustments, and social safety nets, can help buffer the impact of negative economic shocks. Additionally, diversifying the economy, improving resilience to external shocks, and investing in human capital development can help countries better withstand adverse economic conditions and support financial development. Government expenditure and financial development: coefficients in some models indicate that increased government spending can have a positive impact on financial development. Policymakers should focus on optimizing government expenditure by allocating resources towards investments that promote financial sector development, such as infrastructure projects, financial inclusion initiatives, and capacity-building programs. It is

important to ensure that government spending is transparent, efficient, and aligned with the objectives of financial sector development.

In case of inflationary pressures, the negative coefficient estimates for inflation, suggest a negative relationship with financial development indicators. Policymakers should prioritize maintaining price stability and implementing effective inflation control measures. This can include adopting prudent monetary policies, such as; inflation targeting frameworks, enhancing central bank independence, and implementing sound macroeconomic policies. Controlling inflation can help maintain a stable economic environment, foster investor confidence, and promote financial sector development. Enhancing trade and economic openness: The coefficient estimates for total exports and imports and terms of trade, ratio of export to imports, indicate positive relationships with financial development indicators in some models. Policymakers should prioritize policies that promote trade openness, improve export competitiveness, and attract foreign direct investment. This can be achieved through trade facilitation measures, reducing trade barriers, improving logistics and infrastructure, and fostering a favorable business environment. Enhancing trade agreements, partnerships with other nations and promote economic openness, boost financial flows, and support the development of the financial sector. Strengthening financial sector stability and resilience: The regression results also indicate that lagged values of financial development indicators have a positive relationship with the corresponding current values in some models. Policymakers should prioritize policies that promote financial sector stability and resilience. This includes implementing robust regulatory frameworks, conducting regular assessments of financial institutions' health, and strengthening risk management practices. Enhancing the quality and transparency of financial reporting, improving corporate governance standards, and promoting financial literacy among individuals can also contribute to a stable and resilient financial sector.

Sustainable fiscal management is essential, considering the negative effect between broad money and standard deviations of trade variables. Aligning trade policy reforms with financial development goals can further strengthen the financial sector by supporting export-oriented industries and negotiating favorable trade agreements. Policymakers should prioritize strengthening financial institutions and allocating trade-related revenue towards increased lending to the private sector. Diversifying the economy is also vital to enhance resilience against external shocks. By encouraging the development of multiple export industries, risks can be spread, and overall economic

stability can be strengthened. Focusing on trade policy reforms, particularly for trade variables, can help reduce uncertainties and improve terms of trade. Simultaneously, monitoring and managing exchange rate risks can contribute to financial stability and investor confidence, ensuring the efficient utilization of trade variables for the benefit of financial development in developing nations. Trade policy reforms are crucial as positive effects of term of trade on financial development indicators indicate. Governments should negotiate favorable trade agreements, reduce barriers, and support export-oriented industries. Developing countries can leverage the positive impact of trade variables on financial development indicators to foster inclusive and sustainable positive economic changes. Simultaneously, they can use trade gains to promote financial inclusion by providing better access to formal financial services, stimulating savings, investments, and overall economic development.

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Examining the Influence of Mobile Payment Customer Experiences on Attitudinal and Behavioural Loyalty: Evidence from Tanzania

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Abstract
This study examined the influence dimensions of customer experience (CX) on attitudinal customer loyalty (ACL) and behavioural customer loyalty (BCL) in mobile payment (m-payment) service in Dar es Salaam, Tanzania. The unit of analysis employed was mobile payment customers, the sampling techniques used was convenient sampling and purposive sampling techniques to select service providers. Data analysis was conducted using Partial Least Square regression with sample size of 379 respondents. The results suggested that out of four dimensions of CX, moment of truth, peace of mind and outcome of focus have a significant positive relationship with both ACL and BCL. The product experience dimension revealed that in mobile payment context customer regards PEX as less important. The study recommends to managers to work on improving PEX through improving marketing strategies. Mobile phone operators/companies advocate customer experience in enhancing customer repurchasing and recommendations. The study contributes towards understanding of the role of customer experience in customer behavioural and attitudinal loyalty in mobile m-payment context. Also, the policymakers should support the provision of m-payment services, cross-product comparison and enhance freedom of choice.

Keywords: *Customer experience, attitudinal customer loyalty, behavioural customer loyalty, m-payment*

1.0 Introduction

For the past several decades, various academic practitioners have considered customer loyalty (CL) due to its ability to enhance sales revenues. Parallel to that, the rapid technological change in service marketing earmarks the alteration of consumer behaviour. One of the reasons is evolution of interrelated services both offline and online, and presence of contractual

relationships in mobile telecommunication services (Pavlović-Höck, 2022). Practices in Europe, India, China and other places in the world, reveals that integration of numerous technological changes (Japutra et al., 2021; Verhulst et al., 2020) and social media platforms (Hanafizadeh et al., 2021) enhances customer loyalty. However in sub-Sahara Africa, prevails insufficient digital knowledge and digital orientation (Astou et al., 2021; Matonya et al., 2019; Nandonde, 2018). Indeed, it is imperative to understand customer loyalty in such context such as Tanzania in order to explaining customer attitudinal and behavioural loyalty from such experiences.

The situation in Tanzania encompass m-payment services, such as personalised mobile services and customer-to-customer interactions which is essential in explaining good and bad experiences to customers. For example; interoperability increases mobile channels which sparked the service's rendering, providing room for customer experience assessment. On the other hand the industry has shown dropouts in market shares of giant service providers such as Vodacom (M-pesa), Airtel (Airtel money), and Tigo (Tigo-pesa) services explained (TCRA, 2020; 2015) (p.10; p.5). In 2015, the M-Pesa services were leading at 45 per cent, 30 per cent for Tigopesa, and 23 per cent for Airtel Money, but in 2020, five years later, the market share of Vodacom had dropped to 8 per cent. Likewise, in 2020, the infographic data revealed a drop to 37 per cent for M-pesa, 31 per cent for Tigopesa, and Airtel Money, which was 21 per cent (TCRA, 2020). Regardless of new entrants like TTCL (T-pesa) and Halotel (Halopesa) the TCRA infographics could not explain other important usage behaviours such as customer experience as a result little is known about customer experience. Customer experience in this study refers to the interaction between service employees, mobile device and customers.

Astou *et al.*, (2021); Matonya *et al.*, (2019); Nandonde, (2018) argued that what is missing in attaining customer loyalty is a brand experience and digital orientation due to digital illiteracy. Similarly, Rahman *et al.* (2020) added that perceived security and social influence plays a role in cashless payment. Unlike traditional payment services, the notion behind m-payment service is facilitating availability of service everywhere and anytime. Ochola, (2022) contended that in such situation the prevailing technological changes have triggered consumer behaviour (e.g. customer loyalty) which requires better business models. The implication implies that it is interesting to understand the customer experience of such services under such circumstances.

Furthermore, Hoyer, Kroschke, Schimitt, Kraume, & Shankar (2020) stated that the mobile channel has increased, and the digital revolution has updated the concept of experience quality. Likewise, Fall, Diop-Sall, & Poncin (2020) advocated that service providers are obliged to couch customers on usage competence in sub-Saharan Africa. The lack of empirical findings in the sector regarding customer loyalty challenges scholarly understanding of the service marketing perspective, specifically on customer focus. Though Lemon and Verhoef (2016) argued that experience quality occurs in the mobile channel customer journey, yet did not capture the essence of the service process (Jaakkola & Terho, 2021). Similarly Matonya, Jaensson & Ngaruko (2019) argue that brand experience influence brand loyalty but concentrated on MSMEs. Besides, regulations allow multiple subscriptions which may be different to other countries, and providers have introduced a specific department to manage customer experiences. In general, the study is interesting and explains what happens during service encounter regardless of customer own mobile device or from service vendor.

The dimensions of customer experience includes; product experience (PEX), a moment of truth (MOT), outcome focus (OUF), and peace of mind (POM) (Maklan & Klaus, 2013). Similarly, Raina *et al.* (2018) addressed the importance of marketing outcomes such as loyalty to banking services in India. Yet, there is insufficient evidence on how customer experience influences ACL and BCL in Tanzanian m-payment services.

To address this gap, this study extended the customer experience assessment literature and the relationship with customer behaviour, such as attitudinal and behavioural customer loyalty. The study empirically draws quantitative data using structural equation modelling with smart PLS to analyse data. This study examined the influence of the dimensions of CX on attitudinal and behavioural customer loyalty in m-payment services in Dar Es Salaam, Tanzania. The study was guided by the following research questions; how does customer experience influence the relationship between attitudinal and behavioural customer loyalty in m-payment services?

The rest of this study is explained as follows; section 2 is the literature review, section 3 is materials and methods, section 4 is results, section 5 is discuss the results, section 6 explains implication to the study and section 7 concludes the results.

2.0 Literature Review

The primary objective of this study is to expand the available literature on the influence of customer experience on customer loyalty in mobile payment

services. This study was built based on three interrelated theoretical foundations, which entail the customer loyalty framework by Dick & Basu (1994), social exchange theory by Blau (1964) and customer experience by Klaus & Maklan (2013). The sections below explain mobile payment in Tanzania, experience quality, and customer loyalty.

2.1 Mobile Payment Services in Tanzania

M-payment services entail the use of mobile devices or digital devices to acquire financial services which are not limited by space and time. The service spreads in towns and cities in the vicinity of the country because of involving a customer handset only. Indeed the importance of the m-payment service is further widened across Tanzanian borders, entire East Africa and the continent. The smoothness of the service provision and updated technological usage promote innovations in the service and competition in the industry. According to (UNICTAD, 2020) the cash method of payment is wide spread in the country both online and offline transactions as compared to mobile payment. Consequently, the practice shows that there are other substituted providers like m-banking and mobile apps; involving the interconnectedness of services such as health, education and mass usage across companies.

2.2 Attitudinal and Behavioural Customer Loyalty

Customer loyalty is defined as Herhausen et al. (2019) define customer loyalty as "a customer intention to engage in the journey of touchpoints provided by a given retailer and to transit from post-purchase to repurchase at this retailers." On the other hand Oliver (1999) "deeply held commitment to rebuy or repurchase a preferred product or service consistently in the future, thereby causing repetitive same brand or same brand set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviour.”. This study has adopted the definition by (Herhausen et al., 2019) and state customer loyalty as a customer intention to participate in several channels of the service provider, post-purchase and repurchase at the same service provider.

The theoretical underpinning in this study explains the customer loyalty model by Dick & Basu (1994) is represented by two elements attitudinal customer loyalty (ACL) and behavioural customer loyalty (BCL). The concepts are prerequisites to be supported with theoretical foundations, i.e. in terms of trust, commitment, attitudes or behaviours (Damberg et al., 2022; Melián-Alzola & Martín-Santana, 2020). The model assumes that customer loyalty occur based on circumstances such as relative attitudes and relative

behaviour. The model further explains that customer attitude leads to customer behaviour at certain conditions facilitated by social influence and situational factors.

The ACL is referring to the relative attitudes which explain the continuous reminder of the service offerings like ads and extra services (Dick & Basu, 1994). Likewise, the customer saying positive things about the service to family friends and colleague and mentions the service to the social circle. BCL is referring to customer relative behaviour towards the service which is explained by customer tendency to repurchase or repeat patronage. In the present study, the rapid technological changes and competition compel the conceptualisation of the model in mobile payment context. Initially because of the interactions between customers who acquire service by mobile device then the interaction with service employees and service agents. On top of that is answering the call from recent studies which call for empirical investigation on changing consumer behaviours due to technological changes in the industry (Bapat, 2022) and also led to changes in consumer behaviour. The second reason behind using this model is the consideration of situation factors (ads, promotions, incentives-for competing providers) which may compel the customer decision environment to be consistent regarding attitude and behaviour. Likewise, this is useful in the digital era due to high competition among telecommunication service providers (Kalia, 2021). There is little empirical evidence in the industry (Matonya, 2019; Nandonde, 2019) that necessitates conceptualising customer experience.

The theory is imperative in explaining undergoing mixed information on the nature of customer loyalty in terms of attitudinal loyalty and behavioural loyalty which will enhance understanding of the assessment of service quality. Thus consider customer loyalty as static, meaning that must follow conditions or phases. This is opposed by Curran et al. (2010) whereby explained that customer loyalty is dynamic and not static because customers may purchase a service with no reasons such as liking but happens anyway. Besides, there is a continuing debate concerning the use of two dimensions at a time but rather one (Melián-Alzola and Martín-Santana, 2020). Moreover, criticism of the frameworks is that they could not provide an association between customer loyalties with the customer experience of which this study will unleash.

2.3 Customer Experience

Customer experience is defined by (Meyer & Schwager, 2007) as “the internal and subjective response customers have to any direct or indirect

contact with the company" (p.2). The study conceptualises customer experience from Maklan and Klaus (2013) framework of customer experience namely Experience Quality (EXQ). The framework explains customer emotional responses to service during a service encounter**.** The dimensions of customer experience framework include; a moment of truth (MOT), product experience (PEX), outcome focus (OUF), and peace of mind (POM). The term "moment of truth" refers to a customer's assessment of a mobile operator's company involvement in increasing customer repurchasing and recommendations. "Peace of mind" refers to the customer's evaluation of the interaction on their customer journey (sending and receiving), before, during, and after experiencing service to establish a relationship with the mobile operator's company. In addition, "Product experience" refers to customer assessment of available choices for the rendered service and the ability to compare such offerings (Raina et al., 2018).

Moreover, Raina et al. (2018) define "outcome of focus" as a customer assessment of the cost associated with business operations, which implies the ability to find out what other mobile operators can offer. Mobile operators work on providing a better customer experience through an experience management unit that follows up closely customer responses to the m-payment service. For example, asking a customer to rate the service offered. The reason behind using this framework is to understand customer experience in m-payment context and how it influence ACL and BCL.

2.4 Hypothesis Development

2.4.1 Customer Experience on Attitudinal Customer Loyalty

The two key hypotheses form customer experience constructs are modified from the experience quality framework by Maklan & Klaus (2013), such as product experience (PEX), outcome focus (OUF), a moment of truth (MOT), and peace of mind (POM). These constructs link attitudinal and behavioural customer loyalty in m-payment services. According to Srivastava and Kaul (2016), POM influences customer loyalty in tourism services where customers have a memorable experience of the scenery. As in Raina et al. (2018), customer experience (POM, OUF, MOT and POM) influences customer loyalty in the banking sector in the Indian service context. Imhof and Klaus's (2019) addressed further that, customer experience dimensions positively influence CL, narrated in finding that a satisfied customer may have a better customer experience. Still, in some instances, there is a lack of alternatives that compel customers to become loyal even if they are dissatisfied. On the other hand, in m-payment services, where the expertise of the provider, convincing retention, and process of usage is familiar to the

customer, may bring a better understanding of the influence of PEX, OUT, MOT, and POM on customer loyalty.

Previous research by Brun et al. (2017) and Japutra et al. (2021) suggested that customer experience impacts customer loyalty, but the study focused on retailer apps. Besides, the customer experience in the digital era reveals subjective customer responses to their emotions. Customer loyalty remains on customer assessment of experience quality during service delivery from a customer-focused perspective. According to Bandyopadyay & Mortell (2007), attitudinal customer loyalty (ACL) can be distinguished from behavioural customer loyalty (BCL) as it carries particular weight in understanding loyalty because of the inclusion of social-cultural influences like social bonding. In the context of advanced technology, Johns & Davey (2021) consider customers experiencing emotional vulnerability, which leads them to rely on close relations during service encounters. With social influence to learn and use the service, which makes sense of the power of social bonding in experiences acquired to influence ACL. On top of that, there is a quest for a deepening ACL/recommendation perspective as social influence factors are inevitable when there are numerous touchpoints such as Wakala, ATM (Automated Teller Machine) and POS (Point of Sale), which give customers different experiences. For instance, when a customer experience at the time inquires about a service from point of sale and connections between point of sale infrastructures and service provider is not responding, or there is internet failure. Hence it is important to examine whether the dimensions of CX has influence on attitudinal loyalty. The following are the proposed hypotheses;
H1a: *Peace of mind positively influence attitudinal customer loyalty*
H1b: *Outcome of focus positively influence attitudinal customer loyalty*
H1c: *Moment of truth positively influence attitudinal customer loyalty*
H1d: *Product experience positively influence attitudinal customer loyalty*

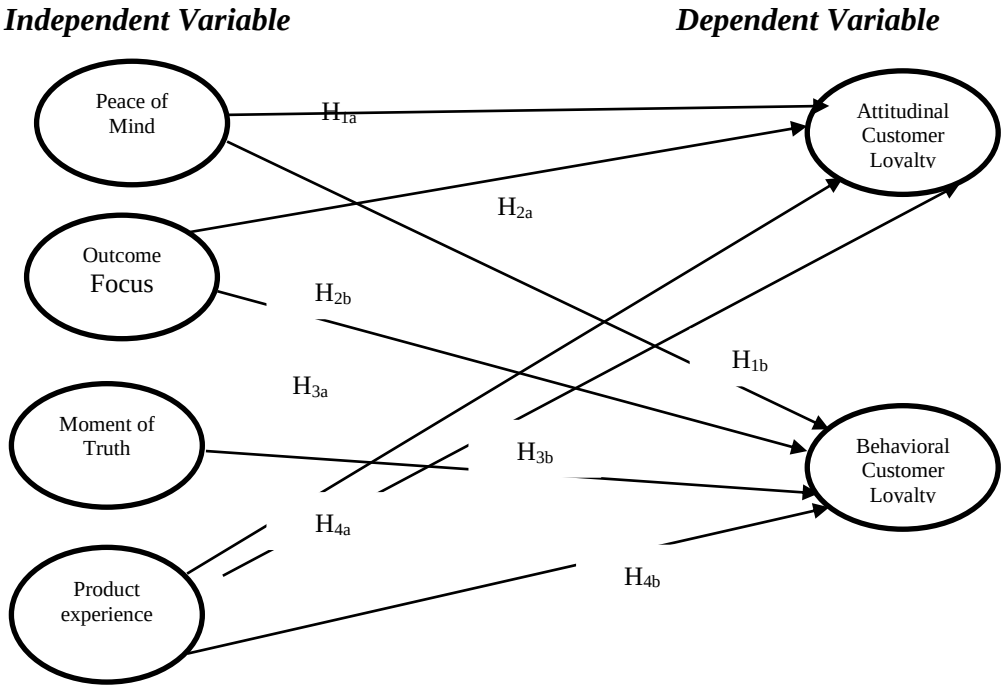
2.4.2 Customer Experience on Behavioural Customer Loyalty

The study addressed BCL when customers repurchase the service and contends that CX occurs throughout the service delivery process, including before, during, and after purchasing, as well as throughout the entire customer journey (Lemon & Verhoef, 2016). According to Meyer & Schwager (2007), customer experience is a subjective response linked with emotions and has used neurophysiological tools to measure responses (Verhulst et al., 2020). Likewise, it emphasises the physical environment, post-purchase perceptions, and retention (Kuppelwieser & Klaus, 2020). The fact that emotion plays a role in assessing the service is an eye-opener to how

behavioural loyalty forms. Similarly, Iv et al. (2015) explained communication as meaningful in enhancing BCL. For example, a customer may decide not to switch to other providers but keeps buying from the same provider and not elsewhere. The active participation of customers in the service, like self-service customer encounters and those from vendors, may improve dimensions of CX (PEX-freedom of choice, OUF-result focus, MOT-proactivity, and POM-expertise) familiarity) Moreover, this may influence BCL. However, because of peer-to-peer interaction, BCL differs across industries as the nature of experience differs (Pekovic & Rolland, 2020a), which is essential to conceptualise m-payment. Therefore it is important to empirically examine whether the dimensions of CX has influence of on behavioural customer loyalty. Therefore the study proposes the following hypothesis;

H_{2a}: Peace of mind positively influence behavioural customer loyalty
H_{2b}: Outcome of focus positively influence behavioural customer loyalty
H_{2c}: Moment of truth positively influence behavioural customer loyalty
H_{2d}: Product experience positively influence behavioural customer loyalty

2.5 Conceptual Framework



Dimensions of Customer Experience
Figure 1: Conceptual Model

Based on the literature reviewed in this paper, the independent variable is dimensions of customer experience namely; POM (Peace of Mind), OUT (Outcome of Focus), (MOT), Moment of Truth and PEX (Product Experience). The hypothetical development discussed above and the conceptual framework in Figure 1. iillustrates that these dimensions influences the dependent variable which is mobile payment attitudinal customer loyalty (ACL) and behavioural customer loyalty (BCL).

3.0 Materials and Methods

This study employed explanatory research design where the objective was to deduce causal effect (Bhattacherjee, 2012). Unit of analysis was comprised of individual m-payment customers because the objective of this study focused on customers. In order to acquire the best representation of the sample, three large companies were selected with a large customer base among Tanzanian mobile payment service operators identified by the Tanzanian Communication and Regulatory Authority (TCRA). These operators are Vodacom which provide M-pesa services, Tigo which provide tigopesa and Airtel with Airtel-money. The sampling technique used was purposive sampling which involved selecting the three companies. Sample Size was obtained using Cochran formula (Cochran, 1977). Below is the respondent formula of sample size;

Respondents sample Size Determination Using Cochran Formula

$$n=\frac{z^2pq}{e^2}$$

Where n=sample size, z is a critical value of desired confidence level, p is the estimated proportion of an attribute in the population of mobile payment customers (Using standard value of 0.5% since its unknown), q=1-p (1-0.5) and e is the Margin error of 5%. Taking p=0.5, q=1-0.5=0.5; e=0.05; z=1.96,

So $n= \frac{(1.96)^2 \times 0.5x0.5}{(0.05)^2} = 384.16 = 384$ (Sample size for respondents from infinite population)

$$= \frac{3.8416 \times 0.25}{0.0025} = 384.16$$

The population obtained was 384 prior to data collection. The returned questionnaires and following coding and data cleaning was 379 questionnaires at a response rate of 94.75 per cent employed for further analysis. Data collection took place between Januarys to March, 2021in Dar es Salaam region.

Moreover, non-probability sampling procedure was employed because of the availability and sensitivity of m-payment data and complications in customer mobility. Besides, the sampling procedure involved a convenient sampling technique in response to (Jaakkola *et al.*, 2022) that contended for research that comprise touchpoints outside service provider control. The respondents were drawn based on their willingness to respond at m-payment vendor shops and seller point of sale. Also, have used the service for over one year and subscribed to Mpesa, Tigopesa, or Airtel money service providers.

3.1 Measurement of Constructs

The two dimensions for customer loyalty model by Dick and Basu (1994) is employed as study employed and modified with constructs from previous literatures (Melián-Alzola and Martín-Santana, 2020; Matonya et al. 2019; Mandhachitara, 2011) These dimensions are namely attitudinal customer loyalty and behavioural customer loyalty as dependent variable. The items were ACL is explained by "Saying positive things about service" and "Encouraging share of information about service". Likewise, BCL was explained by "continue usage of service and Repurchase service". The independent variable includes dimensions of customer experience obtained from Experience quality framework (EXQ) by Maklan and Klaus (2012) which were introduced in the literature review discussion.

The study employed both dimensions of customer loyalty and the dimensions of customer experience namely peace of mind, moment of truth, outcome of focus and product experience. The research model tested in this study is developed based on the relationship between the dimensions of customer loyalty Dick and Basu (1994) and the dimensions of customer experience by Maklan and Klaus (2012). Moreover, this conceptualization allows an extensive examination of each dimensions in the m-payment context. The outcome of research model as explained by hypotheses in Fig. 1 that four dimensions of customer experience are; POM, MOT, OUF and PEX (Kuppelwieser & Klaus, 2020; Roy 2018; Klaus, 2013: Raina 2019). These determinants affect both dimensions of customer loyalty (ACL and BCL). Measurement scales of the constructs employed multiple scale items which are useful in handling complex multi-dimensional constructs (Damberg et al., 2022). All constructs employed in this study, were adopted from previous studies with validated measurement. Overall indicators were measured using 7-point Likert scale which ranged from 1=strongly dis-agrees to7= strongly agree.

3.2 Questionnaire Development

In this study, survey method was employed whereby questionnaire had three sections; demographic profile of respondents, customer experience and loyalty. For example, there were three major parts; the respondent's demographic profile, which helped understand customer loyalty; the frequency of application to the service; gender; and subscription status. The questionnaire carried six sections whereby two constructs, ACL and BCL, explained customer loyalty. In contrast, the customer experience was explained by four constructs: peace of mind, outcome focus, product experience, and moment of truth. The questionnaire was written in English and later translated to Swahili, whereby experts were involved in translations. The reason was that the respondents were individual customers, most of whom use the latter language. These questionnaires were self-administer whereby a researcher followed customers at the point of sales and requested them to respond to the surveyed questionnaires at their convenience.

3.3 Demographic Profile of the Respondents

The descriptive analysis revealed the following; the majority of the respondents were male, at 52.5%, while the female respondents were at 47.2 per cent. About 70.4per cent of respondents were self-employed, while 20.8 per cent were full-time employed and 8.2 per cent were not employed. Meanwhile, the respondents were from three major service providers, whose distribution was as follows: Tigopesa from Tigo, 66 per cent, Mpesa from Vodacom, 46 per cent, and Airtel from Airtel money was 43.5 per cent. The reason includes; that respondents register with more than one m-payment service provider. The demographic profile supports the study's clear picture of customer experience and loyalty.

Table 1: Descriptive Statistics (N=379)

No.	Measure	Details	Frequency%	Percentage %
1.	**Age**	Young	295	78
		Old customers	84	22
2.	**Gender**	Male	190	53
		Female	189	47

4.0 Data Analysis and Results

4.1 Evaluation of the measurement model

Data analysis employed the Statistical Package for Social Science (SPSS) version 26. The tool enables computation for psychometric properties, reliability, validity, and factor loading through confirmatory factor analysis (CFA). According to (Sarstedt et al., 2020), PLS-SEM involves measuring

model assessment followed by structural model assessment following evaluations of reliability and validity. The table 2 illustrates results for dependent and independent variables using composite reliability.

Table 2: Assessment of Reliability, Convergent Validity and Collinearity

Variables	**Items**		**Loading >.7**	**CR >.7**	**AVE >.5**	**VIF <.3**
Attitudinal Customer Loyalty	ACL_1	I will say positive things about my m-payment providers	0.881	0.867	0.686	2.001
	ACL_2	I always consider my m-payment provider as my first choice	0.856			1.875
	ACL_3	I consider myself to be a loyal customer	0.740			1.328
Behavioural Customer Loyalty	BCL 1	I will keep using m-payment service provider	0.819	0.844	0.644	1.484
	BCL 2	I will use this provider the next time, I need a new service	0.820			1.488
	BCL 3	I will do most of my m-payments with the same provider as I have now	0.767			1.332
Peace of mind	POM 1	I am confident with mobile payment service	0.707	0.822	0.537	1.299
	POM 2	My dealing with this provider is easy	0.741			1.293
	POM 3	My service provider provide free advice on which service will suit my needs	0.771			1.348
			0.709			1.420
Moment of Truth	MOT 1	Mobile payment service provider gives me good customer service	0.811	0.851	0.588	1.111
	MOT 3	The service provider keeps me informed with each new information coming	0.811			1.111
Outcome of focus	OUF 1	My provider gives me better offers, then why should I worry; here I know I will get it	0.727	0.794	0.658	1.387
	OUF 2	Mobile payment service gives me what I need swiftly	0.733			1.389

Variables	**Items**		**Loading >.7**	**CR >.7**	**AVE >.5**	**VIF <.3**
	OUF 3	I prefer my mobile payment service provider over their competitor	0.766			1.530
	OUF 4	My provider's services are superior than their competitor	0.837			1.792
Product experience	PEX 1	I can choose different options from my mobile payment service provider	0.773	0.841	0.638	1.352
	PEX 2	I receive offers from my mobile payment service provider	0.784			1.383
	PEX 3	I can compare different offers from my service provider	0.837			1.535

The results obtained from composite reliability in the table 2, are in-line with Henseler et al. (2016), presenting above 0.7 standard thresholds. According to Hair *et al.* (2019), convergent validity is explained with appropriate AVE value that should be 0.5 and all AVE in table 4 illustrates between a range of 0.527 to 0.668 which is acceptable.

Table 3: Discriminant Validity of the Constructs- Heterotrait Monotrait (HTMT)

Latent Variable	ACL	BCL	MOT	OUF	PEX	POM
Attitudinal Customer Loyalty						
Behavioural Customer Loyalty	0.594					
Moment of Truth	0.666	0.811				
Outcome of Focus	0.698	0.648	0.38			
Product Experience	0.434	0.468	0.629	0.614		
Peace Of Mind	0.643	0.615	0.738	0.663	0.628	

The Discriminant validity was computed using Heterotrait Monotrait ration (HTMT) which explains that the discriminant validity was acceptable as per (Hair et al., 2019). The values below the diagonal shape should be below 0.8. The results in Table 3 above are below the threshold hence acceptable for further analysis.

4.2 Evaluation of Structural model

4.2.1 4.3.1 SEM Results

The Evaluation of the structural model with partial least square regression technique tests the relationship of the hypotheses follows after estimation of the measurement model according to (Hair et al., 2019)(Hair et al., 2019). The structural model initial assess the collinearity problems which is computed by Variance Inflation Factor (VIF). This estimation check enables comparison and understanding of the size of the coefficients in the model. In table 2 the VIF values are below threshold of 3, illustrating acceptable values. The model explanatory power is then estimated, structural model results depicted a good model fit for the Standardised Root Mean Square Residue (SRMR) presented in this study for measuring model fit, which is 0.039 for both the measurement model and structural model. The implication of the criterion for model fit supports that a model has explanatory power and is useful for the analysis.

Table 4: Model Goodness Fit

Indices	Measurement Model	Structural model
SRMR	0.039	0.039
d_ULS	0.159	0.159
d_G	0.062	0.062
Chi-Square	122.162	122.162
NFI	0.926	0.926

Table 4 illustrates the analysis of the model fit; the analysis establishes the measurement and structural models through path analysis. According to Diamantopouslos and Winklhofer (2001), the rule of thumb in evaluating these results requires a scale reliability value of 0.6 to 0.7. The path coefficients and R-square values estimates are from the structural model for measuring the strength of the causal relationship. The relationship entails the dependent variable ACL and BCL and the independent variables CE with constructs (POM, MM, OUF, and PEX), as well as measuring the amount of variance explained by independent variables and the predictive power of the model. The study is consistent with Hair et al. (2019), Henseler et al. (2016), and Hair et al. (2011), whereby the tool supports non-normal data, is useful for marketing studies and when the structural model is complex with various constructs.

The results in Table 4 illustrate that the model has explanatory power because the values of the measurement and structural models are similar. SRMR is 0.08 as a threshold, but for marketing studies between 0.25-0.3 is good and acceptable, showing the robustness of the model.

Table 5: Model Predictive Power and Predictive Relevancy

	Q^2predict	RMSE	MAE R	R^2
Attitudinal Customer Loyalty	0.332	0.833	0.499	0.350
Behavioural Customer Loyalty	0.297	0.860	0.544	0.324

The findings revealed that ACL = R2 =35 per cent and BCL = 32.4 per cent, which is acceptable for marketing studies. The R2 explains that the influence of CE on CL is explained by ACL for about 38.2 per cent, while BCL has explained 36.4 per cent of the rest for other variables. The coefficient of determination R2 is explained by dependent variables which explain variances. Besides to the study make decision about the model the out of sample predictive power by running the PLS(predict) analysis which for dependent variables ACL and BCL which is suggested by (Shmueli et al., 2019). In this assessment a positive Q2 indicate that the model is acceptable

for further analysis. The results for Q2 in table 4 reveals that Q2 for ACL and BCL are positive hence acceptable for further analysis.

4.2.2 Hypothetical Results

A bootstrapping result employed 5000 samples following testing of the hypotheses and structural relationships and estimate the model. This value of SRMR depicts goodness of fit at a threshold of <0.08, which is acceptable (Hair et al., 2011). SEM was carried out in the partial least square estimation method to analyse the measurement model (proposed hypothesis). Table 6 illustrates hypothetical results as follows;

Table 6: Hypothesis Test

H_0	Relationships	Path Coef (β)	T Value	P values	Decision
H_{1a}	Peace of Mind -> Attitudinal Customer Loyalty	0.255	3.487	0.000	Accepted
H_{1b}	Peace of Mind -> Behavioural Customer Loyalty	0.203	3.170	0.002	Accepted
H_{2a}	Outcome Focus -> Attitudinal Customer Loyalty	0.361	6.050	0.000	Accepted
H_{2b}	Outcome Focus -> Behavioural Customer Loyalty	0.217	3.153	0.002	Accepted
H_{3a}	Moment of Truth -> Attitudinal Customer Loyalty	0.086	1.428	0.153	Rejected
H_{3b}	Moment of Truth -> Behavioural Customer Loyalty	0.247	4.332	0.000	Accepted
H_{4a}	Product Experience -> Attitudinal Customer Loyalty	0.017	0.317	0.751	Rejected
H_{4b}	Product Experience -> Behavioural Customer Loyalty	0.057	0.791	0.429	Rejected

Source: Researcher, *ACL-Attitudinal Customer Loyalty, BCL-Behavioural Customer Loyalty,*

The results indicated positive and significant relationship of H1a that influence of POM on ACL (β =0.255, p<0.000 hence the hypothesis is accepted. The results of OUF revealed that there is a positive significant relationship between OUF and ACL in H2a (β =0.361, p<0.000). On the other hand H3a which explain the influence of MOT on ACL revealed a negative relationship (β =0.086, p>0.153). The hypothesised effect of PEX in mobile payment services, showed that H4a has a negative relationship with ACL, the results were (β=0.017, p>0.751).

Moreover, In H1b, the findings depicted that the change of Peace of Mind (POM) influences significantly positive change in ACL (β=0.203, p<0.002) and was accepted. OUF in H2b was accepted, revealing a positively significant influence of OUF on BCL (β =0. 217, p<0.002) which was accepted. Similarly, there was a significant positive influence on the relationship in H3b, between MOT and BCL (β=0.247, p<0.000) the decision was accepted. However, the hypothetical result in H4b revealed a non-

significant relationship between PEX and ACL with (β=-0.057, p>0.429) hence rejected.

5.0 Discussion and Implications

This study examined the influence of dimensions of customer experience; peace of mind, outcome of focus, moment of truth and product experience on attitudinal and behavioural loyalty in mobile payment services. Based on the literatures, the relationship between peace of mind (POM) and attitudinal customer loyalty (ACL) for mobile payment services in the proposed model is significant. This finding implies that customer assessment of experience quality; before, during, and after rendered service has influence on customer recommendations of the service. They further suggested that familiarity with the service as well as expertise of the service provider of the "POM" is essential to determine both ACL and BCL. The study was in line with (Hoyer et al., 2020; Pekovic & Rolland, 2020), suggesting that customer experience influences customer loyalty.

Moreover, the outcome of focus (OUF) influenced positive significantly the ACL and BCL. These results implied that customers' assessment of customer experience towards the services in terms of; better offers, swiftness of the service, and service preference compared to the competitors is better to enhance repurchasing (BCL) and recommendation (ACL). The results were in line with (Raina et al., 2018) regarding positive relationship of which the previous relationships were in mortgage and real estate businesses.

The study findings revealed that the relationship between moment of truth and ACL was insignificant. This means that the impression of the customer regarding the m-payment did not influence saying positive things to others like family members, colleagues and friends. which is essential to the customer's assessment of the m-payment services to enhance customer loyalty. Likewise MOT influences BCL positively significant which is contradicting with ACL. This implied that customer impression of m-payment service play part in the repurchases of m-payment services. This study was consistent to past studies Olaleye et al., (2020); Raina et al. (2018) and Rahman et al., (2020) based on BCL but inconsistent with ACL.

Furthermore, the study revealed a significant negative relationship between product experience (PEX) and ACL, and PEX and BCL. These findings demonstrate that customers with m-payment service experience were exposed to different choices of m-payment service providers, can compare these offerings, and appraise the feeling of a variety of choices that do not

influence their repurchasing (BCL) and recommendation (ACL) of the service. The findings contradicted Imbug et al. (2018) the previous finding regarding the relationship between customer experience and customer loyalty, which contends that the relationship is positively associated. The implication is that if a service provider does not communicate customer assessment of experience quality well. In that case, the customer has no choice but to comprehend what is offered. This further implied that when other limitations take place during service provision like network coverage, availability of services and connectivity occur in developing countries, which is considered disloyalty (Bhatnagar et al., 2019; Mbawuni & Nimako, 2016). On top of that, although there was freedom of choice and proactivity from the service provider, it does not reflect customer loyalty. The reason behind could be technological changes, which support previous researcher's suggestion for a need for digital customer orientation (Johns & Davey, 2021; Klaus & Manthiou, 2020; Nandonde, 2019a) affect customer experience. For example, when a customer uses a new mobile phone and wants to undertake m-payment services, there is little concern from the service provider which affect PEX to enhance the ACL and BCL in m-payment service.

6.0 Implications

This study responded to the call for more insights from researchers and service marketing practitioners in understanding customer experience using EXQ measures in service research (Jaakkola & Terho, 2021; Kuppelwieser & Klaus, 2020). The study contributes to the body of knowledge by combining customer experience framework and customer loyalty model. The paper conceptualises specifically customer assessment of customer experience with a customer perspective and contributes explicitly to the attitudes such as recommendations about the service and behaviours such as repurchasing. The theoretical underpinning suggests that MOT, POM and OUF in customer experience influence CL in terms of ACL and BCL except for PEX.

Contrary to previous studies such as (Raina et al., 2019), PEX exceptions might be caused by the touchpoints outside service providers control whereby m-payment customers encounters the service with both device and other service vendors. The proposed research model is useful in developing economy perspective and in provision of marketing strategies. Similarly, it is responding to scholars' concerns on change in customer behaviour due to technological changes and presence of many touchpoints(Jaakkola et al., 2022).

Practically, the m-payment sector in Tanzania should work on providing memorable experiences and follow up on customer queries and concerns to

keep them using the service. Experiences include improving follow-up on social media platforms because customers use that to communicate their experiences. Therefore several actions can be taken as strategies for enhancing ACL and BCL as an important indirect performance measure of the company. Policymakers should consider the dimensions of customer experience on their agendas on consumer protection.

7.0 Conclusion and Recommendations

This empirical paper explains the influence of the dimensions of customer experience (peace of mind, outcome of focus, moment of truth and product experience) on attitudinal and behavioural customer loyalty in mobile payment services in Tanzania. The findings indicated that three dimensions of CX (MOT, POM and OUF) influence ACL and BCL but one dimension of CX which is PEX revealed a negative relationship. The conceptual model explains that in the mobile payment context, POM, OUF and MOT are important in influencing CL. The results derived from the hypothetical test explaining that mobile payment service providers should work on improving PEX because the service involves technology set up in mobile devices, which involves customer experience; in that case, it may help to use it for competitive advantage.

However, this study has several limitations and area for future studies to embark on m-payment services studies. The three big providers (M-pesa, Tigopesa and Airtel money) involved in the study are a limitation whereby other studies can consider all providers in the industry. This study employed a field survey; future studies could replicate it, involving a qualitative approach like an in-depth interview and focus group discussion. On top of that, other studies can concentrate on vendor-based m-payment services and their effect on customer loyalty. Lastly, there were numerous opportunities through customer-to-customer interactions where the service providers can use them to communicate more with their customers in understanding their experience quality assessment and use them as a competitive advantage. The study focused only on customers; hence future studies can also research on social interactions in other service settings.

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Efficiency of Mutual Funds and Portfolio Performance Measurement: A Case of Selected Mutual Funds in Tanzania

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Abstract
This study examines the current efficiency trends in the Tanzanian mutual fund industry over a five-year span (2018-2022), focusing on six specific funds: Umoja Fund, WekezaMaisha, Watoto Fund, Jikimu Fund, Liquid Fund, and Bond Fund. Employing a non-parametric approach, specifically Data Envelopment Analysis (DEA), the research collects secondary data from diverse sources, including newspapers, journals, books, periodicals, and the websites of UTT and the Bank of Tanzania (BOT). Monthly Net Asset Values (NAVs) of the selected mutual funds are scrutinized from each scheme's inception. Motivated by the limited understanding of mutual fund efficiency in Tanzania despite reported successes in increased asset values, profitability, and investor numbers, the study reveals distinctive performances under Constant Returns to Scale (CRS) and Variable Returns to Scale (VRS) assumptions. Under VRS, all mutual funds consistently achieve nearly 100% efficiency, signifying optimal operational scales. However, under CRS, efficiency scores fluctuate over time, underscoring the importance of mutual funds' adaptability for enhanced efficiency. Furthermore, the research suggests that mutual fund size significantly influences efficiency and potential scale economies. Smaller mutual funds demonstrate superior resource utilization efficiency, attributed to their focused investment approach. The analysis of inputs and output slacks provides insights into efficiency and resource utilization, identifying areas of optimal resource management and highlighting opportunities for improvement. The findings offer valuable insights into mutual fund efficiency under different scale assumptions, emphasizing the importance of scale flexibility and efficient resource management for superior performance. Implications suggest avenues for further research to explore external factors, efficiency fluctuations, portfolio management practices, and longitudinal trends within the mutual fund industry.

Keywords: *Portfolio Performance Measurement Mutual Funds, Tanzania*.

1.0 Introduction

Nowadays mutual funds have received increased attention worldwide as the fastest-growing financial intermediaries bearingseveral economic benefits to

individuals, companies and economies. They are considered to be among the means of investment available for people in an attempt to increase earnings over time. Mutual funds are recognized as collective investment schemes in which several investors accumulate funds under one firm management called portfolio management (Pangestuti, et al., 2017). The fund manager is responsible for professionally managing pooled contributions from investors who become shareholders by monitoring the appropriate use of funds for the benefit of all investors (ComLaw Authoritative Act, 2013). It is argued that the pooling of investors' money to create collective investment schemes helps to strengthen the power of investment to the capacity of larger investments than what could be possible for whatever individuals operating in isolation, whereby individual investors remain owners of the proportional segment of the fund's portfolio,Plantier, (2014).Under mutual fund mobilization, banks are custodians of assets possessed by the funds while trustees stand between the investors and the mutual funds management to protect the interest of investors by ensuring that assets are invested as per predetermined objectives (Cooper et al., 2013).

Evolution of mutual funds as important financial intermediaries started in the United States where the industry plays an extremely important role in the economy. The period of 1990s will remain important as there was a rapid expansion of the industry in different parts of the world led by US where the net assets value of mutual funds, along with the proportion of households owning assets in different mutual funds, grew substantially, followed by countries in the European zone (Klapper, et al., 2004). At present, the trend has spread to a significant number of countries in the world. According to most literatures, the main argument for growth of mutual funds include rapid financial globalization during the 1990s, along with growth in information technology and a growing demand for safer investments among adults of the western aging population, enabled the market capitalization exercise to operate smoothly. From studies conducted in the US, it was observed that, knowledge of the operation of the Mutual fundindustry among the population, financial crisis among economies as well as growth in GDP among countries have also been responsible factors for Mutual funds growthin different parts of the world (Klapper, et al., 2004). In UK, growth of mutual funds was also found to result from fair and predictable policies on investment, that increased the certainty of investment practices that counts on optimization of investment costs (Otten&Bams, 2002).

In developing countries, financial sector development has enabled the growth of mutual funds in different countries at different levels.It is argued that, as

the populations of developing countries grow, the proportion of middle-class segment which is comprised of medium level investors with interest in both local and international investment opportunities offered by the mutual fund industry is also growingcosts (Otten&Bams, 2002).

In emerging markets like China, Malaysia and Indonesia; equity mutual funds have shown a greater performance level than most developed countries (Huij& Post, 2011). The data base of mutual funds in Asian countries indicate that, from 1999 to 2005 there were 10,568 open end actively managed equity funds from 19 countries in the region (Alkassim, 2009).According to Persse (2008), In China, while the entire mutual funds asset value has consistently risen from year to year, they have also remained atop investment vehicle for financial management.

In Tanzania, since 2000 and particularly following the liberalization of financial industry and strengthening of the privatization practice, the mutual fund industry obtained its base as an important financial intermediary in the country (WEF, 2000). Literature reveals that, growth of the mutual funds industry in Tanzania was realized through establishment of Unit Trust Fund Asset Management Investor Services (UTT-AMIS) and diversification of fund products under the collective investment scheme such as Umoja Fund, Watoto Fund, Jikimu Fund, Wekeza Maisha, Liquid Fund and Bond Fund. Since the establishment of various mutual fund schemes in the country, there have been a sound success record in terms of the number of investors, asset value and operational practices. From the UTT AMIS annual report of 2021 it was noted that, from the year 2019 to 2020, mutual funds in Tanzania has recorded a substantial growth from Tsh. 290.7 billion to 412.8 billion being a growth rate of 42% along with an increased number of investors and profitability above the performance benchmark. Among the noted reasons for an observed growth of mutual funds in Tanzania include; increased public confidence and understanding about their performance, introduction of digital access services, and integrationof fund systems with bank systems, impressing legal institutions in domestic country as well as introduction of wealth management services (Kazungu and Mwanahanja, 2021).

Despite of the success reports for mutual funds in Tanzania from year to year over the past two decades in terms of increased asset values, profitability and number of investors, challenges cannot be escaped. By examining asset under management ratio to GDP, Kegamba, (2022)found that, Tanzania is facing a serious problem of lack of participation of a significantly large segment of the population in the mutual fund industry to the extent that, it is unhealthy

for the industry to smoothly function. In addition,Adajania (2013) reports that, mutual fund industry in Tanzania is suffering from costly requirements of marketing and distribution mechanisms in the attempt of raising investments from remote regions which are significantly many. It is argued that, limited financial literacy that make most people in the country prefer saving in liquid assets such as in bank accounts and cash at home make it difficult for the financial sector including the mutual fund industry to smoothly operate (Adajania, 2013). Moreover, limited access to formal banking services for a significantly large segment of the Tanzanian population negatively affects the operation of mutual funds (Adajania, 2013). In addition, there are sufficient evidence that, variations in macroeconomic variables like interest rate, inflation and exchange rate being the normal tendency of the global economy affects the efficiency of mutual funds.

However, with all these challenges, little is known on the efficiency with which mutual funds perform in Tanzania. It is from this background that, this study devotes towards examining the efficiency of mutual funds and portfolio performance in Tanzania based on DEA.The selection of DEA approach follows the fact that it has shown unquestionable strengths of involving several inputs and outputs while addressing the problems of benchmark specification, endogeneity of transaction costs and the role of market timing which is not covered by parametric methods (Lehmann and Modest, 1987; Grinblatt and Titman, 1994; Murthi et. al, 1997). Hence, since investors expect returns from assets they invest; information on performance efficiency of fund organisations which is the focus of this study is important to enable individuals and companies to build confidence on investing in mutual funds and make appropriate investment decision among options available in the county.

2.0 Theoretical Review

Countless researchers have conducted research on Mutual Funds and their performance, and more importantly as a determining factor for the decision making of investors. Thus, the typical investor would not only want to know the performance but also the risk taken, to acquire that return, tobetter understand if they are getting value-added to their investment or not.

It is typical for a portfolio or MF to have an incredible past performance. However, it does notalways translate to future returns, as there are factors that affect and determine the performance, and this interesting characteristic of any portfolio, an investor would wish to understand in orderto select an MF and a fund manager. Although the existing literature covers a wide range of issues about MFs, this review will pay particular attention to these areas:

the concept of collectiveinvestment schemes and mutual funds, the theories of mutual funds' performance, the significance of Equity Mutual Funds , the determinants of the performance, the nature and development of MFs in developed and developing capital markets and the present state in Tanzania.

Some theories provide justification for the existence, operations and trading strategies of mutual funds and a few of such theories that are relevant to this particular study are briefly examined below.

2.1 The Optimal Fund Objectives and Industry Organization Theory

The theory was formulated by Mamaysky and Spiegel (2002). The model sees the mutual fund (like other financial intermediaries) as firms established by investors to manage their investments while the investors go about their personal activities. The theory opines that these firms , are not like individuals endowed with utility function, but take orders from investors; thus with profound implications for the firms (mutual funds) trading styles and the effect on asset prices. Furthermore, Mamaysky and Spiegel (2002) opine that MFs are gifted with vastly spanning set of trading strategies as opposed to those of individuals and other firms.

2.2 The Rational Theory of Mutual Funds' Attention Allocation.

This theory was developed by the trio of Kacperczyk, et al., (2014). It posits that funds process information on future assets values on the basis of which they invest in "high-valued assets". The model regards the condition of the business cycle as the attention allocation variable that is used to predict information choices usable for predicting effective strategies for investment and returns in portfolio of funds. Ultimately, the theory opines that as optimum attention allocation changes according to the prevailing economic condition, MF investment portfolios and the returns they generate also change. The theory has implications for fund managers' managerial abilities, their portfolio investment strategies and the differing returns across mutual funds.

2.3 The Agency Theory

The Agency Theory is also relevant to the role and activities of mutual funds. The agency theory, traceable to Mitnick (2013), espouses the relationship and conflict that arise between, the principal, usually the business owners, and the agents, mainly business executives or managers of business organizations (such as MFs). The theory recognizes that although agents are contracted to promote the interest of the principals but the interests of both parties are not

always congruent, thus manifesting in differences in goals and level of risk aversion between the owners (in this case investors) and managers (mutual fund managers). These lie at the root of the agency problem in business organizations including financial intermediaries like mutual funds. One common technique that is used to resolve the agency problem is the use of performance-based compensation plan for managers. Thus, the agency theory has implications for the goals MFs managers pursue, and their risk-return trade-offs.

3.0 Literature Review

Vidal-García et. al (2018) upon examining the market efficiency of the mutual fund industry around the world using parametric and non-parametric (DEA) approaches based on a unique database of worldwide domestic equity funds found that, there is a statistically significant relationship between higher expenses of mutual funds and poor performance in the positive direction from both parametric and non-parametric (DEA) approach.

In Indonesia, Pangestuti et. Al., (2017) based on DEA in measuring the effect of inflation on performance of mutual funds and Sharpe Index tool in efficient measurement involving transaction costsfound that,besides the fact that performance of mutual funds were significantly determined by inflation and technical efficiency in selected market stocks, the positive and significant effects of inflation on resulted from portfolio diversification of risks and capability of portfolio management.

Com Law Authoritative Act (2013) based on traditional parametric tools to examine efficiency performance of superannuation funds in Australia found that, while efficiency performance was determined by investment costs, the marginalized investment fee was the cause of reported inefficiency of mutual funds.

Similarly, in Nigeria, Iloet al., (2017) assessed security picking talent amongst managers and based on the returns from 37 MFs that cut across six classes of exchange traded fund portfolios from 2012 to 2015 concluded that the funds could not consistently generate superior risk-adjusted outcomes; thus demonstrating lack of stock picking talent by fund managers.

Mahmuda and Abdullahi (2017) investigated the performance of certain MF schemes in Nigeria within the period of 2015 to 2017 while employing commonly used performancemeasures. They reported that the funds generated positive Treynor and Sharp ratios but negative Jensen Alpha and

concluded that the selected funds provided superior risk adjusted returns but surprisingly fund managers lacked good asset selection talent.

Lemantile (2017) onexamining the financial performance of mutual funds in Kenya, using traditional parametric methods, based on macroeconomic factors found that, variation in macroeconomic variables including interest rates, exchange rate and inflation significantly affects the performance of mutual funds in the country. It was found that, while interest rate variations affected the performance of mutual funds both positively and negatively, exchange rate variations and inflation rate variation affect mutual funds purely in a negative direction.

The above reviews of the literature on MFs performance indicate the lack of consensus among scholars that MF managers have the capacity to successfully outdo the market portfolio benchmark return. By the same token, findings on managers' market prediction and asset selectivity capacities are mixed. Therefore, further research to investigate MFs performance is desirable to guide investors especially in Tanzania in making wise investment decisions in mutual funds such ascollective investment schemes to assist in the attainment of their investment goals.

4.0 Research Methodology

The present study focuses on the utilization of the DEA approach, a robust mathematical programming technique developed by Charnes, et al., 1978, to evaluate the relative efficiency of production units. In the context of this research, we consider mutual funds as the production units of interest.DEA proves to be particularly advantageous for our research due to its capability to accommodate multiple inputs and outputs. This feature enables us to integrate diverse investment characteristics and fund attributes into our analysis, in addition to the conventional metrics of return and risk, which may significantly influence the performance of mutual funds. In essence, the DEA technique establishes the relative position of a mutual fund concerning the frontier of optimal fund performance by computing the ratio of the weighted sum of inputs to the weighted sum of outputs. The envelopment surface resulting from this analysis represents the estimated frontier of best performance and serves as an indicator of fund efficiency while also identifying inefficiencies within the mutual fund market.

The DEA framework encompasses two distinct orientations: the input orientation and the output orientation, each representing different approaches to analyzing a DEA model. In the context of an input orientation, the analysis

aims to determine the extent of proportionate input reduction required for an inefficient fund to attain DEA efficiency while maintaining the existing output levels. Conversely, an output orientation analysis seeks to ascertain the magnitude of output augmentation needed for an inefficient fund to achieve DEA efficiency while keeping the inputs unchanged. However, the latter aspect is deemed less significant since fund managers typically lack direct control over output levels. For our study, we adopt the input-oriented DEA model proposed by Banker, Charnes, and Cooper (1984), hereafter referred to as the BCC model. This model serves as an extension of the original Charnes, Cooper, and Rhodes (1978) DEA model formulation, denoted as CCR henceforth.

Below, is an outline the BCC model. However, to provide a comprehensive context, we commence the discussion with a description of the CCR model.

y_{rj}=Known positive output level of fund j,r=1,2,….s where s is the number of outputs

X_{ij}=Known positive input level of fund j,i=1,2,…,m where m is the number of inputs

n=total number of funds

The CCR model for determining relative efficiency of designated fund “0” is given

$$\text{Efficiency}=\frac{\sum_{r=1}^{s} u_r y_{rj}}{\sum_{i=1}^{m} v_i x_{ij}} \quad \ldots\ldots 1$$

$$Max\left\{\frac{\sum_{y=1}^{s} u_r y_{ro}}{\sum_{i=1}^{m} v_i x_{i0}}\right\} \quad \ldots\ldots 2$$

$$\text{Subject to } \frac{\sum_{r=1}^{s} u_r y_{rj}}{\sum_{i=1}^{m} v_i x_{ij}} \le 1,\ j=1,2,..n, \quad \ldots\ldots 3$$

r=1, 2…, s, and i=1, 2…m……………………………………………………4

The variables in the above model are input and output weights u_r and v_i respectively.

The objective function (1) is the ratio of weighted sum of outputs to weighted sum
of inputs with weights being the optimal values of the variables u_r and $v_i$to be determined
as a solution to the CCR model.
The above problem can be transformed into an equivalent linear programming
model. The BCC model we use is the dual of this equivalent linear program together with
a constraint capturing returns to scale characteristics. The linear program so obtained for
determining the relative efficiency score, θ of fund '0' is given by
Min θ

Subject to $\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{ro,}$ r=1,2…s,……5

$\theta x_{io} \geq \sum_{j=1}^{n} \lambda_j x_{ij}$ i=1, 2,…m…… 6

$$\sum_{j=1}^{n} \lambda_j = 1,$$

$\lambda_j \geq=1,$ j=1, 2…, n……..…7

The variables in the BCC model are θ and λ_j which is nonnegative. The

variable $\theta$is the proportional reduction required in each input of the designated fund to achieve efficiency. The constraints in the model ensure that the relative efficiency of the fund never exceeds 1. The sufficient

condition for the efficiency of the fund is that the optimum value of $\theta$is 1. Otherwise, it is labelled as inefficient compared to the other funds in the sample. Thus, a DEA run will produce a relative efficiency score and a set of λ_j j = 1,2,...,n, values for each fund. The set of λ_j values defines the point on the envelopment surface. Therefore, for an inefficient fund, the point defined by thevalues becomes a role model that establishes precedence for it to become efficient. The set of efficient funds' $\lfloor j : \lambda_j, \succ 0 \rfloor$is called the peer group of the designated fund.

The utilization of equation (7) introduces a critical constraint referred to as the convexity constraint, which is specifically designed to account for the

consideration of variable returns to scale (VRS) within the model. Conversely, by excluding this convexity constraint from the formulation, the resultant model aligns with the scenario of constant returns to scale (CRS). In the context of CRS, the relative efficiency score obtained for a designated fund serves as a comprehensive measure of the fund's overall technical efficiency, encompassing all aspects of production efficiency.

However, under the VRS condition, the relative efficiency score acquired reflects the pure technical efficiency of the fund, focusing solely on the productive efficiency aspects unaffected by scale variations. It is important to note that the disparity between the overall and pure technical efficiencies can be attributed to scale efficiency, which is quantified as the ratio of overall technical efficiency to pure technical efficiency.

Furthermore, in the realm of linear programming, it is a fundamental principle that each linear programming problem is inherently associated with another dual linear program. The dual counterpart of the output-maximizing Data Envelopment Analysis (DEA) can thus be formally expressed as follows:

$\theta^* = Min\theta$ ……

Subject to

$\sum_{j=1}^{n} \lambda_j x_{ij} \leq \theta x_{io,} i = 1,...m$ ……..……..

$\sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{ro,} r = 1,...s$ ……..…….

$\lambda_j \geq 0$

θ is unrestricted

If $\theta^* = 1$,then the input levels cannot be reduced, indicating that DMU_0 is on the frontier. Otherwise, if $\theta^* \prec 1$,DMU_0 is dominated by the frontier. $\theta*$represents the input oriented efficiency score of the DMU_0. The individual input reduction is called slack. In fact, both input and output slack value may exist in model……

$s_i^- = \theta^* x_{io} - \sum_{j=1}^{n} \lambda_j x_{ij}$ i=1…

,m…

$s_r^+ = \sum_{j=1}^{n} \lambda_j y_{rj} - y_{ro}$, r=1,…,s

To determine possible non-zero slacks solving linear programming (….),we should solve the following linear program:

Max $\sum_{i=1}^{m} s_i^- + \sum_{r=1}^{s} s_r^+$

Subject to

$\sum_{j=1}^{n} \lambda_j x_{ij} + s_i^- = \theta x_{i0,} i = 1,...,m$

$\sum_{j=1}^{n} \lambda_j y_{rj} - s_r^+ = Y_{ro,} r = 1,...,s$

$\lambda_j \geq 0,$

θ unrestricted

DMU_0 is efficient if and only if $\theta^* = 1$ and $S_i^{-*} = S_r^{+*} = 0$ for all i and r.DMU_0

Is weakly efficient if and only if $\theta^* = 1$ and $s_i^{+*} \neq 0$ and (or) $s_r^{+*} \neq 0$ for some iand r.

In summary a two DEA process can be summarized as follows in DEA model

Min $\theta - \varepsilon(\sum_{i=1}^{m} s_i^- + \sum_{r=1}^{s} s_r^+)$

Subject to

$\sum_{j=1}^{n} \lambda_j x_{ij} + s_i^- = \theta x_{io,}$ i=1,…,m

$\sum_{j=1}^{n} \lambda_j y_{rj} - s_r^+ = y_{ro,} r = 1,...,s$

$\lambda_j \geq 0,$

θ unrestricted

4.1 Data Source

To reveal the present efficiency trends of the Tanzania mutual fund industry, the study covered 5 years (2018-2022) involving 6 mutual funds in Tanzania (Umoja Fund, WekezaMaisha, WatotoFund, Jikimu Fund, Liquid fund,Bond Fund) and comprised of all equity-diversified funds in the country. Following the fact that there are variations in mutual fund commencement, appropriate consideration has been given tothe commencement of each fund. The study

employed secondary data collected from newspapers, journals, books, periodicals, and various websites like that of UTT and Bank of Tanzania (BOT). The NVAs of the sample mutual fund schemes were collected monthly regarding the scheme's commencement.

4.2 Inputs and Output Variable Specifications

There is no agreement on selection of inputs and output to be considered in mutual funds studies on efficiency measurement. However different studies have used different inputs and outputs to measure the efficiency of mutual funds, for example studies by Tuzcu et al., (2020). Traditional measurement such as Risk, expense and fund size as inputs while funds returns were used as output, on the other hand Don (2002) on Australian mutual fund performance appraisal used standard deviation, costs and other operating expenses, minimum initial investment as inputs while growth and income were used as output.

Lozano and Gutierrez (2008) proposed risk measure consistent with stochastic dominance, first order stochastic dominance rules select those portfolios that are non-dominated when evaluated by increasing utility function, similarly second order stochastic dominance (SSD) is of relevance for all nonsatiated.

Amelia (2023) used coherent risk measures as inputs while expected return was used as output. Table 1 below provides a summary of inputs and outputs used by different studies.

Table 1: Main Financial inputs and outputs used in measuring the efficiency of mutual funds:

SN	Author(s)	Outputs	Inputs
1	Basso and Funari(2001)	Mean Return, Stochastic dominance indicator	Standard Deviation, Beta %subscription cost per 5000,25,000 and 50,000, Dollar Initial Investment
2	Basso and Funari(2003)	Mean Return, Ethical level	Standard Deviation beta subscription cost redemption cost
3	Basso and Funari(2005,2007,2010)	Final Value of unit investment	Standard Deviation, Initial fees, exit fees
4	Briec et al(2004,2007)	Mean return	Variance
5	Chang, 2004	Return(Net of transaction cost, fees and expenses, gross sales charges)	Standard deviation, Beta load, Total Net asset Value(NAV)
6	Choi and Murthi(2001)	Mean gross return	Standard deviation, Transaction cost., loads, turnover
7	Murthi et al 1997	Fund Return	Standard Deviation and Transaction costs. Transaction costs includes Operational expenses, Management fees, market and administrative expenses, Net Asset Value, Turnover, loads [a]
8	Baraio and Simar(2006)	Total Return	Standard Deviation, expense ratio, turnover, fund size.
9	Babalos et al(2012)	Fund Return	Risk and Expense ratio [b]
10	SevgiEdaTuzcu(2020)	Funds returns	Risk, expense and fund size

[a] Expense ratio refers to the costs incurred by mutual fund in operating the portfolio, including administrative expenses and advisory fee paid to investment manager, expressed as percentage of total asset under management
[b] Loads are sales charge or redemption fees incurred when investors purchase and sell the shares

Following previous studies on inputs and outputs selection, the study used the following variables. The Inputs variables used in DEA analysis are following: (i)Total risk standard deviation(ii)Transaction cost,generally referred to management expense ratio(MER)(iii)Net Asset value,while the output used in this study was Fund return.

5.0 Results

The Table 1 presents the average technical efficiency scores under constant return to scale (CRS) and variable return to scale (VRS) assumptions for the years 2018 to 2022. The table also includes the number of decision-making units (DMUs) and the percentage of efficient DMUs under each assumption for each year. The mean efficiency results across firms during the period of study are found in **appendix 1**

The average technical efficiency score under CRS represents the average efficiency of the DMUs assuming a fixed scale of operation (i.e., the DMUs cannot adjust their scale). In 2018 and 2019, only 2 out of the 6 DMUs (33.3%) were efficient under CRS, implying that the majority of DMUs were not operating at their optimal efficiency level during those years. In 2020, the number of efficient DMUs increased to 4 out of 6 (66.6%), indicating an improvement in efficiency for the majority of DMUs. However, in 2021, the number of efficient DMUs dropped back to 2 out of 6 (33.3%), suggesting a decline in efficiency for most DMUs compared to the previous year. In 2022, the number of efficient DMUs slightly improved to 3 out of 6 (50%), indicating a moderate level of efficiency across the group of DMUs. The average technical efficiency scores (0.686, 0.696, 0.945, 0.720, and 0.767) indicated that, on average, the DMUs utilized 68.6%, 69.6%, 94.5%, 72.0%, and 76.7% of their resources efficiently under CRS for the respective years. Similarly, the average technical efficiency score under VRS represents the average efficiency of the DMUs assuming they could adjust their scale of operation to achieve optimal efficiency. Notably, under the VRS assumption, all DMUs were 100% efficient in each year from 2018 to 2022. This implied that, under VRS, the DMUs were able to find their optimal scale of operation and utilize their resources most efficiently to produce their respective

outputs. The consistent 100% efficiency score indicated that the DMUs were operating at their full potential and achieving the best possible performance without any inefficiencies or wastage of resources. The VRS efficiency scores (1, 0.916, 1, 1, and 1) highlighted the DMUs' ability to fully utilize their resources and maximize output levels while operating at their optimal scales during the specified years.

Overall, the analysis demonstrates that the Mutual funds were more efficient under the VRS assumption, where they could adjust their scale of operation, compared to the CRS assumption, where the scale was fixed. The perfect efficiency under VRS indicated that the DMUs were operating at their best possible level, while the fluctuations in efficiency scores under CRS suggested that the mutual funds might not have been operating optimally at all times due to scale constraints. The results underscored the importance of considering scale flexibility in efficiency analysis to achieve a more accurate assessment of Mutual funds' performance.

Table 1

	2018	2019	2020	2021	2022
Number of DMU	6	6	6	6	6
Number of efficient DMU under CRS	2(33.3%)	2(33.3%)	4(66.6%)	2(33.3%)	3(50%)
Number of efficient DMU under VRS	6(100%)	5(84%)	6(100%)	6(100%)	6(100%)
Average Technical efficient Score under CRS	0.686	0.696	0.945	0.720	0.767
Average Technical efficient Score under VRS	1	0.916	1	1	1
Average Scale efficient Score	0.686	0.696	0.945	0.72	0.767

Average scale efficiency is an important measure that assesses how efficiently DMUs are operating in relation to their optimal size or scale. It combines both technical efficiency (how well a DMU uses its resources to produce output) and scale efficiency (how close a DMU operates to its optimal scale) into a single metric. In this context, the average scale efficiency score represented the overall efficiency of the mutual funds in the period of study, considering both CRS and VRS assumptions, and it is calculated as the average of the technical efficiency scores. In 2018, the average scale efficiency score was found to be 0.686. This implied that, on average, the DMUs utilized approximately 68.6% of their optimal scale resources to achieve their current level of output. It also indicated that the Mutual funds, as a group, have room for improvement in optimizing their resource utilization to attain higher efficiency levels. The trend in average scale efficiency showed an increasing pattern from 2018 to 2020. In 2020, the average scale efficiency reached its highest value of 0.945, indicating

significant improvement in the DMUs' ability to utilize their resources more effectively to produce output. In 2021, the average scale efficiency dropped to 0.720, suggesting that the mutual fund, on average, experienced some inefficiency in their resource utilization during that year compared to the previous year. However, in 2022, the average scale efficiency improved to 0.767, indicating a recovery and an upward trend in the Mutual funds' resource utilization and output levels. Notably, under the VRS assumption, the average scale efficiency scored were consistently equal to 1 for each year from 2018 to 2022. A scale efficiency score of 1 represents perfect efficiency, suggesting that the Mutual funds were operating at their optimal scale during these years, with no room for further improvement. Notably, under the VRS assumption, the average scale efficiency scores are consistently equal to 1 for each year from 2018 to 2022. A scale efficiency score of 1 represents perfect efficiency, suggesting that the Mutual funds were operating at their optimal scale during these years, with no room for further improvement. Generally, the analysis reveals that the Mutual funds' performance in utilizing their resources efficiently fluctuates from year to year under CRS, but the VRS assumption consistently shows perfect efficiency. The variations in average scale efficiency scores over time suggest that the management must improve the ability to optimize their resource allocation and scale of operation. The lowest efficiency scores may be due to increase in the number of less efficiently managed fund portfolio, similar observations were pointed by Tuzcu(2019),Babalos et al (2012) and Baghdadabad (2014).

5.1 Return to Scale (RTS)

Table 2 below demonstrates that a significant portion of mutual funds operate with the concept of increasing returns to scale, at a rate of 67%. A notable outcome of functioning within this scenario is the observed trend for the expense ratio of these funds to decrease as their Assets Under Management (AUM) grow. The expense ratio signifies the fraction of the fund's assets designated for covering operational expenses. As these expenses are distributed across a wider asset base, individual investment units carry a proportionally lighter burden of costs, leading to lower expense ratios for investors. This occurrence holds the promise of generating enhanced net returns for investors. This outcome is attributed to the efficiency gains stemming from economies of scale, which can consequently result in higher net returns for investors. With a smaller portion of the fund's assets being allocated for operational costs, a larger share of the fund's returns can be directed towards investors. As a result, mutual funds that boast lower expense ratios become more appealing to investors, as they offer a more resource-

efficient approach to accessing a diversified portfolio managed by professionals. This increased allure contributes to a larger influx of funds, further reinforcing the economies of scale phenomenon. Additionally, mutual funds characterized by increasing returns to scale achieve a more favorable position in the market, enabling them to furnish competitive returns to investors while maintaining low costs. This ability sets them apart in a crowded market environment.

Table 2: Efficiency Summary and Return to Scale(RTS)

Firm	Crtste	vrtte	scale	rts
1	1.000	1.000	1.000	-
2	0.462	1.000	0.462	irs
3	0.724	1.000	0.724	irs
4	0.785	1.000	0.785	irs
5	1.000	1.000	1.000	-
6	0.147	1.000	0.147	irs

5.2 Efficiency by the Size of Mutual Funds

The present research undertook a comprehensive analysis and extended its investigation to explore the influence of mutual fund size on efficiency. Drawing upon the research work of Tuzcu and Ertugay (2019), it became evident that fund size constitutes a significant determinant of mutual fund efficiency. In the context of this study, the mutual funds were classified into two distinct groups, namely "small funds" and "large funds," based on their size relative to the median value. Specifically, funds exceeding the median size were categorized as "large funds," while those falling below the median were considered "small funds." This classification methodology aligns with the similar approach utilized by Tuzcu, et al., (2020) and Ertugay(2020)in their own examination of mutual funds.

The primary objective underlying this categorization was to discern whether either group demonstrated a higher efficiency estimate concerning economies of scale. Through this investigation, the research aims to illuminate potential scale economy advantages for mutual funds. By delineating efficiency disparities between the two categories, this study souhght to enhance understanding of the dynamics inherent within the mutual fund industry. Consequently, this analytical framework offers valuable insights into the intricate relationship between fund size and efficiency, thereby contributing to a more nuanced comprehension of this sector.

Table: 2 presents a summary of the annual efficiency scores of mutual funds by categorization from the years 2018 to 2022. With reference to CRS,the efficiency scores represent the ability of mutual funds to utilize their resources effectively in generating returns and managing risks. With reference to CRS in 2018 the efficiency score for large mutual funds was found to be 0.716, signifying an average efficiency of 71.6% in resource utilization. However, in the subsequent year, 2019, the efficiency score declined to 0.697, indicating a decrease in efficiency compared to the previous year. Notably, there was a significant improvement in efficiency in 2020, with a score of 0.927, suggesting that large mutual funds had become more efficient during that period. In 2021, the efficiency dipped slightly to 0.755 but rebounded to 0.828 in 2022, demonstrating some variation in efficiency scores over the years. Overall, it appears that large mutual funds made efforts to enhance their efficiency, as evidenced by the improved scores in 2020 and 2022.

On the other hand, the efficiency score for small mutual funds with reference to CRS in 2018 was 0.856, indicating that on average, small mutual funds achieved 85.6% efficiency in managing their resources. The score decreased slightly to 0.761 in 2019 but remained relatively high. Interestingly, in both 2020 and 2021, the efficiency scores reached 1.000, implying that small mutual funds achieved 100% efficiency during those years, showcasing exceptional performance. However, in 2022, the score decreased slightly to 0.875, indicating potential adjustments in their resource management strategies.

A comparison of the efficiency scores between large and small mutual funds reveals that small mutual funds generally outperformed their larger counterparts in terms of resource utilization efficiency. Over the years, small mutual funds consistently achieved higher efficiency scores, with their 100% efficiency scores in 2020 and 2021 being particularly noteworthy. One possible explanation for this superior performance is that smaller funds may adopt a more concentrated and focused investment approach. Due to their fewer assets to manage, they can carefully select investments and concentrate on high-potential opportunities. This focused strategy might contribute to better performance compared to larger funds that often have to spread their resources across a broader range of assets. The findings are in line with, Premachandra (2012).

In general, the efficiency scores of mutual funds under CRS indicate their ability to effectively manage resources and achieve returns while managing

risks. Both large and small mutual funds experienced variations in their efficiency scores over the years. Large mutual funds demonstrated efforts to enhance efficiency, particularly in 2020 and 2022, whereas small mutual funds consistently displayed high efficiency, with notable achievements of 100% efficiency in 2020 and 2021. The superior performance of small mutual funds may be attributed to their focused investment approach, allowing them to optimize their resources to a greater extent.

Table 2: Annual Efficiency Scores of Mutual Funds by Categorization From the Years 2018 to 2022

	Scale	**2018**	**2019**	**2020**	**2021**	**2022**
LG	CRS	0.716	0.697	0.927	0.755	0.828
	VRS	1.000	0.865	1.000	1.000	1.000
	SE	0.716	0.811	0.927	0.755	0.828
SM	CRS	0.856	0.761	1.000	1.000	0.875
	VRS	1.000	1.000	1.000	1.000	1.000
	SE	0.856	0.761	1.000	1.000	0.875

Notes: LG=large category of mutual fund SM=Small category of mutual fund

Table 3 indicate the number of inputs and outputs slack on mutual fund technical efficiency scores. In efficiency analysis, slacks refer to the unused or excess capacity of inputs or outputs that a firm has. Zero slacks in efficiency analysis mean that the firm is fully utilizing its inputs and outputs without any excess or unused resources. Specifically, if an input slack is zero, it indicates that the firm is efficiently using all its input resources, and there is no room for further improvement in input utilization without affecting the output. Similarly, if an output slack is zero, it means that the firm is efficiently converting all its inputs into outputs, and there is no potential for further improvement in output generation without changing the input mix.

In Table 3 the input slack for risk (standard deviation) measures how close the firm's actual standard deviation of returns is to the minimum possible value that can be achieved given the current resource allocation. A value of 0.000 for the input slack in risk means that Firm 1 has achieved the minimum possible standard deviation of returns with its current resource allocation, indicating optimal risk management. On the other hand, positive values for the input slack indicate that there is room for improvement in risk management by reducing the standard deviation of returns. For example, Firm 2 has a slack of 0.232, suggesting that it could potentially reduce the risk (standard deviation) of its returns by this amount, given its current resource utilization. Notably, Firm 5 has the highest input slack for risk at

48.655, indicating significant potential for reducing risk through resource optimization. This suggests that Firm 5's current resource allocation may be associated with relatively high volatility in returns, and adjustments to its portfolio or investment strategies could lead to a decrease in risk.

Table 3: **Input and Output Slacks of Mutual Funds**

		Output slacks	**Inputs slacks**			
Firm	**te efficiency**	**Fund return**	**Risk(s.td . Dev)**	**NAV**	**NUM(Net Asset Under Mgt)**	**Expense ratio**
1	1.000	0.000	0.000	0.000	0.000	0.000
2	0.462	0.000	0.232	164.002	0.000	2.095
3	0.724	0.000	0.131	235.125	0.000	1.690
4	0.776	0.000	1.248	57.522	0.000	1.626
5	0.716	0.000	48.655	82.193	0.000	0.777
6	0.093	0.000	1.028	1.045	0.000	0.098
mean	**0.629**	**0.000**	**8.549**	**89.981**	**0.000**	**1.048**

The input slack for Net Asset Value (NAV) represents the difference between the firm's actual NAV and the maximum possible NAV that could be achieved with the current resource allocation. A value of 0.000 for the input slack in NAV, such as in Firm 1, indicated that the firm has achieved the maximum possible NAV with its current resource utilization, signifying efficient resource management. Positive values for the input slack in NAV implied that there was potential for increasing the firm's Net Asset Value through better resource allocation. For instance, Firm 2 has a slack of 164.002, suggesting that it could potentially increase its NAV by this amount by optimizing its resource allocation.

The input slack for "Expense ratio" represents the unused or excess capacity of the expense ratio variable for each firm. The expense ratio is the percentage of the mutual fund's total assets that are used to cover operating expenses, including management fees and administrative costs. A lower expense ratio is generally more favorable for investors, as it means that a larger portion of the fund's returns is retained by the investors. A slack of 0.000 for the expense ratio indicates that Firm 1 has achieved the lowest possible expense ratio with its current resource allocation. This suggests that the firm is efficiently managing its operating expenses, resulting in a favorable expense ratio for its investors. The input slack for Firm 2's expense ratio is 2.095, which means that there is significant room for improvement in managing its operating expenses. By reducing the expense ratio by 2.095 percentage points, the firm could optimize its resource utilization and

potentially offer investors a more competitive expense ratio. Firm 4 has an input slack of 1.626 for its expense ratio, suggesting that there is room for optimizing its expense management. By decreasing the expense ratio by 1.626 percentage points, the firm could potentially offer a more attractive investment option to investors.he input slack for Firm 5's expense ratio is 0.777, indicating that there is a moderate opportunity for improving its expense management. By reducing the expense ratio by 0.777 percentage points, the firm could enhance its overall efficiency and potentially increase investor satisfaction.Firm 6 has the smallest input slack for its expense ratio at 0.098, implying that there was only a minor scope for improvement in its expense management. Nevertheless, by optimizing its expenses by 0.098 percentage points, the firm could further enhance its efficiency and potentially offer investors a slightly more competitive expense ratio.

The input slack for the expense ratio provides valuable insights into how efficiently each firm is managing its operating expenses. Firms with zero input slack have already achieved the lowest possible expense ratio given their current resource allocation, indicating efficient expense management. On the other hand, positive input slack values indicated opportunities for improving expense management and potentially offering investors more attractive investment options with lower expense ratios. Investors often consider expense ratios when selecting mutual funds, as lower expense ratios could lead to higher net returns for investors over time. Therefore, firms with higher input slack values should focus on optimizing their operating expenses to stay competitive in the market and attract more investors.

6.0 Concluding Remarks and Policy Implications

The research findings highlight the significance of considering scale flexibility in efficiency analysis for Mutual funds. The study showed that Mutual funds performed differently under Constant Returns to Scale (CRS) and Variable Returns to Scale (VRS) assumptions. While under VRS, all Mutual funds achieved almost 100% efficiency consistently, indicating they operated at their optimal scale. However, under CRS, the efficiency scores fluctuated over time, suggesting that the Mutual funds' ability to adjust their scale of operation is crucial for achieving higher efficiency.

One of the managerial implications is that managers of Mutual funds should pay attention to their ability to optimize resource allocation and scale of operation, especially under CRS, to improve overall efficiency. This highlights the importance of considering scale flexibility and efficient resource management for better performance. The research also indicates that

mutual fund size plays a role in determining efficiency and potential advantages of scale economies. Smaller mutual funds demonstrated superior resource utilization efficiency compared to larger ones, likely due to their focused investment approach. This finding underscores the significance of considering fund size and efficient resource management for mutual fund performance. Investors can use this information to make informed decisions and select funds that offer competitive expense ratios and efficient resource utilization.

Moreover, the analysis of inputs and output slacks for mutual funds provides valuable insights into their efficiency and resource utilization. It identifies areas where firms have achieved optimal resource management and areas where improvements can be made. For instance, some firms have efficiently managed their operating expenses, resulting into favorable expense ratios, while others have opportunities to optimize their expenses to attract more investors.

The research implications include several areas for further investigationExternal Factors: Future research could explore how economic conditions, market trends, regulatory changes, or other external factors impact the efficiency of Mutual funds under different scale assumptions. Understanding these external influences can help provide a more comprehensive picture of the efficiency fluctuations.

Fluctuations in Efficiency: Identifying the reasons behind the fluctuations in efficiency under CRS could be a subject for further research. Investigating the factors contributing to inefficiencies and finding ways to ensure consistent efficiency over time can offer valuable insights to managers and investors.

Portfolio Management: Further research could delve into the specific portfolio management practices or strategies that contribute to higher efficiency and better performance. Understanding the relationship between portfolio management decisions and efficiency can help enhance overall fund performance.Comparative Analysis: Extending comparative analyses to other financial institutions or industries could help understand how scale flexibility affects overall efficiency in various sectors and identify best practices for resource utilization.

The research findings provide valuable insights into the efficiency of Mutual funds under different scale assumptions and highlight the importance of scale

flexibility and efficient resource management for better performance. The implications suggest avenues for further research to explore external factors, fluctuations in efficiency, portfolio management practices, and longitudinal trends. By considering these factors, mutual fund managers and investors can make informed decisions to optimize resource allocation and enhance overall efficiency. Overall, the policy implications drawn from the research suggest that considering scale flexibility and efficient resource management are crucial for enhancing mutual fund performance. By implementing these policy recommendations, regulators, fund managers, and investors can work together to foster a more efficient and robust mutual fund industry.

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Appendix 1: Mean Efficiency summary under CRS and VRS

	2018		2019		2020		2021		2022	
firm	**CRS**	**VRS**	**CRS**	**VRS**	**CRS**	**VRS**	**CRS**	**VRS**	**CRS**	**VRS**
1	1.000	1.000	0.495	0.497	1.000	1.000	1.000	1.000	1.000	1.000
2	0.462	1.000	1.000	1.000	1.000	1.000	0.865	1.000	0.621	1.000
3	0.724	1.000	0.273	1.000	1.000	1.000	0.767	1.000	1.000	1.000
4	0.785	1.000	0.824	1.000	0.888	1.000	0.423	1.000	0.499	1.000
5	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
6	0.147	1.000	0.582	1.000	0.781	1.000	0.264	1.000	0.485	1.000
Mean	**0.686**	**1.000**	**0.696**	**0.916**	**0.945**	**1.000**	**0.720**	**1.000**	**0.767**	**1.000**

1=Umoja, 2=Wekeza Maisha,3=Watoto Fund,4=Jikimu Fund,5=Liquid fund,6=Bond Fun

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Relationship Between Board Characteristics and Level of Corporate Disclosure Among Listed Companies in Tanzania

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Abstract
This paper examined the relationship between board characteristics and Level of corporate Disclosure (LCD) among Tanzanian listed companies. Relationships between board size, board independence; directors' remuneration and LCD were examined. The 105 firm-year observations for 21 listed companies in Tanzania from 2016 to 2020 were used. The study used the agency theory. An explanatory research design was employed. Balanced panel data for analysis were gathered using a survey method. Data were analyzed using descriptive and inferential statistics. Regression analysis was used in testing hypotheses. Findings showed that board size, board independence, directors' remuneration were positively related to LCD. It was recommended that listed companies should appoint a higher proportion of independent directors to their boards. Independent directors can provide impartial oversight and are more likely to prioritize transparency and disclosure. Companies are adviced to optimize board size aim for a board size that is appropriate for their specific needs and industry. Moreover, listed companies should adopt transparent and fair director remuneration practices. This includes disclosing the structure of director compensation, including; salaries, bonuses, stock options, and other benefits. Policymakers and regulators should consider implementing or strengthening regulations related to board composition, independence, and disclosure practices.

Keywords: *Corporate disclosure, board characteristics, Board size, Directors Remuneration*

1.0 Introduction

Corporate disclosure plays a pivotal role in providing stakeholders with essential information about a company's financial performance, risk management practices, and governance structures. (Alnimer, 2019). Mansulu (2021) contended that financial scandals reported for example Enron Scandal

(2001); WorldCom Accounting Fraud (2002); Tyco International Scandal (2002); 1Malaysia Development Berhad (1MDB) Scandal (2015-2018); Danske Bank Money Laundering Scandal (2018) just to mention a few, have highlighted an international need to improve and reform corporate governance practices.

With increasing exposure to international capital markets, most listed firms in developed and developing countries have been obliged to satisfy the information demands of foreign investors and to provide these investors with more transparent, meaningful, reliable and relevant information in their annual reports (Gad, 2020). Improvement of the quality, extent and informativeness of both mandatory and voluntary disclosures in annual reports may assist the market mechanism to function efficiently and thereby facilitate the effective distribution of capital, assets and even human resources (Mansulu, 2021). However, despite International Financial Reporting Standards (IFRS) requirements, General Accounting and Auditing Guidelines (GAAP), and governmental regulations, full disclosure among listed firms is not guaranteed (Alnabsha et al., 2018). This is caused by the fact that corporate reporting regulation aims to provide outside investors with minimal information (Almaqtari *et al*., 2021).

The board of directors, as a key governing body, plays a crucial role in shaping corporate disclosure practices (Almaqtari *et al*., 2021). However, there is a lack of comprehensive research on how specific board characteristics relates to the level of corporate disclosure among listed companies in Tanzania. The rationale for selecting board size, board independence and director remuneration as independent variables is because according to researchers' best knowledge, they have not been researched by previous studies in Tanzania. Therefore, this study aims to bridge this gap by conducting an in-depth analysis of the relationship between board characteristics and corporate disclosure practices in the Tanzanian context.
In Tanzania, scanty studies have been conducted on the relationship between different board characteristics and level of corporate disclosure. The following questions were answered in order to fulfill the objective of this paper: Is there any relationship between board size and the level of corporate disclosure for listed companies in Tanzania? Is there any relationship between board independency and the level of corporate disclosure for listed companies in Tanzania? Is there any relationship between directors' remuneration and the level of corporate disclosure for listed companies in Tanzania?

1.1 Theory that guided this Study

One of the key theories that can provide a theoretical foundation for this study include agency theory. Agency theory posits that there is a principal-agent relationship between the shareholders (principals) and the management (agents) of a company. Agency theory then attempts to reduce information asymmetries by incorporating monitors and establishing mechanisms that can defend shareholders from conflicts of interest on the part of management (Mansulu, 2021).The theory suggests that the effectiveness of the board in monitoring and controlling management behavior influences the level of corporate disclosure. A strong board with appropriate characteristics may lead to better oversight and, consequently, more transparent corporate disclosure practices. Three variables for this study emanate from agency theory. These are board size, board Independence and the directors remuneration. By studying these variables in the context of agency theory, researchers can gain insights into how board characteristics affect the LCD for listed companies.

1.2 Motivation and Contribution of the Study

The study is unique as it examines for the first time the impact of board characteristics in corporate disclosure in an economy being transformed from the least developing country to developing country. Moreover, the study is unique in that it describes the board characteristics in view of the wide range of shareholdings. Furthermore, this study is considered important because the knowledge about internal components of the company that influence corporate disclosure helps the formation of regulations and policies, so that generalization to all companies of all sizes, age and other variations is avoided. By studying the relationship between board characteristics and level of corporate disclosure, we can prove the agency theory which argues that there is a positive relationship between board size, board independence and director remuneration and LCD, and this will be proved in developing economy, specifically Tanzania.

1.3 Empirical Literature and Hypothesis Development

In this paper, the research hypotheses were formulated based on a critical review of both theoretical and empirical literature.

Board Size and Level of Corporate Disclosure

Board size refers to the number of directors serving on a company's board (El-Deeb *et al*. (2021). It represents the number of executive and non-executive members on the board of governance of a company (Elfeky, 2017). Board size may influence the extent of corporate disclosure and the decision-

making process of a business entity (Javaid*et al.,* 2016). The agency theory postulates that larger boards can play a vital role in monitoring management and having long-run sustainable decisions (Elfeky, 2017; Fama& Jensen, 1983). Moreover, a larger board is less likely to be controlled by the management (Jensen &Meckling, 1976).

Studies exploring the relationship between board size and corporate disclosure have produced mixed findings. Some studies have suggested a positive association, indicating that larger boards tend to lead to higher levels of corporate disclosure (Albasam *et al*., 2018; Masum& Khan, 2019; Omer *et al*., 2020).This is because larger boards may bring diverse perspectives and expertise, leading to more comprehensive and transparent reporting. A larger board could also imply greater accountability and oversight, which may incentivize higher levels of corporate disclosure. On the other hand; other studies have found out a negative association between board size and corporate disclosure (Ntim&Ahmed., 2019; Ullah *et al.*, 2018; Orazalin, 2019). These studies have argued that larger boards can suffer from coordination problems, communication problem, monitoring problems, information overload and excessive internal conflicts, which may hinder decision-making processes and reduce the level of corporate disclosure. Furthermore, some researchers have found no relationship between board size and disclosure level (e.g., Ntim*et al.,* 2017). According to agency theory larger boards are associated with greater diversity in terms of expertise and experience(Katmon&Farooque, 2020). Therefore, given the fact that the current study aimed at contributing to the agency theory (AT), which revealed a positive relationship between board size and LCD thus, the following hypothesis was formulated:
H_1: There is a positive relationship between the board size and the LCD among the listed companies in Tanzania.

Board Independency and Level of Corporate Disclosure
This variable measures the proportion of independent directors on the board who are not affiliated with the company's management. Board with a high proportion of nonexecutive directors is more likely to be more successful in directing and controlling management (Cheng & Courtenay, 2006). Although outsiders and insiders have their merits and demerits, empirical evidence provided by past research have revealed that outsider-dominated boards were more favorable to meet the varied interests of stakeholders (Charumathi & Ramesh, 2015). Further, they can enhance the independence and objectivity dimensions in boardroom's decision making (Fama& Jensen, 1983) and improve corporate reporting (Fernandez *et al.,* 2018). From a theoretical

framework, nonexecutive directors provide corporate disclosure to mitigate information asymmetry and litigation risks (Lim *et al*.,2007). Independent directors have closer relations with various group of stakeholders, know their expectations better, and are more likely to satisfy their interests (Masum& Khan, 2019). Moreover, independent directors do not have any relation with the firm and, thus, they will incline to engage in more corporate governance-related activities (Alnabsha *et al*., 2018).The level of independence within the board of directors can influence disclosure practices(Al-Maskati&Hamdan, 2017). A higher proportion of independent directors, who are not directly affiliated with management, can enhance the board's oversight function and reduce the potential influence of management on disclosure decisions (Lee &Luu, 2017).

Independent directors are more likely to advocate for transparent and accurate disclosure. Researchers have indicated conflicting findings on the relationship between the independence of directors in the board and LCD. Ntim*et al.* (2017); Yasser& Al-Mam (2020) reported a negative relationship between the board independency and LCD, while the positive relationship between them was indicated by Hashed &Almaqtari (2021). However, El-Deeb *et al*. (2021); Ke*et al.* (2020) found no association between the independence of directors in the board and LCD. Given the fact that previous researchers have tested the direct relationship between the board independency and LCD and there were mixed results and focused on the idea that the relationship was indicated to be positive in the agency theory (AT) which is supposed to be tested, thus the current researcher proposed the following hypothesis two:
H_2: There is a positive relationship between board independence and the LCD among the listed companies in Tanzania.

Directors' Remuneration and Level of Corporate Disclosure
Director's remuneration refers to the compensation and benefits that directors of a corporation receive for their services and responsibilities (Katmon&Farooque, 2020). Corporate disclosure related to director's remuneration is an important aspect of transparency and governance in publicly traded companies. It involves the disclosure of detailed information about how much directors are paid and the various components of their compensation packages (Ntim& Ahmed, 2019). In most countries, publicly traded companies are required by law to disclose detailed information about director's remuneration in their annual reports and financial statements. These disclosures are typically included in the company's proxy statement or annual report to shareholders (Orazalin, 2019).

In recent years, directors' remuneration has become a controversial topic in corporate governance due to the tension between shareholders demanding to understand and to be able to rationalize their directors remuneration levels and methods and the directors desire for privacy in their financial affairs (Alqmatar,2021).Both executive and non-executive directors are required to be compensated for services they provide to the company.

These compensations/remunerations can be in terms of salaries, fees, or use of the company's property as per the agreement (Lokman*et al*., 2014). Several authors have indicated that directors' remuneration is positively related to the level of corporate disclosure (LCD) (Alnabsha *et al*., 2018; Masum& Khan, 2019; Sarhan&Ntim, 2019). Other researchers have revealed that directors' remuneration has a negative relationship with the level of corporate disclosure (Alyousef&Alsugher, 2021; Khlif *et al*., 2017). Therefore, there is a disagreement among the researchers based on the mixed results on the relationship between directors' remuneration and LCD. The current study aimed at contributing to the agency theory (AT) which revealed a positive relationship between directors' remuneration and LCD thus, the following hypothesis was formulated:
H_3: There is a positive relationship between the directors' remuneration and the LCD among the listed companies in Tanzania.

1.4 Conceptual Framework

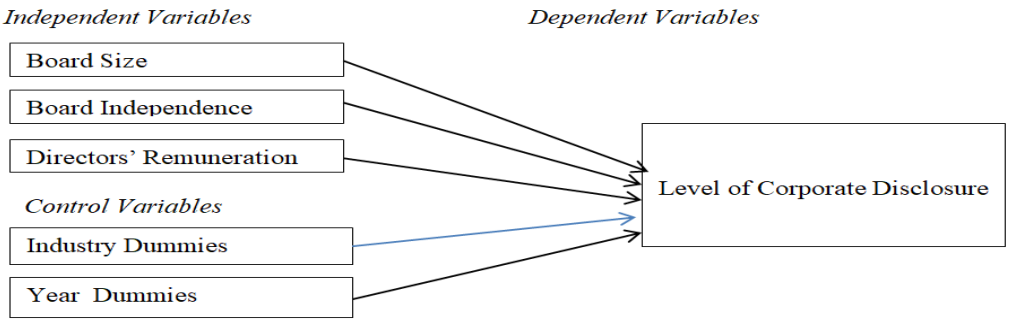

Figure 1: **Conceptual Framework**
Source: Developed by authors (2023) using empirical and theoretical review.

2.0 Methodology

This study used a post-positivist philosophy. Saunders *et al.* (2019) posits that post-positivist philosophy is based on the belief that reality is independent of people's perceptions, but it can be studied scientifically. Since this study uses a reasonable inference about a relationship between board

characteristics and the level of corporate disclosure, post-positivist philosophy suits the study because it combines empirical observations with logical reasoning in investigating causal relationship between board size, board independence, director remuneration and the LCD. Moreover, this study used explanatory research design because explanatory research design determines cause-and-effect relationships among variables and testing hypotheses to determine the worth of theories and the ability of particular theories to make predictions about social developments. Moreover, explanatory research design uses quantitative research procedures and seeks answers to how or why questions. Therefore, testable and measurable research hypotheses can be answered with a yes or no or a precise answer to how many (Zikmund *et al*., 2013).This study uses deductive approach. The deductive approach in this study took the form of the research hypotheses in order to support or not support a theory. Additionally, this study used the survey strategy because it is associated with instruments that need numerical inputs of the parameters related to the subject of investigation. It is also considered an appropriate strategy because it establishes a causal relationship between variables (Saunders *et al.*, 2019).

The sampling frame for the study was twenty seven (27) local and cross-listed companies: twenty two (22) local companies and five (5) cross-listed companies at DSE.As of June 30,2021,DSE had a total of 27 listed companies in both the main investment market segment (MIMS) and the enterprise growth market (EGM) (DSE,2021).The MIMS had twenty two (22) listed companies, while the EGM had five (5) listed companies, comprising twenty-two (22) local companies from Tanzania and five (5) cross-listed companies (mainly from Kenya).Census method was used to select companies for sample. The following three criteria were used for selecting the sampled companies: First, the company had its stock listed in DSE before 2016. Secondly, the company had the audited annual report for the years 2016 - 2020 inclusively accessible either through the company website or on the DSE website. Finally, the company retained its listing status for the selected period (2016 -2020). Due to the unavailability of annual reports for 2016 and 2020, six companies were excluded. After the exclusion, there were 105 observations from 21 companies in the sample (n = 105). The study spanned the years 2016 through 2020.

2.1 Dependent Variable

The study's dependent variable was the level of corporate disclosure (LCD). This is the index measuring the level of corporate disclosure which is a combination index measuring the level of voluntary disclosure and level of

mandatory disclosure for each company. This measurement was created using the unweighted approach. This index included the 44 items that measured voluntary disclosure and 92 items measuring mandatory disclosure then combined to make a total of 136 items measuring overall corporate disclosure (LCD). Each company was examined, and if the disclosure criteria were met, the index item received a score of 1, otherwise a score of 0.

2.2 Independent Variables

Independent variables in this study were board size (BSize); board independency (BIN) and directors' remunerations (DirRem). Hypothesis H_1-H_3 concerning these independent variables was tested.

2.3 Control variables

According to earlier studies, LCD may be impacted by other company characteristics. In order to control the relationship between the dependent and independent variables, certain control variables were used in this study, industrial dummies and year dummies (Al-Bassam *et al*., 2018; Laksmana, 2008) Measurement of Variables is as shown in Table 2.

Table 2: Measurement of Variables

Variable Investigated	**Notion in the Model**	**Measurement of variable**	**Other studies which has used the variable**
Level of Corporate Disclosure	LCD	LCD is the Corporate Governance disclosure index consisting of 136 disclosure items (44 voluntary disclosure items and 92 mandatory disclosure items) that takes the value of 1 if each item is disclosed and 0 otherwise; scaled to value between 0 and 100%.The complete corporate disclosure index was then computed for each sample firm as a ratio of the entire disclosure score to the maximum possible disclosure by the firm.	Alnabsha*et al.* (2018); Ntim and Ahmed (2019).
B Main independent variables – Board Characteristics			
Board Size	Bsize	The total number of directors on the board	Ntim*et al.*(2017)
Board Independence	BIN	The number of independent non-executive directors / total number of directors on the board	Ntim*et al.* (2017);Soobaroyen*e t al.*(2017)
Director Remuneration	DirRem	The total amount of compensation given to the board of directors for each company.	Alnabsha*et al.* (2018)
Industrial Dummies	Industrial Dummies		Laksmana, (2008),
Year dummies	Year dummies		Cho *et al.*(2020)

Source: Compiled by the Authors (2023)

2.4 Source and Data Collection

This study used secondary data which included financial and non-financial information from the annual reports of listed companies in Tanzania. Secondary data was gathered from annual reports from listed companies' database, and comprised: income statements, statements of financial position, statements of change in equity and statements of cash flow. Similarly, board and management reports on the companies' activities and the notes to these financial statements, aimed at giving qualitative information about the companies' nature, operations, and disclosure practices which measured the level of corporate disclosure (LCD). Similar to past studies Al-Maskati&Hamdan (2017); Habbash*et al*.(2016), annual report data were used to gather data regarding LCD. As in earlier studies, LCD data were gathered using a balanced panel data analysis of annual reports.

2.5 Estimation Model

The following Ordinary Least Square (OLS) model was employed to test the hypotheses of the current study:

$$LCD_{it} = \beta_0 + \beta_1 Size_{it} + \beta_2 BIN_{it} + \beta_3 Dir\,\mathrm{Re}m_{it} + \beta_4\ Industrial\ dummy + \beta_5\ Year\ dummy + \varepsilon_{it}$$

2.6 Data Analysis

STATA software version 17 was used to analyze the data gathered from the annual reports of the companies. Based on the output of the statistical tool, the data were then analyzed. It was compared to earlier research from Tanzania and other countries. Similar to prior studies (Cho *et al*., 2020; Eng&Mak, 2003; Laksmana, 2008), the study produced descriptive statistics measuring mean, standard deviation, maximum and minimum values, skewness and kurtosis. Moreover, the study employed Pearson's correlation coefficients to investigate the correlation between study variables. It also used Ordinary Least Squares (OLS) regression to examine the relationship between the explanatory variables and LCD similar to other studies (Alnabsha*et al*, 2018; Alturki, 2014).

2.7 Validity and Reliability of the Research Tools

The reliability statistics test of Cronbach Alpha (Cronbach, 1951) was tested for eleven disclosure items and confirmed to be 0.785 through 0.810 for the level of mandatory disclosure (LMD) and level of voluntary disclosure (LVD) which meets Pallant's (2020) criteria for variable reliability (Table 3 and 4). A coefficient value of $\alpha = .7$ or higher is widely considered reliable and acceptable (Pallant, 2020).

Table 3: Cronbach Alpha Test for Level of Mandatory Disclosure (LMD)

Category	Number of Items	Cronbach's Alpha Coefficient
General Company information	16	0.809
Financial Transparency Information	22	0.812
Ownership Information	15	0.785
Board and Management Structures	33	0.795
Auditing and Control Mechanisms	6	0.799

Source: Data analysis (2023)

Table 4: Cronbach's Alpha Test for Level of Voluntary Disclosure (LVD)

Category	Number of Items	Cronbach's Alpha Coefficient
General Company Information	5	0.802
Firm Segment Performance Information	16	0.801
Financial Information	7	0.787
Employee Information	6	0.795
Corporate Social Responsibility Information	7	0.707
Corporate Governance Ethics Information	3	0.762

Source: Data Analysis (2023)

3.0 RESULTS

3.1 Descriptive Analysis Results

In this study the results shown in Table 5 indicated that the mean LCD of Tanzania firms on average was 63 percent whereas its minimum value was 55 per cent and maximum was 76 per cent showing optimum spread with standard deviation of 6 per cent. Implidly the mean can move away 0.062 in both directions. In terms of board characteristics descriptive statistics, Table 5 reported that, board size of listed companies in Tanzania (BSize) ranged from 3 members to 17 members with an average of 9 members. This showed that listed companies domiciled in Tanzania had relatively modest board sizes. This aligned with previous studies (Desta *et al.(*2019); Fulgence, 2021). Furthermore, results showed that 82 percent of boards of Tanzanian listed companies were comprised of more independent directors than non-independent directors with a minimum and maximum levels of 33 percent and 95 percent respectively, and a standard deviation of 14 percent suggesting the likelihood of effective oversight by board members. This indicated that due to reform and emphasis on compliance and disclosure requirement, many listed companies in Tanzania met the minimum recommended board independence rate of one third (33.33 percent) (CMSA, 2002).Moreover, the results evident board remuneration with a minimum of TZS.800 million, a maximum of TZS.456billions and an average of TZS.105

billion indicating that most listed companies remunerated highly their board of directors.

Table 5: Summary of Descriptive Statistics

	N	Mean	SD	Min	Max	Skewness	Kurtosis
LCD	105	0.6267	0.0626	0.5536	0.7597	0.1609	1.6034
Bsize	105	9	3.0944	3	17	0.7526	3.2423
BIN	105	0.8205	0.1458	0.3333	0.9453	1.8288	5.3127
DirRem	105	1.05E+09	6.04E+08	8000000	4.56E+09	2.2178	7.0437

Source: Data Analysis (2023)

3.2 Correlation Analysis Results

The Pearson correlation presents the direction and strength of correlations among the variables and helps identify any multicollinearity problem. Table 6 presents the correlation coefficient and p-value for measuring LCD through index. According to Pallant, (2011) correlation analysis checked the association among multiple variables. As expected, the LCD was positively associated with board characteristics as represented in Table 6. LCD is significantly and positively associated with board size with coefficient 0.4047 ($p< 0.01$), LCD is significantly and positively associated with board independence with coefficient 0.4923($p< 0.05$), and LCD is positively and significantly associated with director remuneration with coefficient 0.3519 ($p< 0.01$).The positive correlation among these variables showed that higher LCD was associated with these board characteristics. This was consistent with existing studies (Deb &Dube,2017; Grassa, 2018).

Table 6: Correlation Analysis Results

Variable	LCD	Bsize	BIN	DirRem
LCD	1000			
BSize	0.4047***	1000		
BIN	0.4923**	0.0817	1000	
DirRem	0.3519***	0.4699***	0.018	1000

*Note:*p<0.1, **p<0.05 ***p<0.01 (indicating significance)*
Source: Data Analysis (2023)

3.3 Testing for Multiple Regression Assumptions

3.3.1 Testing for Normality

In this study, the skewness and kurtosis of the data were measured to determine whether the data were normal. Table 5 showed that the values for skewness ranged from 0.1609 to 2.2178 and those for kurtosis from 1.6034 to 7.0437. Based on Kline's (2015) guidelines of skewness < |3.00| and kurtosis

< |10.00|. The findings showed that skewness and kurtosis were centered within the suggested critical values, Such results implied that data were normally distributed, and that the multiple regression premise with regard to normality was properly met. Linearity assumption was also checked and p-normal graph showed a strong positive linear relationship. Data showed a closely clustered around the upward-sloping line, indicating a strong positive linear relationship between independent and dependent variables meaning that there was no clear departure from linearity (See Figure 2).

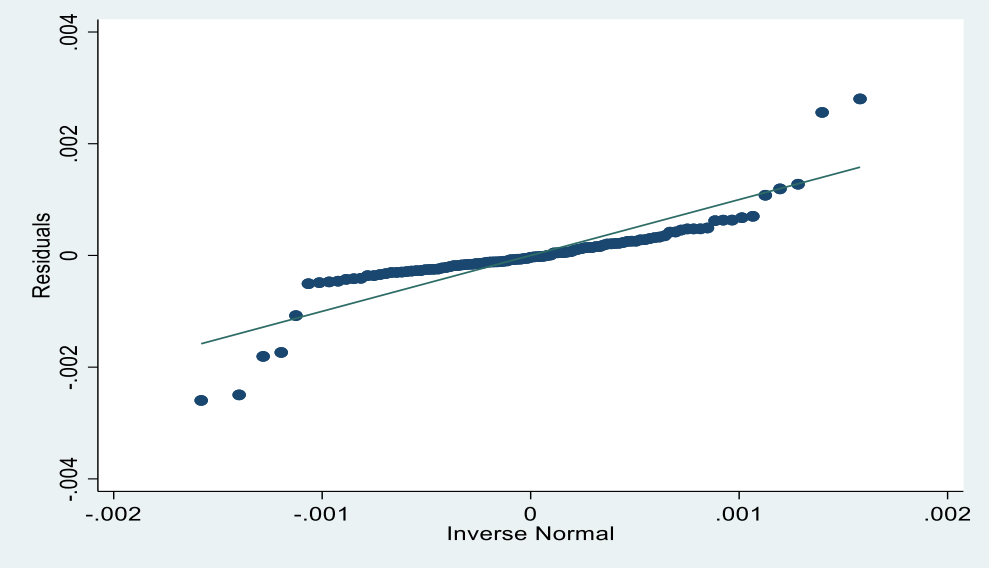

Figure 2: Test of Linearity using (p-normal graph)
Source: Data Analysis (2023)

Furthermore, multicollinearity was tested using Pearson's correlation coefficient. According to Hair *et al* (2021) the Pearson's between each pair of independent variables should not exceed 0.90. In this study, no high correlation among the independent variables was found because the highest coefficient was 0.49 which is below the threshold of 0.9 as shown in Table 6. Additionally, in order to be more precise about the issue of multicollinearity of the variables, the authors decided to examine the variables using VIF.The VIF was employed to examine the presence of multicollinearity whereby Hair *et al.*(2021) suggested that the threshold for value for VIF should be less than 5.All VIF values in this study were well below the commonly used threshold of 5 as shown in Table 6 indicating that each predictor's variance was mostly independent of the other predictors evidencing the absence of severe multicollinearity cases.

Table 7: VIF analysis To Check Multicollinearity

Variable	Tolerance (1/VIF)	VIF
LCD	0.52	1.96
Bsize	0.58	1.73
BIN	0.64	1.56
DirRem	0.68	1.43

Source: Data Analysis (2023)

3.3.2 Testing for Homoscedasticity

According to Kline (2015), homoscedasticity is a multiple regression statistical test that assumes residuals are normally distributed and have uniform variance across all levels of predictors. If this assumption is violated, it might lead to significant non-normality, affect validity, or lead to greater measurement error (Keith, 2019). The authors used a scatter plot of standardized residuals against the predicted value to test for homoscedasticity. The result obtained in Figure 3 showed no serious heteroscedasticity issues. This is because only two points fall outside the threshold range of ±3 (see Keith, 2019); thus, the assumption of homoscedasticity was archived.

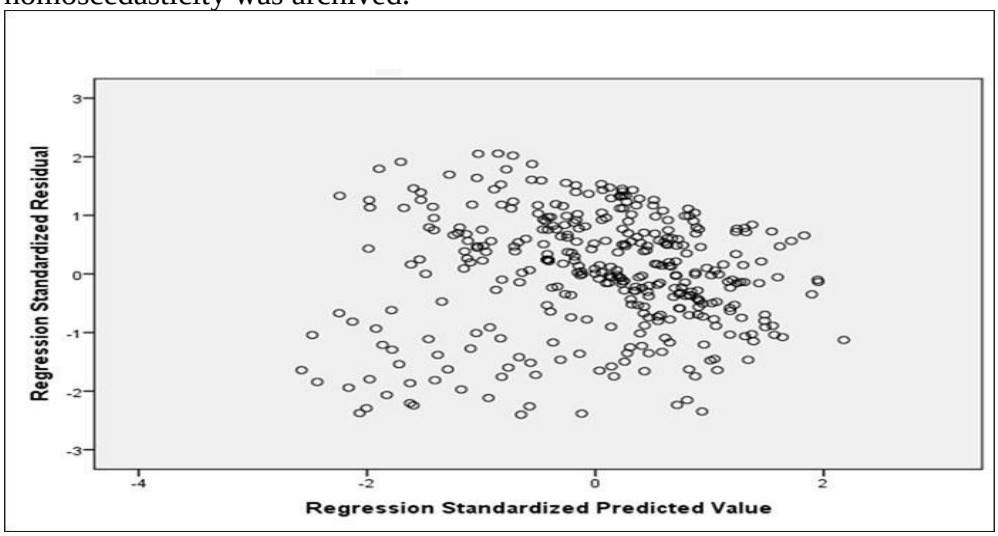

Figure 3: Results of Test for Homoscedasticity
Source: Data Analysis (2023)

3.4 Selecting Appropriate Model

The result indicated that p-value was 0.0265 for model 1 and 0.0325 for model 2, which is less than 0.05, as shown in Table 8. Then we reject the null hypothesis that random effects were preferred over fixed effects which was preferred (See Table 8).

Table 8: Hausman Test

	Model 1	**Model 2**
Chi^2	10	11.34
Prob> Chi^2	0.0265	0.0325

*Note: *p<0.1, **p<0.05 ***p<0.01 (indicating significance)*
Source: Data analysis (2023)

3.5 Multiple Regression Analysis Results and Discussion

Multiple regression analysis was used to examine the relationship between board characteristics and LCD for Tanzanian listed companies. Table 10 shows the model's regression parameters. Hypothesis one (H_1) predicts a positive relationship between board size and LCD in Tanzania. The coefficient on BSize presented in Table 10 was positive and statistically significant i.e. β = 0.01005 (t-statistic = 2.03879, p< 0.01). As predicted, and by using agency theory postulation, these findings suggest that the board size in Tanzania support the higher level of corporate disclosure. These findings were in line with the findings of (Albassam*et al*.,2018; Masum& Khan, 2019 andSamaha*et al.*, 2015). Also, the findings contradicted the results of different scholars who showed that board size was negatively related to LCD (Khlif*et al.*, 2017; Ntim& Ahmed,2019; Ullah et al., 2018). These findings may be explained by the notion that firms with a big board size may experience higher pressure for transparency and accountability (Samaha*et al.*, 2015). These findings also proved the argument of the agency theory which claims a positive relationship between board size and the level of corporate disclosure.

Secondly, the study hypothesized that board independence relates positively to LCD. As predicted, the coefficient on BIN presented in Table 10 bears a positive sign. The coefficient on BIN is β = 0.30189 (t-statistics =0.03930, p< 0.01).The positive relationship between BIN and the LCD provides empirical support for H_2. These findings are in line with the findings of Albassam*et al*., (2018); Deb &Dube, 2017; Gaur *et al*. (2015) and Ntim*et al.* (2017) who suggested that corporations with high BIN make high disclosure. Also, the findings contradicted the results of different scholars who asserted that BIN is negatively related to LCD (Khlif*et al.*, 2017 and Yasser *et al*., 2020).This contradiction is caused by variation in Corporate environments across industries, regions, and time periods. Moreover, differences in the economic, regulatory, and cultural contexts between these studies and that of the author influence the relationship between board independence and corporate disclosure level. These findings support the argument of the agency theory that postulates that board independence is positively related to LCD.

Thirdly, the study hypothesized that director remuneration relates positively to LCD. As shown in Table 10, the coefficient β = 0.01200 (t-statistic = 3.02936, p< 0.01) was positive and statistically significant. The positive relationship between DirRem and the LCD provides empirical support for H_3.the positive relationship between DirRem and LCD was in line with the evidence of previous authors (Alnabsha *et al*., 2018; Masum& Khan, 2019; Sarhan&Ntim, 2019) and is contrary to studies of Alyousef&Alsugher (2021); Khlif *et al*.(2017). Hence this study contributed to the agency theory which argues that there was a positive relationship between directors' remuneration and LCD.

The following is the resulted model after the analysis:

$$LCDit = 0.88 + 0.01*(BSize)it + 0.30*(BIN)it + 0.01*(Dir\,\mathrm{Re}\,m)it + \varepsilon it$$

The equation suggests how changes in the independent variables influence the value of "LCD." The estimated value of "LCD" when all the independent variables (BSize, BIN andDirRem) are zero is 0.88. Furthermore, the results showed that for a one-unit increase in "BSize," the predicted value of "LCD" increases by 1 per cent units, assuming all other variables remain constant. Additionally, the findings showed that a one-unit increase in "BIN" corresponds to a predicted increase of 30 per cent units in "LCD," while keeping other variables constant. Regarding DirRem, findings indicated that an increase of one unit in "DirRem" is associated with an increase of 1 per cent units in the predicted value of "LCD," assuming other variables were held constant. R^2 showed the proportion of change in LCD due to variation in independent variables of the study. The value of R^2 is (78%) which designates that 78 per cent variation in LCD was explained by BSize, BIN and DirRem and remaining 22 per cent was explained by other factors other than the ones analyzed. F-Statistic showed the overall significance of the variables and fitness of the model. The p-value of the test is (0.0000) which means that the model was overall fit.

Table 9: Multiple Regression Results

	Model 1 Pooled OLS		**Model 2 Fixed Effects**		**Model 3 GMM**	
Variable	**Coefficients**	**T-value**	**Coefficients**	**T-value**	**Coefficients**	**T-value**
Board Characteristics						
Bsize	0.01005***	4.242	0.01651***	2.63426	0.0125***	4.1201
BIN	0.30189***	3.024	0.20234	5.23142	0.3123***	3.1334
DirRem	0.01200***	2.000	0.01045	2.1256	0.0169***	2.2167
Obs	105		105		105	
Year Dummy	Yes		Yes		Yes	
Industrial Dummy	Yes		Yes		Yes	
Firm fixed effects	No		Yes			
Constant	0.879***	5.091	0.899***	5.076	0.816***	0.112
F-Value	32.43***	0.000	16.58*	0.000	24.65***	0.000
Ch^2	23.37		23.00		24.89	
R^2	0.778		0.781		0.789	
Adj.R^2	0.777		0.779		0.781	

*Note:*p<0.1, **p<0.05 ***p<0.01 (indicating significance)*
Source: Data Analysis (2023)

3.6 Robustness Analysis and Endogeneity Test

According to Roberts & Whited (2013) the most remarkable pitfalls encountering empirical studies in corporate finance are driven by endogeneity. The ambiguous findings in a prior study on the relationship between ownership structure and corporate disclosure are a consequence of the endogeneity issue. Hence, for robust analysis and comparison with GMM estimates presented in the following subsection, it reported the findings from pooled OLS and FE models in Table 10. Model 1 reports pooled OLS findings. The adjusted coefficient of determination (adjusted R^2) showed that the explanatory variables explained almost 77% of the variation in the dependent variable "LCD." Moving to the P-value, our model revealed congruous findings. The overall P-value of F test was statistically significant (32.43, P < .01). Therefore, one could draw an indisputable conclusion that the empirical model fittedthe data better than the intercept-only model. The OLS results also indicated that there was a statistically significant impact of board characteristics dimensions (BSize, BIN and DirRem) on LCD.

Moving to Model 2, the FE results revealed that the statistical significance of the estimated coefficient of (BSize), (BIN) and (DirRem) disappeared when one take into account the unobserved firm FE. Hence, this denoted that the findings yielded from pooled OLS estimator were likely to be affected by omitted firm-level attributes. In this context, the results, therefore, were

consistent with a number of prior researchers (Abang' &Wang'ombe, 2020; Alquatermeen*et al.*,2020). Although the results mentioned above were in alignment with a stream of previous studies, thefindings were expected to be sorely distorted by other sources of endogeneity, which had not been taken into account by OLS/FE models such as; simultaneity and dynamic endogeneity. Hence, the two-steps system GMM approach developed by Arellano and Bond (1991) and Blundell and Bond (1998), for dealing with the endogeneity problem was employed, which allowed us to control for the different sources of endogeneity (Wintoki*et al*., 2012). After running GMM, the results revealed that the effects of all variables remained unchanged. More interestingly, the findings in all models were similar to somewhat.

4.0 Conclusion

The results suggested that the board characteristics were significant in explaining the level of corporate disclosure in annual reports. First, the results showed that the disclosure level varied substantially among the Tanzanian listed firms, and the disclosure level was moderate because it was above average. The study concluded that board size, board independence and director remuneration were positively related to the overall disclosure level. The positive relationship between board size and corporate disclosure suggested that as the number of directors on a company's board increases, the level of corporate disclosure also increases. This implied that larger boards might be associated with more transparent and informative disclosure practices. Moreover, independent directors were less likely to have conflicts of interest and may be more inclined to prioritize transparency and disclosure for the benefit of shareholders and stakeholders. Again, this is a correlation, and further research would be needed to establish causation. Moreover, the positive relationship between director remuneration and corporate disclosure suggested that companies that pay their directors more tend to disclose more information. One possible explanation for this relationship is that companies paying higher director remuneration may be more sophisticated or larger firms that naturally have more extensive disclosure practices. However, additional research is needed to explore the underlying reasons for this relationship. These findings provided valuable insights into the factors that may influence corporate disclosure practices in the Tanzanian context.

5.0 Implication of the Findings

Listed companies should consider carefully structuring their boards to include a balanced mix of executive and independent directors. Independent directors should be actively engaged in decision-making and provide oversight to ensure corporate disclosure practices are robust and transparent.

Listed companies should review and assess their director compensation structures to ensure they are competitive, transparent, and aligned with the company's long-term strategy. Disclosure of director compensation should be clear and detailed in annual reports and proxy statements, including the rationale behind compensation decisions. Regulators and policymakers should consider implementing or strengthening regulations related to corporate governance and disclosure practices. Listed companies should ensure compliance with all relevant regulations and disclosure requirements.

6.0 Recommendations

Based on the positive relationships between board size, board independence, and director remuneration with the LCD in listed companies it is that listed companies are encouraged to appoint a higher proportion of independent directors to their boards. Independent directors can provide impartial oversight and are more likely to prioritize transparency and disclosure. It's essential for companies to establish clear criteria for board independence and regularly evaluate the independence of their directors. Secondly optimization of board size: While a larger board size is correlated with higher corporate disclosure, it's important for companies to strike a balance. They should aim for a board size that is appropriate for their specific needs and industry. Thirdly, companies should adopt transparent and fair director remuneration practices. This includes disclosing the structure of director compensation, including salaries, bonuses, stock options, and other benefits. Policymakers and regulators should consider implementing or strengthening regulations related to board composition, independence, and disclosure practices. Clear guidelines and reporting requirements can encourage companies to adopt better governance practices. Companies should conduct benchmarking exercises to compare their disclosure practices with industry

The study had a number of limitations. First, the LCD data were collected from annual reports only, and other sources like companies' websites and press releases were not taken into account. This represents an opportunity for future studies. Secondly, this study covered only listed companies at DSE in Tanzania. Other non-listed companies were not accounted for in the sample. Moreover, the study covered companies listed in Tanzania only. Future studies can examine the same variables in other countries.

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Relationship Between Ownership Structures and Level of Corporate Disclosure Among Listed Companies in Tanzania

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Abstract
This paper examined the relationship between ownership structures and the level of corporate disclosure (LCD) among Tanzanian listed companies. Relationships between director, government, institutional and foreign ownership and LCD were examined. The 105 firm-year observations for 21 listed companies were examined from 2016 to 2020. The agency theory was used. An explanatory research design was employed. Data were gathered through balanced panel data using a survey method. Descriptive and inferential analysis using Ordinary Least Square was used. Descriptive and inferential analysis using Ordinary Least Square was used. The study found that director, government, and foreign ownership positively affect the LCD, while institutional ownership negatively affects it. This implied that in Tanzania, ownership structures were very important in determining LCD.The study concluded that Tanzania's LCD is moderate, and companies should disclose director ownership, establish independent oversight mechanisms, collaborate with foreign investors, and engage with institutional investors to align corporate governance practices with international standards.

Keywords: *Corporate disclosure, ownership structures, listed companies, Tanzania*

1.0 Introduction

Corporate disclosure is an essential aspect of financial transparency, enabling investors, stakeholders, and regulators to make informed decisions and assess the financial health of listed companies (Ahmed, 2021). Financial scandals in recent years have prompted examinations of the potential relationship between a company's governance and its disclosure practices (Cormier *et al.*, 2010). Moreover, recent publicity around corporate collapses that resulted from weak corporate governance (CG) systems has highlighted an international need to improve and reform CG practices (Alyousef & Alsughayer, 2021). The demand for disclosing corporate information becomes pivotal due to agency conflicts between insiders of the business and other core stakeholders (Mwenda,2022).

Corporate information involving financial and non-financial information is very useful for investors because it diminishes fraud and earnings manipulation (Hashed & Almaqtari, 2021, Ndiege and Pastory,2021). Improvement of the quality, extent and informativeness of both mandatory and voluntary disclosures in annual reports may assist the market mechanism to function efficiently and thereby facilitate the effective distribution of capital, assets and even human resources (Mansulu, 2021). Despite IFRS requirements, GAAP guidelines, and governmental regulations, full disclosure among listed firms is not guaranteed due to corporate reporting regulations aiming for minimal information (Almaqtari et al., 2021).

2.0 Theoretical Literature Review

The theory used in this study is agency theory.Agency theory was proponded by Smith (1732) and developed by Jensen and Meckling in 1976.The theory states that, "because of the separation between ownership and control, problems may arise in the relationship between a principal (shareholder) and an agent (corporate manager)".It argues the information asymmetry is the source of conflict between principals and agents.Moreover,this theory assumes that information asymmetries can be reduced by incorporating monitors (Hashed & Almaqtari, 2021) and establishing mechanisms that can mitigate conflict of interest between shareholders and management (Mwenda *et al*.(2021)). Agency theory provides the best explanation for Corporate Governance (CG) roles concerning ownership and control through the use of internal CG mechanisms. In aligning the agent's and principals' interests and ensuring that the corporations are run to the interests of the principals, the agency theory suggests that director ownership, government ownership, institutional ownership, foreign ownership should be in place as control mechanisms (Mwenda and Ibrahim,2022).

Some studies have explored the relationship between ownership structures and LCD in other countries using agency theory for example Ahmed (2021); Alyousef & Alsughayer (2021); Hashed & Almaqtari (2021) but most of these studies were conducted in developed countries, but the unique business landscape and cultural factors in Tanzania may lead to different outcomes.Additionally,some studies in Tanzania have tried to examine issues of corporate disclosure (see for example Mwenda and Ibrahim (2022) who examined theeffects of Corporate Governance Disclosure on Profitability of Public Listed Firms in Tanzania.Moreover,Mwenda *et al.* (2021) did a study titled "Non-Financial Information Disclosure and Performance of Firms Listed at Dar es Salaam Stock Exchange, Tanzania".The study focued on

corporate Governance Information (CGI) and Performance , but the current study focues on ownership structures and LCD, hence a research gap filled.

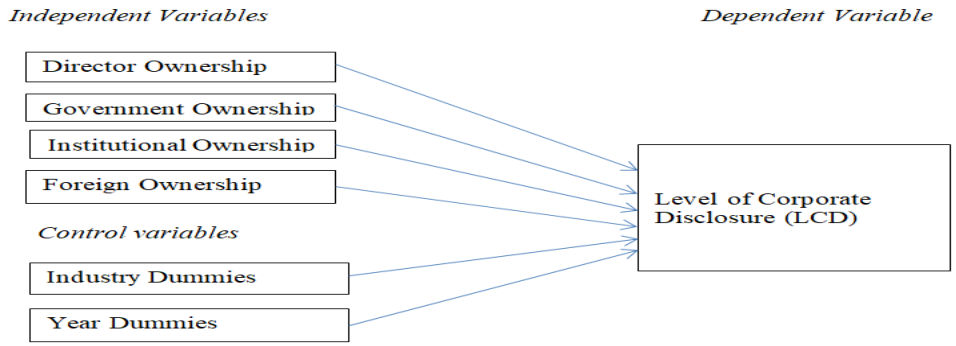
Significance of this Study

Understanding the relationships between ownership structures and LCD in Tanzania is crucial for several reasons: First, investors require accurate and comprehensive information to make informed investment decisions.Second: The findings can inform policymakers and regulators about the the relationship between the ownership structures and LCD and identify potential areas for improvement the ownership of companies.Third: By studying the relationship between ownership structures and the LCD in Tanzania, the research can provide valuable insights for comparative studies across different countries and their unique economic and regulatory contexts. Hence, the findings are expected to have implications for investors, regulators, and policymakers, promoting greater transparency and accountability in the Tanzanian capital markets.

Empirical Literature and Hypothesis Development

In this paper, the research hypotheses were formulated based on a critical review of both theoretical and empirical literature. The hypotheses formulation was considered after the conceptual framework was drawn, which shows the expected relationships between independent variables, controlling variables and dependent variables.

Conceptual Framework



Source: *Developed by authors (2023) using empirical and theoretical review.*
Figure 1: *Conceptual Framework*

Director Ownership and Level of Corporate Disclosure

Director ownership refers to the ownership of a company's shares by its directors, including executive directors and non-executive directors (Samaha

et al., 2015). The effects of director ownership on corporate disclosure varies depending on the extent of ownership (Masum & Khan, 2019). Some researchers have indicated the positive relationship between director ownership and the level of corporate disclosure (LCD) (Alnabsha *et al.*, 2018; Masum & Khan, 2019; Samaha *et al*., 2015; Sarhan & Ntim, 2019). Other researchers showed a negative relationship between director ownership and LCD (Albitar, 2015; Alyousef &Alsugher, 2021; Khlif *et al*., 2017). Therefore, there is a disagreement among the researchers based on the mixed results on the relationship between director ownership and LCD. Given the fact that the current study aimed at contributing to the agency theory (AT) which revealed a positive relationship between director ownership and LCD, the following hypothesis was formulated:
H1: There is a positive relationship between director ownership and the level of corporate disclosure among listed companies in Tanzania.

Government Ownership and Level of Corporate Disclosure
Researchers have shown mixed results on the relationship between government ownership and LCD. From the empirical discussion, Al-Bassam *et al.* (2018); Deb & Dube (2017); Gaur *et al.*(2015); Ntim *et al*. (2017) and Saha & Kabra (2020) have indicated a positive relationship between government ownership and the LCD. On the other hand, Abdou *et al*.(2017); Chizema *et al*. (2015); Shubita & Shubita (2019) found a negative relationship between government ownership and LCD. However, the current study is based on agency theory (AT) which indicates a positive and significant relationship between government ownership and the LCD; hence, hypothesis two was developed.
H2: There is a positive relationship between government ownership and the LCD among the listed companies in Tanzania.

Institutional Ownership and Level of Corporate Disclosure
Institutional ownership refers to the ownership of a company's shares by large financial institutions, such as mutual funds, pension funds, and hedge funds. Researchers have indicated conflicting findings on the relationship between institutional ownership and LCD. Ntim & Soobaroyen (2017) and Yasser & Al-Mam (2020) have reported a negative relationship between institutional ownership and LCD, while a positive relationship between them was indicated by Albassam *et al*. (2018); Alnabsha *et al.(*2018); Hashed & Almaqtari (2021). Concerning the Tanzanian context, the government's plan to privatize its enterprises has led to an increase in the level of institutional ownership in Tanzanian privatized firms. Therefore, the researcher anticipates firms with high institutional ownership to disclose more

information. Given the fact that previous researchers have tested the direct relationship between institutional ownership and LCD and focused on the idea that the relationship was indicated to be positive in the agency theory (AT), which is supposed to be tested, the current researcher proposed the following hypothesis three

H3: There is a positive relationship between institutional ownership and LCD among the listed companies in Tanzania.

Foreign Ownership and Level of Corporate Disclosure

Foreign ownership refers to the ownership of a company's shares by foreign individuals, companies from foreign countries. The effects of foreign ownership on corporate disclosure can vary depending on the ownership of the foreign investors and the company's industry (Albassam *et al*., 2018). Foreign ownership can lead to increased pressure for corporate disclosure and transparency, particularly if foreign investors are from countries with more stringent disclosure requirements or are demanding greater transparency than domestic investors (Alnabsha *et al*.,2018). Different authors have indicated conflicting results on the relationship between foreign ownership and LCD. Shubita & Shubita (2019) and Wang & Wang (2017) found out a positive relationship between foreign ownership and LCD. On the other hand, Almaqtari *et al.* (2021) and Modugu & Eboigbe (2017) found a negative relationship. However, the current study is based on agency theory (AT) which indicated a positive and significant relationship between foreign ownership and the LCD, and hence following hypothesis four was developed:

H4: There is a positive relationship between foreign ownership and the LCD among the listed companies in Tanzania.

3.0 Methodology

This study used a post-positivist philosophy. According to Saunders *et al.* (2019), the post-positivist philosophy is based on the conviction that reality is independent of people's perceptions, but it can be studied scientifically. Since this study used a reasonable inference about a relationship between ownership structures and the level of corporate disclosure, post-positivist philosophy suits the study. As such, it combines empirical observations with logical reasoning. This study used an explanatory research design, and a deductive approach. The deductive approach in this study took the form of the research hypotheses. Moreover, this study used a survey strategy because it is associated with instruments that need numerical inputs of the parameters related to the subject of investigation (Saunders *et al*., 2019).

Population and Sample

The poputation for the study was all twenty-seven (27) local and cross-listed

companies: twenty-two (22) local companies and five (5) cross-listed companies at the Dar es Salaam Stock Exchange (DSE). As of June 30, 2021, DSE had a total of 27 listed companies in both the main investment market segment (MIMS) and the enterprise growth market (EGM) (DSE,2021). A census method was used to include companies in the study. A companies was included in the study if it met three criteria : First, the company had its stock listed in DSE from 1st January 2016 up to 31st December 2020.The year 2016 was considered the starting point because before that year most listed companies had no enough data hence could have make companies included in the study to be very limited. Second, the company had the audited annual report for the years 2016 - 2020 inclusively accessible either through the company website or on the DSE website. Finally, the company retained its listing status for the selected period (2016 -2020).The year 2020 was considered the last year because it was the year with full data for the period data was collected. Six companies among the total of 27 were excluded because of missing data. After the exclusion, there were 105 observations from 21 remained companies (n = 105). The composition of companies included in the study can be seen in Table 1.

Table 1: Composition of Companies included in the Study

Sector	No of companies	No of Observations
Industrials	3	15
Financials	13	65
Consumer goods	5	25
Consumer services	5	25
Oil & gas	1	5
Initial Sample	27	135
Less: Companies registered after 2016		
Financials	2	10
Consumer goods	1	5
Consumer services	1	5
	-4	-20
Less: Companies missing data		
Financials	1	5
Consumer Services	1	5
	-2	-10
Remaining companies		
Industrials	3	15
Financials	10	50
Consumer goods	4	20
Consumer services	3	15
Oil & gas	1	5
Final Sample	**21**	**105**

Source: *Survey data (2023)*

The dependent variables, independent variables, and controlling variables are briefly described and measured in Table 2.

Dependent Variable

The Level of Corporate Disclosure (LCD) is the study's dependent variable. LCD index measuring the level of corporate disclosure is a combination of indices measuring the level of voluntary disclosure and the level of mandatory disclosure for each company. This measurement was created using the unweighted approach. Several studies have employed this strategy (see, for example, Mwenda and Ibrahim 2022). The 44 items that make up the study's index for voluntary disclosure and 92 items measuring mandatory disclosure were combined to make a total of 136 items measuring overall corporate disclosure. Each company was looked into, and if the disclosure criteria were met, the index item received a score of 1, otherwise a score of 0.

Independent Variables

In the light of previous literature (Almaqtari*et al*., 2021; Alnabsha *et al*., 2018; Mwenda and Ibrahim 2022) four ownership structures used in the current study are independent variables that are considered to have a relationship with the LCD for companies listed at Dar es Salaam Stock Exchange (DSE). These are director ownership (DirOwn), government ownership (GovOwn), institutional ownership (InstOwn) and foreign ownership (ForOwn). Hypothesis H1-H4 concerning these independent variables were tested.

Control variables

Finally, industry type was introduced (Industry Dummies) to control for industry differences/effects and reduce such effects and year-fixed effects (FE; Year Dummies) to capture any variation in the output that exists over time that reflects business cycle and macroeconomic fluctuations (Nguyen *et al*., 2020a). The measurement of Variables is shown in Table 2.

Table 2: Measurement of Variables

Variable Investigated	**Notion in the Model**	**Measurement of variable**	**Other studies which have used the variable**
Level of Corporate Disclosure	LCD	LCD is the Corporate Governance disclosure index consisting of 136 disclosure items (44 voluntary disclosure items and 92 mandatory disclosure items) that takes the value of 1 if each item is disclosed and 0 otherwise; scaled to a value between 0 and 100%.The complete corporate disclosure index was then computed for each sample firm as a ratio of the entire disclosure score to the maximum possible disclosure by the firm.	Alnabsha *et al.* (2018); Ntim and Ahmed (2019Mwenda and Ibrahim (2022)
B Main independent variables - Ownership Structures			
Directors Ownership	DirOwn	The percentage of shares held by directors to the total number of shares issued	Abang'a &Wang'ombe (2020); Aliyu *et al.* (2018); Alnabsha *et al.*(2018); Mwenda and Ibrahim (2022).
Government ownership	GovOwn	The percentage of shares held by the government to the total number of shares issued	Alhazaimeh *et al.* (2014); Le and Luu (2017); Ntim & Ahmed, 2019;Sarhan & Ntim (2019).
Institutional ownership	InstOwn	The percentage of shares held by institutional investors to the total number of shares issued	Alqatameen *et al.* (2020); Nguyen *et al.* (2020a); Wang & Wang (2017).
Foreign ownership	ForOwn	The percentage of shares held by foreign investors to the total number of shares issued	Aliyu *et al.* (2018); Alqatameen *et al.* (2020).
C Control variables			
Variable Investigated	**Notion in the Model**	**Measurement of variable**	**Other studies which have used the variable**
Company Dummies and	Company Dummies Year Dummies	Least square dummy variable oneapproach (LSDV1) was used to address issues of company and year dummies. It uses dummy	Al-Bassam *et al.*, (2018).Ntim *et al.(2017)*

Variable Investigated	Notion in the Model	Measurement of variable	Other studies which have used the variable
Year Dummies		variables and drops one first dummy variable in its calculations, and also it provides a good way to understand fixed effects.	

Source: *Compiled by authors (2023)*

Data Collection

This study used secondary sources which included financial and non-financial information from the annual reports from listed companies in Tanzania comprising: income statements, statements of financial position, statements of change in equity and statements of cash flow. Similarly, board and management reports on the companies' activities and the notes to these financial statements aimed at giving qualitative information about the companies' nature, operations, and disclosure practices which measure the LCD. Balanced panel data was used in this study.

Data Analysis

The study produced descriptive statistics measuring mean, standard deviation, maximum and minimum values, skewness and kurtosis. Moreover, the study employed Pearson's correlation coefficients to investigate the correlation between study variables. It also used ordinary least squares (OLS) regression to examine the relationship between the explanatory variables and LCD similar to other studies (Alturki, 2014; Alnabsha *et al.*, 2018). Ordinary least squares (OLS) regression was used as baseline model in order to compare results with those studies which employed OLS model globally.

Validity and Reliability of theResearch Tools

The reliability statistics test of Cronbach Alpha (Cronbach, 1951) was tested for eleven disclosure items and confirmed to be 0.785 to 0.812 for the level of mandatory disclosure (LMD) and 0.707 to 0.802 for thelevel of voluntary disclosure (LVD) which meets Pallant's (2011) criteria for variable reliability (Table 3 and 4). A coefficient value of $\alpha = .7$ or higher is widely considered reliable and acceptable (Pallant, 2011)

Table 3: Cronbach Alpha Test for LMD

Category	Number of Items	Cronbach's Alpha Coefficient
General Company information	16	0.809
Financial Transparency Information	22	0.812
Ownership Information	15	0.785
Board and Management Structures	33	0.795
Auditing and Control Mechanisms	6	0.799

Source: Data analysis (2023)

Table 4: Cronbach's Alpha Test for LVD

Category	Number of Items	Cronbach's Alpha Coefficient
General Company Information	5	0.802
Firm Segment Performance Information	16	0.801
Financial Information	7	0.787
Employee Information	6	0.795
Corporate Social Responsibility Information	7	0.707
Corporate Governance Ethics Information	3	0.762

Source: Data analysis (2023)

Estimation Model

The ordinary least square (OLS) model was employed as a baseline model to test the hypotheses of the current study

$$LCD_{it} = \beta_0 + \beta_1 DirOwn_{it} + \beta_2 GovOwn_{it} + \beta_3 InstOwn_{it} + \beta_4 ForOwn_{it} + company\ age + Company\ dummy + Year\ dummy + \varepsilon_{it}$$

4.0 Results and Discussion

Descriptive Analysis Results

In this study, the descriptive findings were compared with those of earlier studies. The average level of corporate disclosure (LCD) was 63%. This means that, on average, companies in the sample disclosed about 63% of the information that could be disclosed based on the measurement criteria or indicators. A higher percentage in this category suggests that, on average, companies were relatively transparent and provide a significant amount of information to the public or stakeholders. Regarding the ownership structures, the findings showed that the average director ownership was 6 per cent, with a minimum and maximum of zero (0) per cent and 49 per cent respectively, showing an optimum spread with a standard deviation of 14 per cent. This implied that directors own a very substantial amount of shares in most listed companies. Moreover, government ownership reports an average of 4 per cent with a minimum of zero per cent and a maximum of 40 per cent indicating that the state owns a substantial amount of shares in most listed companies, showing optimum spread with a standard deviation of 10 per cent. Among other ownership types, institutional ownership was the most significant shareholder in our sample reportingan average of 37 per cent, a standard deviation of 22 per cent with a minimum of 5 per cent and a maximum of 90 per cent. In the same circuit, foreign ownership reported an average of 27 per cent with a minimum of 0 per cent and a maximum of 86 per cent and a standard deviation of 22 per cent indicating that foreigners own a substantial amount of shares in most listed companies.

Table 5: Descriptive Statistics for Listed Companies at DSE Included in the Study

	N	Mean	SD	Min	Max	Skewness	Kurtosis
LCD	105	0.6267	0.0626	0.5536	0.7597	0.1609	1.6034
DirOwn	105	0.0633	0.1385	0.0000	0.4890	2.1586	6.2607
GovOwn	105	0.0413	0.1026	0.0000	0.4000	2.4768	7.7008
InstOwn	105	0.3652	0.2205	0.0494	0.8996	0.3113	2.3610
ForOwn	105	0.2698	0.3015	0.0000	0.864	0.6846	1.9988

Source:*Data analysis (2023)*

Correlation Analysis Results

The Pearson correlation presents the direction and strength of correlations among the variables and helps identify any multicollinearity problem. Table 6 presents the correlation coefficient and p-value for measuring LCD through index. According to (Pallant, 2011) correlation analysis checks the association among multiple variables. As expected the LCD was positively associated with some of the ownership structures, and had a negative correlation with other types of ownership structures as represented in Table 6.Regarding correlation analysis, consistent with existing studies (Deb & Dube, 2017; Grassa, 2018), the correlation matrix indicated a very low relationship between the four ownership structure measures. The results showed a significant positive correlation between LCD and DirOwn (β=0.0565, $p<0.05$). This is consistent with the findings of Masum *et al.* (2020) and contrary to the findings of Al Maskati & Hamdan (2017). The findings also showed a positive significant correlation between LCDand GovOwn (β=0.1193; $p<0.01$) consistent with Rouf & Akhtaruddin (2018) and Celantino *et al.* (2020), who showed a positive correlation betweenGovOwn and LCD. Also, the results demonstrated a positive significant correlation between LCD and ForOwn (β= 0.1775, $p<0.01$). Noticeably, InstOwn had a negative correlation with LCD with a low coefficient (β=-0.0193). The authors of this paper supported those who support positive relationship because the aim of this paper was to support the argument of agency theory and hence contribute to agency theory.

Table 6: Correlation Analysis Results

Variable	LCD	DirOwn	GovOwn	InstOwn	ForOwn	VIF
LCD	1000					2.16
DirOwn	0.0565**	1000				1.99
GovOwn	0.1193***	0.4825*	1000			4.32
InstOwn	-0.0193	0.2401**	0.0307	1000		2.21
ForOwn	0.1775***	0.1998**	-0.1539	0.6230***	1000	3.23

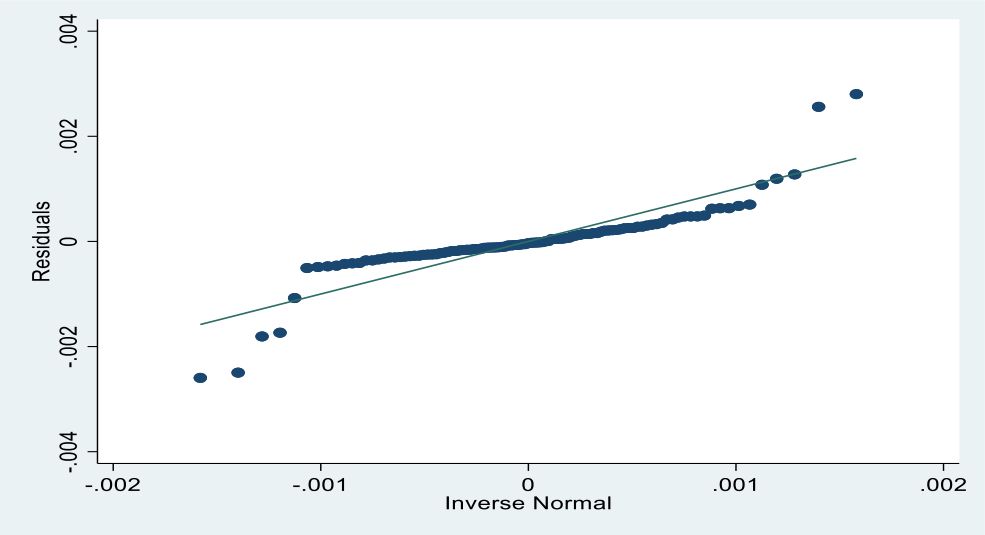
*Note: *p<0.1, **p<0.05 ***p<0.01 (indicating significance)*
Source: *Survey data (2023)*

Testing for Multiple Regression Assumptions

Testing for Normality

In this study, the skewness and kurtosis of the data were measured to test normality of data. Table 5 showed that the values for skewness ranged from 0.1609to 2.4768 and those for kurtosis from 1.6034 to 7.7078. Based on Kline's (2015) guidelines of skewness < 3.00 and kurtosis <10.00,the findings showed that skewness and kurtosis were cantered within the suggested critical values, such results implied that data were normally distributed and that the multiple regression premise concerning normality is properly met.

Linearity was checked using the the p-normal graph and showed a strong positive linear relationship between independent and dependent variables meaning that no clear departure from linearity (See Figure 2).



Source: Data Analysis (2023)
Figure 2: *Test of Linearity using (p-normal graph)*

Multicollinearity was tested by using the correlations matrix test using Pearson Correlation Matrix and the variance inflation factor (VIF).The Pearson correlation coefficients among the independent variables are presented in Table 6. The results showed that the highest correlation was 0.6230. This means that there was no multicollinearity exists in this model because none of the variables correlates above 0.9 according to Kline (2015). Additionally, the VIF was employed to examine the presence of multicollinearity whereby Hair *et al.* (2014) suggested that the threshold for value for VIF should be less than 5.Based on the VIF analysis,

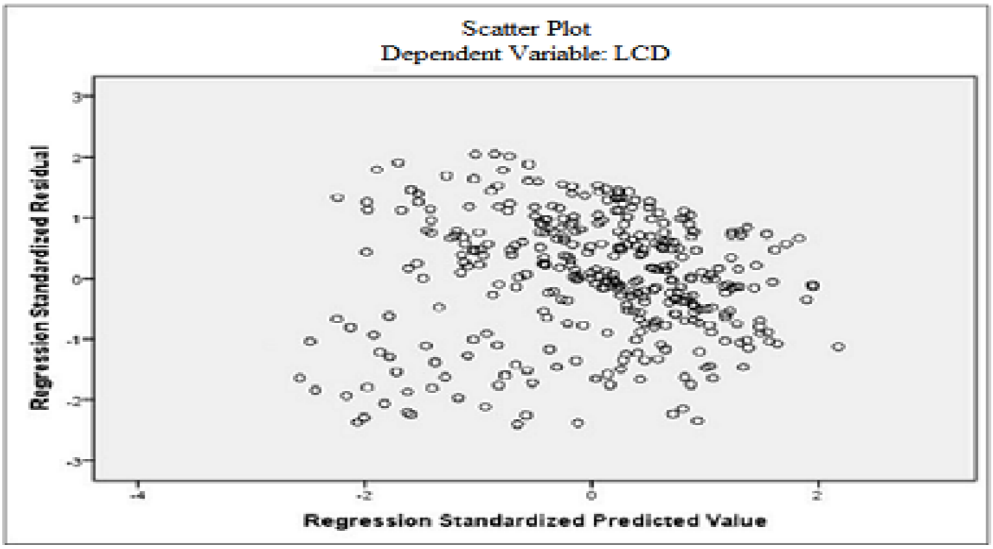
multicollinearity was not a major concern among the independent variables in the study's regression model. All VIF values were well below the commonly used threshold of 5 as shown in Table 7 indicating that each predictor's variance was mostly independent of the other predictors evidencing the absence of multicollinearity cases. Accordingly, as shown in Table 7, there was no multicollinearity concern among independent variables.

Table 7: VIF Analysis to Check Multicollinearity

Variable	Tolerance	VIF
LCD	0.52	1.96
DirOwn	0.81	1.25
GovOwn	0.65	1.57
InstOwn	0.57	1.45
ForOwn	0.78	1.73

Source: Data Analysis (2023)

Homoscedasticity is a multiple regression statistical test that assumes residuals are normally distributed and have uniform variance across all levels of predictors (Klines,2015). If this assumption is violated, it might lead to significant non-normality, affect validity, or lead to greater measurement error (Keith, 2019).The authors used a scatter plot of standardized residuals against the predicted value to test for homoscedasticity. The result obtained in Figure 3 shows no serious heteroscedasticity issues. This is because no points fall outside the threshold range of ±3 (see Keith, 2019); thus, the assumption of homoscedasticity was archived.



Source: Data Analysis (2023)
Figure 3: *Results of Test for Homoscedasticity*

Testing for Autocorrelation

The study used the Durbin-Watson test for autocorrelation, as shown in Table 8

Table 8: Durbin-Watson Test for Autocorrelation

Variable	Coefficient	Std.Error	P-value
Autocorr_Var	0.2547	0.062	0.0407

*Note:*p<0.1, **p<0.05 ***p<0.01 (indicating significance) ns indicates non-significance*
Source: Data analysis (2023)

The result of the Durbin-Watson test showed that the p-value for the coefficient of "Autocorr Var" is 0.0407, which is less than the common significance level of 0.05 i.e. (p-value 0.0407 < 0.05). Therefore, based on the Durbin-Watson test results, the researcher rejected the null hypothesis. This suggests that there was enough evidence to conclude that there was first-order autocorrelation in the regression model. In other words, the error terms appear to be correlated with each other over time violating the assumption of independence that underlies linear regression (see Table 8). To mitigate this problem, in this study, the researcher included lagged values of the dependent variable or relevant independent variables in the model. This helped to account for the autocorrelation pattern by introducing the effects of past observations into the model.

Selecting Appropriate Model

The result indicated that the p-value was 0.0265 for model 1 and 0.0325 for model 2, which wasless than 0.05, as shown in Table 9. Then we reject the null hypothesis that random effects are preferred over fixed effects. In other words, it wasconcluded that fixed effects were at least as consistent as random effects and thus preferred.

Table 9: Durbin-Wu-Hausman Test

	Model 1 (Pooled OLS)	Model 2 (FE)
Chi^2	10	11.34
Prob > Chi^2	0.0265	0.0325

*Note:*p<0.1, **p<0.05 ***p<0.01 (indicating significance)*
Source: Data analysis (2023)

Testing for Endogeneity

Testing for endogeneity in disclosure studies, especially in the context of regression analysis, is an essential step to ensure that the model's assumptions are met. Endogeneity occurs when one or more independent variables in the model are correlated with the error term, which can lead to biased coefficient

estimates. This study used the Durbin-Wu-Hausman test (see Table 9) to compare OLS, fixed effects or Random effect model specifications to identify endogeneity. Then the null hypothesis was rejected that random effects were preferred over fixed effects. In other words, it was concluded that fixed effects were at least as consistent as random effects and thus preferred.

Static Regression Model

The estimation methods applied in this study contained both static and dynamic models. The static models included the pooled ordinary least squares (OLS) and fixed-effect models (FE). The OLS was used as the baseline results estimation model, while the FE was used as the robustness was tested to address issues of unobservable effect and to overcome the biases or inconsistency associated with the OLS results.

$$LCD_{it} = \beta_0 + \beta_1 DirOwn_{it} + \beta_2 GovOwn_{it} + \beta_3 InstOwn_{it} + \beta_4 ForOwn_{it} + \sum Industry\ Dummy + \sum Year\ Dummy + \varepsilon_{it}$$

Where

Where LCD is the level of corporate disclosure; DirOwn is the directors' ownership; GovOwn is government ownership; InstOwn is the institutional ownership; ForOwn is the foreign ownership; industry dummy and year dummy are control variables; the subscripts *i* and *t* indicate firm and year respectively, β0 is the constant, and β1 to β4 are coefficients parameters associated with the intercept and explicative variables of the model, ε is a vector of the stochastic error term.

Dynamic Regression model

The study employed the generalized methods of the moment (GMM), a dynamic modelling approach to address endogeneity checks and to enhance the findings' reliability and validity.

$$LCD_{it} = \beta_0 + \beta_1 LCD_i\left(_{t-2}\right) + \cdots + \beta_2 LCD_i\left(_{t-K}\right) + \beta_3 DirOwn_{it} + \beta_4 GovOwn_{it} + \beta_5 InstOwn_{it} + \beta_6 ForOwn_{it} + \sum Industry\ Dummy + \sum Year\ Dummy + \varepsilon_{it}$$

Where LCD is the corporate disclosure score; (LCDi(t − K) is the lagged value of the dependent variable, time t; k is a vector of the number of lags of the firm's LCD disclosure level.

Multiple Regression Analysis Results and Discussion

Multiple regression analysis was used to examine the relationship between ownership structures and LCD for Tanzanian listed companies. Table9shows the model's regression parameters. Hypothesis one (H_1) predicts a positive relationship between director ownership and LCD in Tanzania. The coefficient on DirOwn presented in Table 10 was positive and statistically significant i.e.β = 0.20162 (t-statistic = 2.03879, p< 0.01). These results showed that for a one-unit increase in "DirOwn," the predicted value of "LCD" increases by 0.20 units, assuming all other variables remain constant. By owning shares in the company, directors had a greater stake in the company's success and might be more likely to act in the interests of shareholders, which could lead to improved disclosure practices. Therefore, the first hypothesis (H_1) was supported. These findings were in line with the findings of (Alnabsha *et al*., 2018; Masum & Khan, 2019; Samaha *et al*., 2015 and Sarhan & Ntim, 2019). Also, the findings contradicted the results of different scholars who showed that director ownership is negatively related to LCD (Alyousef & Alsugher, 2021; Khlif*et al.*, 2017). These findings might be explained by the notion that firms with a higher proportion of director ownership may experience higher pressure for transparency and accountability (Samaha *et al.,* 2015). Similarly, these companies perceived that compliance and disclosure benefits outweigh the disclosure costs (Todd & Anju, 2014). These findings also proved the argument of the agency theory which postulates a positive relationship between director ownership and the level of corporate disclosure.

Secondly, the study hypothesized that government ownership relates positively to LCD. As predicted, the coefficient on GovOwn presented in Table10 beared a positive sign.The coefficient on GovOwn is β = 0.12973 (t-statistics =1.97930, p< 0.01). The findings showed that a one-unit increase in "GovOwn" corresponds to an increase of 0.13 units in "LCD," while keeping other variables constant. The significant positive relationship between GovOwn and the LCD provided empirical support for H_2. Agency theory suggests that increased disclosure of CG practices can help resolve agency problems between managers of companies and the government as influential shareholders (Jensen & Meckling, 1976). These findings were in line with the findings of Albassam *et al*., (2018); Al-Janadi *et al*. (2016) and Deb & Dube (2017) who suggested that corporations with high government ownership made high disclosure. Also, the findings contradicted the results of different scholars who asserted that government ownership was negatively related to LCD (Alyousef & Alsugher, 2021;Khlif *et al.,* 2017).

These findings supported the argument of the agency theory that postulates that government ownership is positively related to LCD. Tanzania's government holds significant ownership stakes in major corporations with a keen interest in positively influencing CG and stakeholder issues. Thus, this finding offers empirical support for our theoretical framework. Specifically, this finding suggested that as a powerful stakeholder, and given the Tanzania government's (through the CMSA) formal support for the recommendations of Tanzania CG guidelines (CMSA, 2002), Tanzania companies with high government ownership tend to actively seek to win government support (Fulgence, 2021) by complying with the CMSA guidelines through increased disclosure of CG practices that might not only help in legitimizing their operations but also secure access to critical resources such as finance that can enhance performance. Companies with state ownership will devote more considerable effort to minimize the exacerbation of the agency costs arising from information asymmetry, by disclosing more information about the firm's financial and nonfinancial objectives.

Thirdly, the study hypothesized that institutional ownership relates positively to LCD. As shown in Table 10, findings show a significant negative relationship between InstOwn and LCD, i.e. β = -0.03741 (t-statistic = 3.02936, $p<0.05$). The coefficient on InstOwn presented was negative and statistically significant. The findings indicated that an increase of one unit in "InstOwn" is associated with a decrease of 0.04 units in the value of "LCD," holding other variables constant..These findings were in line with the scholars who claimed that institutional ownership was negatively related to LCD (Ntim *et al*., 2017; Yasser & Al-Mam, 2020) and contradicts the findings of Albassam *et al*.(2018); Alnabsha *et al.* (2018); Hashed & Almaqtari (2021); Owais (2021) and Ozili (2020) who suggested that corporations with high institutional ownership made high disclosure. One possible explanation for this unexpected finding could be that institutional shareholders in Tanzania have sufficient access to the information they need. Thus, they might not put more pressure on top management to disseminate more information on CG-related activities. Theoretically, this finding was contrary to agency theory, which postulates that managers disclosed more information to reduce institutional shareholders' conflicts.

Hypothesis four (H_4) was used to test the relationship between foreign ownership (ForOwn) and LCD. In Table 10 findings show a significant positive relationship between foreign ownership (ForOwn) and LCD among Tanzanian listed companies (coef. = 0.22938, t-statistic = 1.97489, $p < 0.01$). These findings showed that a one-unit increase in "ForOwn" is linked to an

increase of 0.23 units in the value of "LCD," assuming other variables are held constant. This finding confirmed that companies with higher foreign ownership were incentivized to disclose more information. This was because foreign investors, especially those from countries with strong reporting standards, may push for higher levels of corporate disclosure in line with global best practices. They might have higher expectations for transparency and disclosure than domestic investors, encouraging companies to provide more information as mandated or voluntarily. Hence, hypothesis H_4 was supported, which assumed a positive relationship between ForOwn and LCD. Moreover, the current study supports the agency theory which argued that there was a positive relationship between foreign ownership and CG disclosure

The following is the resulting model after the analysis:

$$LCD_{it} = 0.88 + 0.20 * DirOwn_{it} + 0.13 * GovOwn_{it} - 0.04 * InstOwn_{it} + 0.23 * ForOwn_{it} + \varepsilon_{it}$$

The equation suggests how changes in the independent variables influence the value of "LCD." The estimated value of "LCD" when all the independent variables (OwnConc, GovOwn, InstOwn and ForOwn) are zero is 0.88. Furthermore,the results showed that for a one-unit increase in "OwnConc," the predicted value of "LCD" increases by 0.203 units, assuming all other variables remain constant. Additionally,the findings showed that a one-unit increase in "GovOwn" corresponds to a predicted increase of 0.129 units in "LCD," while keeping other variables constant.Regarding InstOwn,findings indicated thatan increase of one unit in "InstOwn" is associated with a decrease of 0.037 units in the predicted value of "LCD," holding other variables constant and a one-unit increase in "ForOwn" is linked to a predicted increase of 0.229 units in the value of "LCD," assuming other variables were held constant. R^2 showed the proportion of change in LCD due to variation in independent variables of the study. The value of R^2 was (78%) which designates that 78 percent variation in LCD was explained by DirOwn, GovOwn, InstOwn and ForOwn and the remaining 22 per cent is explained by factors other than the ones analyzed.F-Statistic showed the overall significance of the variables and fitness of the model. The p-value of the test was (0.0000) which meant that the model was overall fit.

Table 10: Multiple Regression Results (Pooled OLS, fixed effects and GMM estimators)

	Model 1 Pooled OLS		**Model 2 Fixed Effects**	
Variable	**Coefficients**	**T-value**	**Coefficients**	**T-value**
Ownership Structure				
DirOwn	0.20162***	2.03879	0.32712	2.56731
GovOwn	0.12973***	1.97930	0.21209	1.98901
InstOwn	- 0.03741**	3.02936	-0.13321	1.96203
ForOwn	0.22938***	1.97489	0.00323	2.07681
Obs	105		105	
Year Dummy	Yes		Yes	
Industrial Dummy	Yes		Yes	
Firm fixed effects	No		Yes	
Constant	0.87990***	5.0909	0.8987***	5.0761
F-Value	32.43***	0.0000	16.58*	0.0000
Ch^2	23.37		23.00	
R^2	0.778		0.781	
Adj.R^2	0.777		0.779	

*Note:*p<0.1, **p<0.05 ***p<0.01 (indicating significance) ns indicates non-significance*
Source:*Survey Data (2023)*

Robustness Analysis and Endogeneity Test

According to Roberts & Whited (2013), the most remarkable pitfalls encountering empirical studies in corporate finance are driven by endogeneity. The ambiguous findings in a prior study on the relationship between ownership structure and corporate disclosure are a consequence of the endogeneity issue. Hence, for robust analysis and comparison with GMM estimates presented in the following subsection, report the findings from pooled OLS and FE models in Table 9. Model 1 reports pooled OLS findings. The adjusted coefficient of determination (adjusted R^2) shows that the explanatory variables explained almost 77% of the variation in the dependent variable "LCD." Moving to the P-value, our model revealed congruous findings. The overall P-value of the F test is statistically significant (35.43, P < .01). Therefore, one can draw an indisputable conclusion that our empirical model fits the data better than the intercept-only model. The OLS results also indicated that there was a statistically significant impact of individual ownership dimensions (i.e., director, government, institutional, and foreign ownership) on LCD.

Moving to Model 2, the FE results revealed that the statistical significance of the estimated coefficient of (DirOwn), (GovOwn), (InsOwn) and (ForOwn) disappeared when onetake into account the unobserved firm FE. Hence, this

denotes that the findings yielded from pooled OLS estimator were likely to be affected by omitted firm-level attributes. In this context, our results, therefore, were consistent with several prior researchers (Habbash, 2016; Ke *et al*., 2020; Katmon & Farooque, 2020). Although the results mentioned above were in alignment with a stream of previous studies, these findings were expected to be sorely distorted by other sources of endogeneity, which have not been taken into account by OLS/FE models such as simultaneity and dynamic endogeneity. Hence, the two-step system GMM approach developed by Arellano and Bond (1991) and Blundell and Bond (1998), for dealing with the endogeneity problem was employed, which allows us to control for the different sources of endogeneity (Wintoki *et al*., 2012). After running GMM,the results revealed that the effects of all variables remained unchanged. More interestingly, the findings in all models were similar to somewhat (see Table 11).

Table 11: Dynamic and Static Fixed Effect (FEM) Models

	1		2		3		4		5		6		7	
	LSDV 1_b		dLSDV1_b		CSE		dCSE		PCSE		dPCSE		GMM	
LCD	0.472 *	0.1684	0.3210*	0.1112	0.472 ***	0.1331	0.3213*	0.0709	0.4021***	0.0731	0.3162***	0.0723	0.2552***	0.0311
DirOwn	0.0344	0.1602	0.0573	0.1116	0.0344	0.1823	0.0672	0.1402	0.0632	0.0643	0.05823	0.0632	0.0801	0.0945
GovOwn	-0.5457	0.0741	0.7429*	0.052	-0.5457	0.1256	-0.7829	0.0761	0.4075	0.0424	(0.0721***)	0.035	0.6141*	0.0386
InstOwn	-0.1702	0.1082	0.3425*	0.0684	-0.1702	0.0543	(0.3413*)	0.1281	0.2159	0.0599	(0.336***)	0.0662	0.3631**	0.1359
ForOwn	0.0947	0.0753	0.1487***	0.0532	0.0947	0.0412	0.1389**	0.0532	0.0897	0.0347	0.1426***	0.0356	0.1633***	0.0387
r2	0.786		0.862		0.786		0.862		0.822		0.941		0.943	
r2-a	0.802		0.899		0.802		0.899		0.901		0.904		0.924	
rmse	0.11		0.0771	0.11		0.0771		0.0857		0.0771		0.769		
mss	6.042		6.119	6.042		6.119		6.035		6.021		6.019		
rss	0.82		0.441	0.82		0.441		0.681		0.441		1.092		
F	13.61		29.3	13.61		.		.		.		.		
chi2								110621.8		962815.3		251985.6		

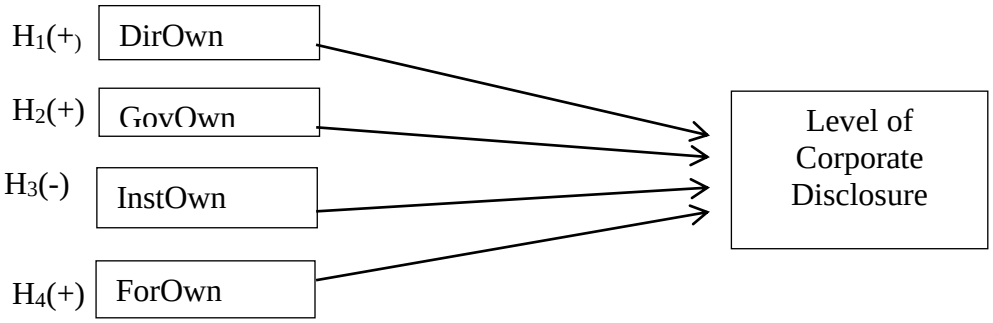
Table 12: Summary of variables, hypotheses, statistical test and statistical support on the improved model

Subject	**Hypothesis**	**Predicted Sign**		**Resulted Sign**	**Statistical test**	**Statistical support**
Ownership structure	Director ownership is positively related to LCD	(H_1)	+	+	OLS,FE & Two-step system GMM	Supported
	Government ownership is positively related to LCD	(H_2)	+	+		Supported
	Institutional ownership is positively related to LCD	(H_3)	+	-		Not supported
	Foreign ownership is positively related to LCD	(H_4)	+	+		Supported

Source: Researcher's model improvement (2023).

Model Improvement

Based output findings, the hypotheses are restated, and a new model's variables are depicted in Table 12. In this model, the dynamic nature of the study's findings was introduced, and the lagged corporate disclosure (LCD(i,t-1)) effects on disclosure (LCD i,t) were taken into account to reflect the dynamic nature of the model as proposed in theories and findings.In Figure 4 new conceptual model is shown.



Source: Data Analysis (2023)
Figure 4: New conceptual model

5.0 Conclusion

This study examined the relationships between ownership structures and LCD. The results provided evidence of a positive relationship between director ownership,government ownership and foreign ownership and LCD.These findings supported the hypothesis H_1, H_2 and H_4 which are consistent with the postulations of the agency theory. Furthermore, the findings indicated a negative relationship between institutional ownership and LCD, contrary to agency theory postulations, hence rejecting the prediction of H_3.The findings reported in this study have notable implications for regulators, policy-makers, listed companies and researchers who want to elevate the level of corporate disclosure (LCD).

6.0 Contribution of the Findings to the Agency Theory

The findings presented in the Tanzanian context make several innovative contributions to agency theory: *Contextual Relevance***:** The study's focus on Tanzanian listed companies provided a context-specific understanding of agency theory's applicability in emerging markets. Like Tanzania, this is innovative because agency theory has primarily been developed and tested in the context of developed economies. These findings suggested that agency theory's principles can be adapted to and have relevance in the Tanzanian business environment.

Ownership Structures:The identification of a positive relationship between different ownership structures (director ownership, government ownership, foreign ownership) and a negative relationship between institutional ownership and level of corporate disclosure highlights how agency theory can be adapted to explain governance dynamics in a setting with diverse ownership patterns. This contributes to a more nuanced understanding of how ownership influences LCD in emerging markets.

7.0 Recommendations

Listed companies in Tanzania are urged to review the ownerships in their companies and see how they impact LCD and adjust the structures where necessary.Regulatory bodies should consider updating or strengthening governance regulations. The study had limitations, including reliance on annual reports for LCD data, and only covering listed companies in Tanzania. Future research should consider other East African countries and investigate the effects of independent variables on voluntary, mandatory, or combined corporate disclosure levels, as well as the impact of other independent variables.

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Malmquist Productivity Change of Mutual Funds in Tanzania

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Abstract
This study utilized Data Envelopment Analysis to assess the efficiency of six mutual funds in Tanzania spanning from 2018 to 2022. The analysis explores efficiency changes, technical advancements, scale efficiency, and total factor productivity. The results revealed significant trends of Mutual funds, on average, demonstrate a 3 percent increase in total factor productivity, signifying enhanced output relative to inputs attributed to improved management practices, technology integration, and operational enhancements. Conversely, technical efficiency change experiences by 2.7 percent decline, indicating that certain funds struggle to optimize inputs, potentially due to shifts in management strategies, resource allocation, or market variations. Further differentiation between large and small mutual funds reveals that larger entities exhibit more favorable productivity changes. This disparity is ascribed to economies of scale, improved investment prospects, and reduced transaction costs for larger funds. The study underscores substantial implications for mutual fund managers and the industry. Positive improvements in efficiency change, scale efficiency change, and total factor productivity indicated an overall positive trend in the mutual fund industry. Emphasizing economies of scale can enhance efficiency and overall outcomes, urging regulatory bodies to provide guidance on achieving economies of scale and fostering better practices. This research offers valuable insights into the mutual fund landscape, emphasizing the critical importance of adapting to evolving market dynamics and incorporating technology to maximize efficiency and success.

Keywords: *Tanzania, Mutual funds, Malmquist Productivity Change, Data Envelopment Analysis, Total factor productivity*

1.0 Introduction

Mutual funds are professionally managed collections of stocks, bonds and other securities. Money is pooled from many sources and invested by a fund manager. The fund manager trades the fund's underlying securities, realises capital gains or losses, and collects the dividend or interest income from the assets. The investment proceeds are then passed along to the individual

investors. In exchange for managing and maintaining the mutual fund, the manager charges a fee deducted from the shareholders' earnings. Money is invested in a mutual fund by purchasing shares of the fund. Mutual fund shares are analogous to shares of stock, as the shareholders are considered to be owners of the fund. Shareholders have voting rights in proportion to their ownership of the fund (Investment Company Institute, 2020).

Collective investment schemes, or mutual funds (MFs), have become one of the most innovative and successful investment vehicles for pooling savings from small investors by professional managers today. Mutual funds (MFs) offer an avenue for investors who purchase ownership units in small amounts to reap the benefits of professionally managed funds pooled into a diversified portfolio of investments that minimise investors' risk while enhancing returns. At the end of 2019, the total amount of investments in MFs globally is at 54.9 trillion US dollars with the United States having the lion share of 25.7 trillion US dollars (Investment Company Institute, 2020).

The mutual fund industry is an essential part of the financial set up of every economy, be it emerging or developed. Given the role, it plays by providing cheaper alternative avenues of investment for those who do not possess the technical expertise to identify potentially viable or financially feasible investment opportunities, its impact on the growth and development of an economy cannot be overlooked. It serves as a financial intermediary since it helps transfer funds from surplus spending units to deficit spending units. The importance of the industry is manifest in the growth in number as well as the value of funds under management of such schemes in the world, especially in developed or advanced economies. In the US for example, there were over 8000 mutual funds with total assets of US$14.7 trillion in 2012, an increase of US$1.7 trillion over the 2011 figure (Investment Company Fact Book, 2013). Global mutual fund assets grew from US$46.2 billion in 1990 (Tkac, 2001) to US$ 26.8 trillion in 2012 (Investment Company Fact Book, 2013).

Managers of mutual funds are expected to make viable investment decisions about the funds entrusted to them. Investors in mutual funds expect to earn returns commensurate with the level of risk that their funds have been exposed to. Making good returns for mutual fund investors is the work of the mutual fund managers. Predicting movements in the market returns and making wise investment decisions is a core aspect of their job. Many investors could be interested in knowing how well they are doing. Also important is the ability of the manager to select good stocks. These two

activities form the core of the investment management process. The primary aim behind mutual funds is to create a pool of money from individuals and organizations to invest in stocks, bonds and other assets in different industry sectors and regions of the world; the money collected from investors is invested by the fund manager in various types of securities depending upon the objective and need of the investor based on the preferred risk and return.

Malmquist total factor productivity change of the investment firm has been a current agenda that creates attention to most investors worldwide. The decision of investors to invest or not to invest does not come quickly; several scrutinisation procedures vary from investor to investor and from investment scheme to scheme(Hafasnuddin et al., 2022). One of the primary factors commonly observed before investing in a business company, such as banks or mutual funds,is the state of productivity (Neves et al., 2020). According to Neves et al. (2020), the pure performance of investment schemes is revealed in terms of total factor productivity change (TFP). The total factor productivity index measures change in inputs to change in output, also known as variable returns to scale. Total factor productivity change measures pure efficiency change resulting from technological and technical efficiency changes. It is from pure technical and technology change acquitted through optimised and upgraded training where employee are capacitated with managerial competence on the efficient use of assets of the firm (expenses) to effectively manage costs and risks and hence have business organisations achieve the best (Sharma et al., 2020).

Numerous empirical studies regarding productivity extensively utilise the economic theory of production as their fundamental analytical framework. The production function articulates the relationship connecting variable inputs and a fixed input at the minimum threshold required to generate optimal Output. Ojo et al. (2013) characterises this relationship as a quantifiable representation highlighting the interconnectedness between inputs and outputs within the production process. The assessment of total factor productivity frequently engages either of two prominent methodological pathways: the parametric and non-parametric approaches. The parametric approach relies on econometric methodologies, encompassing techniques such as simple regression analysis (SRA) and stochastic frontier analysis (SFA) (De Guzmanet al., 2005). Juxtaposing alterations in technical efficiency with changes in overall efficiency can derive the combined gauge of total factor productivity.

The Malmquist Total Factor Productivity (TFP) Change Model, developed by Färe et al (1994) was adopted for this study. This Model's foundational premise revolves around identifying factors that elucidate investment firms' pure efficiency and productivity. Investment firms become enticing to shareholders when they manifest into favourable performance (Dickinson et al, 2023). This attractiveness is rooted in pure efficiency, specifically total factor productivity (TFP) alteration. This phenomenon beckons shareholders to invest in the transformation of TFP (Yang et al., 2019). The Model underscores changes in both technical and technological efficiencies, both of which serve as magnets for equity holders to engage in investment ventures. This propensity for investment augments the firm's ongoing operations, consequently contributing to the attainment of firm value (Adiputra & Hermawan, 2020). Without such mechanisms, the firm might merely be exhibiting growth or scale efficiency, which may not inherently translate into firm sustainability or the amelioration of firm value.

Despite the Malmquist TFP Model's constructive proposals, none has shown how pure technical efficiency and productivity change that may be achieved. Again, the Model has not said how adoption to the new technologies and pure technical efficiency lead to total factor productivity i.e., what are the inputs to be acted upon to reveal pure efficiency (variable returns to scale, VRS) and not only scale efficiency which details on constant returns to scale (CRS)(Obsa et al,2021). Malmquist TFP model is a pure efficiency measurement platform that is silent on the factors promoting the development of investment schemes such as; Banks, hospitals, schools, and mutual funds, (Kaur, & Aggarwal, 2017) The factors for the development of investment firms such as mutual funds include good public perception, free information flow and fair legislative framework, which are not the focus of this study and are thus to be taken as areas for further studies.

The volume of literature related to the world of investment funds has increased significantly in recent decades at an international level and, albeit with some delay, at a domestic level, driven by the strong growth of the collective investment sector. The first empirical works related to the funds' performance date from the sixties of the last century and centred, above all, on the equity fund segment of the United States market. (Peifer, 2011).These early works tried to ascertain whether the returns obtained by investment funds over some time were reasonable. The study on assessing the performance of mutual funds in Indonesia reported on average; the mutual funds experienced a decrease in total factor productivity (TFP) growth (Majid & Maulana, 2010). A decrease in total factor productivity was caused by a

decline in both efficiency change and technical efficiencies, where the efficiency change was contributed mainly by the changes in pure efficiency rather than scale efficiency. The study suggested promoting its total factor productivity by constantly optimising and upgrading the education and training intended to improve managerial ability and speed up the adoption of new technologies.

The study by Bhatia et al (2016) on the efficiency analysis of select mutual funds in India found outthat most funds in all categories were inefficient. The most efficient category of funds was the hybrid fund category. However, substantial gains (greater than 10%) in funds' productivity in all categories of funds for the analysed period were observed. The results indicated improved managerial skills and better investment decisions as the underlying causes of improved productivity. The study by Bhatia et al (2016) purported to evaluate funds' scale efficiencies and to rank the sampled mutual funds as the basis of total productivity change using the DEA-based Malmquist index.

In China Sylviane et al (2011) reported on the performance of ESG funds in which, overall, ESG funds. The total factor productivity of ESG funds shows a decreasing trend during the study period. There are three paths to improve the performance of ESG funds. The 1st path is to maintain a low concentration of holdings and reduce the frequency of fund position adjustments based on increasing fund size. Sylviane (2011) study on how ESG funds can improve their performance involved 26 ESG funds and the DEA-Malmquist productivity index.

In the study conducted in Philippine by De Guzman (2005), employing the DEA-Based Malmquist productivity index, it was discerned that bonds and stocks exhibited the highest growth in Total Factor Productivity (TFP). This growth was predominantly attributed to advancements in Technology. These findings aligned with the study by Sylviane et al (2011) in China, which indicated that the augmentation in Total Factor Productivity primarily stemmed from technological progress as opposed to improvements in efficiency.

Majid & Maulana (2010) empirically investigated the relative efficiency of mutual funds in Indonesia. The outcomes unveiled a decline in the Total Factor Productivity of mutual funds. Both changes in efficiency and technological advancements predominantly drove this decline.Conversely, Babalos et al (2012) scrutinized the relative efficiency of Greek equity funds by utilising a DEA-based Malmquist index. The results demonstrated

noteworthy declines in the productivity of the funds, predominantly attributed to technological changes rather than changes in technical efficiency. This contrasts with the findings of Nazet al (2019) who by employing DEA-Based Malmquist index in Pakistan, identified that TFP growth was primarily engendered by alterations in pure technical efficiency rather than changes in scale efficiency.

Unlike previous research efforts that mainly evaluated performance in mutual funds, banks, and hospitals, the current study investigated total factor productivity, specifically in mutual funds in Tanzania. Notably, the current state of knowledge lacks comprehensive insights into the dynamics of productivity changes within mutual funds operating within the Tanzanian context. Therefore, the principal objective of this study was to examine productivity change of mutual funds in Tanzania

The subsequent sections of this paper are thoughtfully organised as follows: The introductory section encompasses an exploration of the significance attributed to mutual funds and an overview of past research endeavours concerning productivity changes on a global scale. Additionally, the introductory portion encapsulates a theoretical analysis that lays the groundwork for the subsequent discussions. Following this, the methodology section delves into crucial aspects such as the nature of the employed data and the analytical Model adopted for the study. Lastly, the paper concludes with a meticulous analysis of the results obtained and a comprehensive delineation of the implications derived from the findings.

2.0 Methodology

2.1 Data Sample and Variables

The data for this study were taken from the Fund's financial reports for 2018-2022. The financial statements are available from the database of the Capital Market and Securities Authority(CMSA) in Dar es Salaam, Tanzania. Other data were taken from the mutual funds 'individual prospectus. The data were gathered from all six mutual funds, including Umoja Fund (Umoja Unit Trust Scheme); Wekeza Maisha (Invest Life Fund); Watoto Fund (Children Career Plan Unit Trust Scheme); Jikimu Fund (Regular Income Unit Trust Scheme); Ukwasi Fund (Liquid Fund); and Hatifungani Unit Trust Scheme (Bond Fund).

The study used three inputs and one output. The Dar es salaam-Tanzania mutual funds inputs are (i) net asset value, (ii) expenses, and (iii) risks. The Output is the funds' returns to scale. The input-output variables are taken to

measure the fund's efficiency and productivity for the test period of 2012 to 2022.

Table 1: Variables Definition and Measurement Procedures

Variable(s)	Definition	Measurement
NAV	NAV is the total value of a mutual fund's assets minus the total value of its liabilities. It represents the per-share market value of all the securities held by the fund.	NAV is calculated by dividing the total value of the fund's assets minus liabilities by the number of outstanding shares. Mathematically, NAV = (Total Asset Value - Total Liability) / Number of Outstanding Shares.
Expenses	Expenses in mutual funds refer to the costs associated with managing and operating the fund. These can include management fees, administrative expenses, distribution fees (loads), and other operational costs.	The expense ratio is calculated by dividing the total expenses of the fund by its average net assets. Mathematically, Expense Ratio = (Total Expenses / Average Net Assets).
Risks	Risks in mutual funds encompass various factors that may affect the performance and value of the fund.	Risk is often assessed using statistical measures such as standard deviation, beta, and alpha. Standard deviation measures the volatility of returns, beta measures the fund's
Fund's return	Total returns represent the overall change in the value of a mutual fund's investment portfolio over a specific period. It includes both capital appreciation (or depreciation) and any income generated from the fund's investments, such as dividends or interest.	Common measures of risk-adjusted returns include the Sharpe ratio, Treynor ratio, and Jensen's alpha. T

2.2 The Research Model

The study employed Data Envelopment Analysis (DEA)-Malmquist Productivity Index. DEA is the non-parametric mathematical programming approach to frontier estimation (Coelli, 1996). The DEA technique defines an efficiency measure of a fund by its position relative to the frontier of the best fund performance established mathematically by a weighted sum of outputs to a weighted sum of inputs (Galagedera& Silvapulle, 2003). DEA involve using linear programming methods to construct a non-parametric piecewise surface (or frontier) over the data to calculate efficiencies relative to this surface.

The DEA-Malmquist method is applied to calculate the indices of total factor productivity (TFP) and technological and technical efficiency changes. Fare et al. (1994) reported that the productivity change index is given as:

$$M_0(X,^t y^t, x^{t+1}, y^{t+1}) = \frac{D_0^{t+1}(x^{t+1}, y^{t+1}}{D_0^t(x^t, y^t)} \times \left[\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1}} \right) \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right) \right]^{\frac{1}{2}} \quad \text{.....(1)}$$

Where Mo= Malmquist productivity index

D_0= Distance function

x^t = Input from the current period Technology

x^{t+1} = Input I n the next period technology

y^t = Output from the current period Technology

y^{t+1} = Output in the next period Technology

The ratio outside the blackest measures the change in relative efficiency between years' t and t+1. The x and y represent inputs and outputs, respectively. The geometric mean of the two ratios inside the blackest capture the shift in the Technology between the two periods evaluated at x^t and x^{t+1}, that is:

$$\text{Efficiency change} = \frac{D_0^{t+1}(x^{t+1}y^{t+1})}{D_0^t(x^t, y^t)} \quad \text{and} \qquad (2)$$

$$\text{Technical change} = \left[\left(\frac{D_0^t(x^{t+1}, y^{t+1})}{D_0^{t+1}(x^{t+1}, y^{t+1}} \right) \left(\frac{D_0^t(x^t, y^t)}{D_0^{t+1}(x^t, y^t)} \right) \right]^{\frac{1}{2}} \qquad (3)$$

All indices are relative to the previous year. Therefore, the estimated result begins with year 2. If x^t x^{t+1} and $y^t = y^{t+1}$ (i.e., there has been no change in Input and Output between the periods, the productivity index signals no change: $M_0 = 1$. In this case, the component measuring efficiency and technical change are reciprocals, but not necessarily equal to 1 (Fare et l.,1994). The Data Envelopment Analysis criteria are as follows: if any of the Malmquist indices is below 1, this implies that there is a decline in performance of the firm. If any of the Malmquist indices is above 1, this indicates that there is an increase in performance of the firm. Moreover, if any of the Malmquist indices is equal to 1, this means that there is no change in the firm's performance.

The DEA-Malmquist has five indices, to measure the following: i) Technical efficiency change (relative to a constant return to scale, CRS technology), ii) technological change, iii) pure technical efficiency change (relative to a variable return to scale, VRS technology), iv) Scale efficiency change, v) Total factor productivity (TFP) change.

In practical applications, the distance measures that appear in (1) above are calculated for each operator in each pair of adjacent time periods using mathematical programming technique. We assume that k=1,…K firms that produce m=1,…M outputs $y_{k,m}^t$ using n=1,…N inputs $x_{k,n}^t$ at each time period t=1,…,T. Under DEA, the reference technology with constant returns to scale(CRS) at each time period t from data can be defined as

$$G^t = \left[(x^t, y^t) : y_m^t \le \sum_{k=1}^{k} z_k^t y_{k,m}^t \right] m = 1,...,M,$$

$$\sum_{k=1}^{k} z_k^t x_{k,n}^t \le x_n^t \;\; n = 1,...,N, z_k^t \ge 0 \;\; K = 1,...,K, \quad (4)$$

Where z_k^t refer to the weight on each specific cross sectional observation, following Afrit(1972),the assumption of constant return to scale may be relaxed to allow variable returns to scales by adding the following restrictions

$$\sum_{k=1}^{k} z_k^t = 1 (VRS) \quad (5)$$

Following the Fare et al (1994), this study an enhanced decomposition of the Malmquist index by decomposing the efficiency change component calculated relative to the constants returns to scale technology into pure efficient component (Calculated relative to the constant return to VRS technology) and scale efficiency component (Calculated relative to the VRS technology) and the scale efficiency change component which captures changes in deviation between VRS and CRS technology. The sub set of pure efficiency change measures the relative ability of operators to convert inputs into outputs while scale efficiency measures to what extent the operators can take advantage of returns to scale by altering its size towards the optimal scale.

To construct the Malmquist productivity index of firm k between t and t+1, the following four distance functions are calculated using DEA approach: $D_0^T(X^t, y^t), D_0^{t+1}(x^t, y^t), D_0^t(x^{t+1}, y^{t+1}), D_0^{t+1}(x^{t+1}, y^{t+1})$. These distance functions are reciprocals of the Output Farrell' (1957) measure technical efficiency. The non-parametric programing models used to

calculate the Output based Farell(1957) measure technical efficiency for each firm $K^{`}=1,...K,$ is expressed as

$\left[D_0^1(X_k^t, y_k^t\right]^{-1} = \max\ \lambda^{'k'}$ subject to (6)

$$\lambda^{k'} y_{k,m}^t \le \sum_{k=1}^{K} z_k^t y_{k,m}^t \quad m=1,...,M$$

$$\sum_{K=1}^{K} Z_k^t x_{k,n}^t \quad n=1,...,N \qquad (7)$$

$$\sum_{k=1}^{K} Z_k^k = 1 (VRS)\ Z_k^t \ge 0\ K=1,...K.$$

The computation of $D_0^{t+1}(X^{t+1}, y^{t+1})$ is similar to (7), where t+1 is substituted for t

Construction pf Malmquist index also requires calculation of two mixed distance functions, which is computed by comparing observations in one-time period of the mixed distance function for observation k can be obtained from

$\left[D_0^t(x_{k'}^{t+1}, y_{k'}^{t+1})^{-1}\right]=$ max $\lambda^{'k'}$ subject to (8)

$$\lambda^{k'} y_{k,m}^t \le \sum_{k=1}^{K} Z_k^t y_{k,m}^t \quad m=1...M$$

$$\sum_{k=`}^{K} Z_k^t x_{k,n}^t \le x_{k',n}^t \quad n=1..., N \qquad \sum_{k=1}^{K} Z_k^t = 1 \qquad (VRS)$$

$$z_k^t \ge 0\ K=1..., K \qquad (9)$$

To measure changes in scale efficiency, the inverse output distance functions under VRS technology are also calculated by adding (5) into constraints in (7) and (9). Technical efficiency change is calculated relative to CRS. Scale efficiency change in each time period is constructed as the ratio of inverse distance function satisfying CRS to the distance function under VRS, while pure efficiency change is defined as the ratio of the own-period change distance function in each period under VRS. With these two distance function with respect to VRS technology, the decomposition of (1) becomes.

$$M_0(x^t, y^t, y^{t+1}) = \left(\frac{D_0^{t+1}(x^t, y^t}{D_0^t(x^t, y^t}\right)\left(\frac{D_0(x^{t+1}, y^{t+1})}{D_0^t(x^t, y^t}\right)^{\frac{1}{2}} \times \left(\frac{D_0^T(x^t, y^t}{D_0^{t+1}(x^{t+1}, y^{t+1})}\right) \times$$

$$\left(\frac{D_{oc}^{t+1}(x^t,y^t)D_0^{t+1}(x^{t+1},y^{t+1})D_{oc}^{t}(x^t,y^t)D_0^{t}(x^{t+1},y^{t+1})}{D_0^{t+1}(x^t,y^t)D_{OC}^{t+1}(x^{t+1},y^{t+1})D_0^{T}(x^t,y^t)D_{oc}^{t}(x^{t+1},y^{t+1})}\right)^{\frac{1}{2}} \quad (10)$$

Where

$\left(\frac{D_0^{t+1}(x^t,y^t}{D_0^{t}(x^t,y^t}\right)\left(\frac{D_0(x^{t+1},y^{t+1})}{D_0^{t}(x^t,y^t}\right)^{\frac{1}{2}}$ = Technical efficiency change(techch)

$\left(\frac{D_0^{t}(x^t,y^t}{D_0^{t+1}(x^{t+1},y^{t+1})}\right)$ =Pure Efficiency change(pech)

$\left(\frac{D_{oc}^{t+1}(x^t,y^t)D_0^{t+1}(x^{t+1},y^{t+1})D_{oc}^{t}(x^t,y^t)D_0^{t}(x^{t+1},y^{t+1})}{D_0^{t+1}(x^t,y^t)D_{OC}^{t+1}(x^{t+1},y^{t+1})D_0^{T}(x^t,y^t)D_{oc}^{t}(x^{t+1},y^{t+1})}\right)^{\frac{1}{2}}$ = Scale Efficiency Change(sech)

Note that when the Technology in fact exhibit CRS, the scale change factor equals to 1 and it is the same decomposition as (1)

Note:
techch=Technical efficiency change
pech= Pure efficiency change
sech =Scale efficiency change

3.0 Empirical Results

3.1 Descriptive Statistics

Table 2 shows the descriptive statistics of inputs and outputs of 6 mutual funds across categories in Tanzanian mutual fund's industry during the study period. With reference to expense ratio the results suggest that the expense ratios of the mutual funds in the study period vary. The mean and median values are relatively close, indicating a relatively balanced distribution of expense ratios. The small standard deviation implies that most expense ratios were clustered around the mean, with relatively few outliers. The range between the minimum and maximum expense ratios (1.411% to 4.546%) was not extremely wide, but it indicated some variability in the cost of managing these funds. Investors often consider expense ratios when evaluating mutual funds because lower expense ratios could contribute to higher overall returns for investors. Funds with lower expenses have less of their returns eaten up by costs. On the other hand, higher expense ratios might be justified if a fund consistently delivers superior returns.

The descriptive statistics also revealed relatively high mean and median risk values, suggesting that, on average, mutual funds carry a moderate level of risk. However, the broad standard deviation underscores the heterogeneity of risk levels among the funds, with some funds exhibiting substantially higher or lower risk than the mean. The slight standard deviation and the fact that the minimum and maximum values are the same (6.726) suggest that the NAVs of the funds remained relatively stable and did not vary much during the given period. The mean and median values of fund returns are close, indicating a relatively symmetric distribution of returns. The standard deviation suggests moderate variability in returns, with the minimum and maximum values indicating the range of returns achieved by different funds.

Table 2: Descriptive Statistics on Mutual Funds Input and Outputs From 2018-2022

Inputs	Mean	Median	S.D	Maximum	Minimum
RISK	30.132	15.808	32.164	77.531	0.900
Expense ratio	2.438	2.386	0.132	4.546	1.411
Net Asset value	5.635	5.791	0.126	6.726	6.726
Net Asset Attribution	17.022	17.125	0.344	19.894	13.979
Out put					
Fund Return	14.367	14.103	0.353	17.850	10.457

3.2 Malmquist Productivity Index(MPI) Results

In this section we intend to measure the total factor productivity and its corresponding changes in its component between 2018 and 2022. Balanced panel data was used in analysis with about 30 observations from six (6) available mutual funds in Tanzania. The Malmquist productivity index has components which are used in performance measurement; these are changes in technical efficiency, change in technological change, change in pure technical efficiency, and change in scale efficiency as well as change in Total factor productivity. Therefore, the Malmquist productivity indexes provide us with the opportunity to compare the productivity change within the mutual fund industry and the productivity change within groups, hence give the opportunity of poor performers to catch up. Total factor productivity as the word implies refer to all factors pertaining to the production of commercial banks, more specifically the change in total factor productivity entails the changes in efficiency and changes in technology. When interpreting the Malmquist total factor productivity, we consider all of its components greater than one that indicates improvement or progression. On the other hand, the values less than one refers to the deterioration of regression, whereas the

values equal to one refers to as no improvement has been observed. We used DEAP 2.1 program developed by Coelli (1996b) to measure the productivity indexes.

T 3 presents the Malmquist index summary of annual means during the study period. Most mutual funds have shown greater performance in efficiency change improvement scoring 67percent, technical change 50 percent, pure technical efficiency change 50 percent, scale efficiency change improvement and 75 percent. In 2019/2020, there was a substantial increase in efficiency and significant improvements in technical efficiency, pure technical efficiency, and total factor productivity ,the results in efficiency change and technological change resulted in improvement of mutual fund performance, similar findings has been reported by Shabri et al (2010) who found that, in Indonesian mutual funds; the mutual fund productivity improvement was the function of both efficiency change and technological change and through these changes mutual funds can reach high performance level and achieve competitive ability. The mean results indicated technical efficiency change deteriorate by 2.7 percent while there was no improvement in pure technical efficiency change. The rest of the components recorded an improvement as follows efficiency change 5.8 percent, Scale efficiency change (an improvement to catch up) 5.8 percent similar to efficiency change and total factor productivity shown an improvement of 3 percent. The observed 2.7 percent deterioration in technical efficiency change suggested that the mutual funds' ability to utilise their inputs optimally and efficiently in producing outputs has decreased. Such a decline may be attributed to a variety of factors, including changes in management practices, resource allocation, or market conditions. The lack of improvement in pure technical efficiency change suggests that changes in scale have likely contributed to any observed efficiency changes. Pure technical efficiency change focuses on the technological aspect of efficiency, excluding scale effects. The absence of improvement in this aspect could indicate that technological advancements or operational practices have not been effectively utilised to enhance fund performance. The 5.8 percent improvement in efficiency and scale efficiency change is a positive sign. This implies that, on average, mutual funds have enhanced their overall efficiency by using inputs more effectively and optimising their scale of operations. It's important to delve deeper into the specific strategies or practices that have contributed to this improvement, as they could serve as valuable insights for other funds aiming to enhance their performance. The 3 percent improvement in total factor productivity is a notable result. Total factor productivity captures changes in the overall productivity that are not solely attributed to changes in efficiency. This

suggested that mutual funds have achieved higher output levels relative to their combined inputs, indicating improvements in managerial practices, technology adoption, or operational processes. Generally, the results indicate a complex interplay between different components of efficiency and productivity. While technical efficiency has deteriorated and pure technical efficiency has remained stagnant, the gains in efficiency change, scale of efficiency change, and total factor productivity point to areas where mutual funds have managed to make positive strides, the findings are in line with (De Guzman et al., 2005; Babalos et al., 2012).

Table3: Malmquist Index Summary of Annual Means

Year	effch	Techch	pech	sech	tfpch
2018/2019	1.090	0.227	0.892	1.222	0.248
2019/2020	1.484	2.402	1.121	1.324	3.566
2020/2021	0.689	2.290	1.000	0.689	1.577
2021/2022	1.125	0.718	1.000	1.125	0.807
Mean	**1.058**	**0.973**	**1.000**	**1.058**	**1.030**
	effch<1=1	techch<1=2	pech<1=1	pech<1=1	tfpch<1=2
	effch>1=3	techch>1=2	pech>1=1	pech>1=3	tfpch>1=2
	effch=1=0	techch=1=0	pech=1=2	pech=1=0	tfpch=1=0

Note: Technical efficiency change(techch), Efficiency change(effch), Pure Technical efficiency change(pech), Total factor productivity(tfpch)

Table 4 indicates most mutual funds that recorded an improvement in both categories with exception to technical efficiency change where the score recorded the deterioration in productivity change of about 2.7 percent. The annual mean productivity change in other categories wasas follows, efficiency change recorded a progression of 5.8 percent, pure efficiency change recorded no improvement, scale efficiency change recorded an improvement of 5.8 percent and total factor productivity change recorded an improvement of 3 percent.Total productivity improvement was mainly due to efficiency change and not technological improvement. While efficiency gains were indeed crucial for productivity enhancement, the lack of emphasis on technological advancement might have hindered the long-term competitiveness of mutual funds. A balanced approach combining efficiency and technological improvements could yield better results.

Looking into the number of efficiency and efficiency firms in each category, analysis revealed the following; with efficiency change 50 percent indicated an improvement in efficiency change, 33.3 percent recorded no improvement in efficiency change, and 17 percent recorded deterioration in efficiency

change. Concerning technological change, most mutual funds during the study period recorded poor technological advancement with 67 percent deterioration while 33 percent recorded an advancement in technology use. The high percentage i.e.67 percent of mutual funds that experienced a deterioration in technological advancement is concerning. Technological innovation is often a key driver of success in today's rapidly evolving financial landscape. This deterioration could potentially indicate a lack of investment in technology or an inability to adapt to new technological trends or mutual funds has shifted their focus on managerial efficiency rather than acquiring new technologies, similar findings was recorded in Phillipine mutual funds (De Guzman et al., 2005). With respect to pure efficiency change most mutual funds recorded no improvement on this aspect, while in scale efficiency change most mutual fund recorded an improvement of about 67 percent. The fact that most mutual fund recorded deterioration on technological progress similarly most mutual funds recorded deterioration on total factor productivity by 67%. This could be a red flag for the overall health and effectiveness of these funds.

Table 4: Malmquist Index Summary of Firm Means

Firm	effch	Techch	pech	sech	tfpch
Umoja Fund	1.000	0.902	1.000	1.000	0.902
Wekeza Maisha	1.076	0.920	1.000	1.076	0.990
Watoto Fund	1.084	0.908	1.000	1.084	0.984
Jikimu Fund	0.893	0.845	1.000	0.893	0.755
Liquid Fund	1.000	1.148	1.000	1.000	1.148
Bond Fund	1.347	1.160	1.000	1.347	1.563
Mean	**1.058**	**0.973**	**1.000**	**1.058**	**1.030**
	effch<1=1	techch<1=4	pech<1=0	pech<1=1	tfpch<1=4
	effch>1=3	techch>1=2	pech>1=0	pech>1=4	tfpch>1=2
	effch=1=2	techch=1=0	pech=1=5	pech=1=1	tfpch=1=0

Technical efficiency change(techch), Efficiency change(effch), Pure Technical efficiency change(pech), Total factor productivity(tfpch)

Productivity Change by Group Categories

Following Tuzcu& Ertugay (2020), further analysis was done by dividing mutual funds into two groups. The funds over the median size were considered large, and those below the median were considered small. The main objective was to compare the productivity change of mutual funds within their respective groups. This will provide a precise description as to what among the groups of mutual funds have shown superior productivity change with respect to the rest of the groups in the industry. Similarly what

among the groups have shown deterioration in productivity change. Table 5 illuminates productivity change among mutual funds by peer groups.

The results from Table 5 indicated large mutual fund(LMF) recorded progression in productivity change in all perspectives compared to small mutual funds; hence managed to push the frontier of the production possibility outwards with respect to other groups. The large mutual funds records 10.4 percent improvement in efficiency change,6.3 percent in technological change,10.4 percent in scale efficiency change and Total factor productivity change of 17.4 percent. The improvement in total factor productivity was mainly due to improvement in efficiency change and technological progress of the mutual funds within the group. Similarly large funds have benefit over small funds in term of economies of scale because large funds purchase balk of orders so they can pay fixed cost and have access to more resources. Moreover, managers of large funds will have better investment opportunities than managers of small funds and reduced brokerage commission with the amount of the transaction, and consistent with compensation concerns of fund managers (Malhotra et al., 2007; Margaritis et al., 2007). On the other hand, Small Mutual Funds(SMF) recorded deterioration on technological change and total factor productivity by 10 percent and 9.4 percent respectively. Total factor productivity reflects the efficiency with which inputs (Net asset Value, operating expenses labor, Technology, etc.) are transformed into outputs (returns for investors). The decline in total factor productivity implied that SMFs are becoming less efficient at generating returns relative to their resource inputs. This could result from a variety of factors, including suboptimal investment strategies, poor portfolio management, increased operating costs, or outdated business models similarly as pointed out by Bauer et al (2002); small funds experience higher transaction costs than larger funds because they cannot take advantage of certain economies of scale. Small funds may face significant higher costs in their start-up period. This was due not only to marketing costs but also the initial cash flows as it will place a greater load on the fund's transaction costs. According to Bauer et al (2002), one of the reasons for underperformance of younger funds is their exposure to higher market risk since they are invested in fewer stock. The rationale for classifying mutual funds into groups based on these results is rooted in the observed disparities in investment opportunities, costs, efficiency, and risk factors between large and small funds. This classification helps to better understand the dynamics and challenges faced by different categories of mutual funds in the investment landscape.

Table 5: Malmquist Index Summary of Mutual Funds by Groups

	Year	effch	techch	pech	sech	tfpch
	2018/2019	1.261	0.227	0.801	1.574	0.286
LMF	2019/2020	1.384	2.287	1.248	1.109	3.165
	2020/2021	0.696	2.716	1.000	0.696	1.891
	2021/2022	1.225	0.904	1.000	1.225	1.108
	mean	1.104	1.063	1.000	1.104	1.174
	Year	effch	techch	pech	sech	tfpch
	2018/2019	0.788	0.270	1.000	0.788	0.212
SMF	2019/2020	1.522	2.608	1.000	1.522	3.969
	2020/2021	1.000	1.296	1.000	1.000	1.296
	2021/2022	0.855	0.720	1.000	0.855	0.616
	mean	1.006	0.900	1.000	1.006	0.906

LMF=Large Mutual funds, SMF=Small Mutual fund, Technical efficiency change(techch), Efficiency change(effch), Pure Technical efficiency change(pech), Total factor productivity(tfpch)

4.0 4.0.Conclusion and Recommendations

The findings from the study provided valuable insights into the performance and productivity changes of mutual funds over the study period. The Malmquist index summary revealed that most mutual funds have demonstrated improvements in efficiency change, technical change, scale efficiency change, and total factor productivity. These improvements reflect a complex interplay between various components of efficiency and productivity. Notably, the positive improvements in efficiency change and scale efficiency change suggest that mutual funds have enhanced their overall efficiency and optimized their operations, leading to increased productivity. The 3 percent improvement in total factor productivity signified that mutual funds have achieved higher output levels relative to their inputs, indicating improvements in managerial practices, technology adoption, or operational processes.

However, the study also identified areas of concern. The observed deterioration in technical efficiency change by 2.7 percent implied that some mutual funds struggle to utilise their inputs optimally and efficiently. This decline could be attributed to management practices, resource allocation, or market conditions changes. Moreover, the lack of improvement in pure technical efficiency change indicated that technological advancements have not been effectively leveraged to enhance fund performance. The analysis further highlights the importance of a balanced approach between efficiency

and technological improvements. While efficiency gains are crucial, the study suggested that a lack of emphasis on technological advancement could hinder long-term competitiveness, especially considering the rapidly evolving financial landscape.

Dividing mutual funds into large and small groups provides additional insights. Large mutual funds have demonstrated superior productivity changes compared to small mutual funds. Large funds' ability to improve technological, scale efficiency, and total factor productivity is attributed to economies of scale, better investment opportunities, and reduced transaction costs. In contrast, small mutual funds have faced challenges, particularly in technological change and total factor productivity. The decline in total factor productivity for small funds suggests inefficiencies in generating returns relative to resource inputs. This could be due to higher transaction costs, suboptimal investment strategies, or outdated business models.

In conclusion, the study has highlighted the need for mutual funds to balance efficiency and technological advancements to ensure sustained competitiveness. The positive strides in certain areas underscore the growth potential, while the areas of deterioration signal the need for targeted improvements. The findings provided valuable insights for mutual fund managers and the industry, emphasising the importance of adapting to changing market conditions and leveraging technology to enhance overall performance. Encouraging mutual funds to achieve economies of scale can improve efficiency and performance. Regulatory authorities could provide guidance and best practices for achieving economies of scale. Due the challenges small mutual funds face, regulatory authorities could provide targeted support to help them overcome barriers to technological adoption. This might include financial incentives, technology-sharing platforms, or collaborations with larger funds for knowledge transfer.

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Determinants of Broilers Production in Per- Urban Areas in Dar es Salaam, Tanzania

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Abstract
The study analyses the determinants of broilers production in per urban areas in Dar es salaam region, Tanzania using variables costs of production, interest per month, Education of the keeper, Skills of the keeper, Experience in keeping chickens and Family size. For this aim, descriptive statistical and an econometric analysis was conducted in 88 randomly selected broilers keeping farmers in Kitunda ward at Ilala district. The results revealed that cost of inputs had the average total cost of inputs of Tshs 55,170.87per batch. The results of econometric model showed that cost of production, experience of broiler entrepreneur in keeping, training attended to entrepreneur about broiler production, total revenue earned, and education level of broiler entrepreneur was the most important inputs, significantly contributed to the total production of broilers; While, the use of bank loan interest (P= -.088) and family size for farmer (P= -.173) have negative relationship with broilers production. Government of Tanzania should enhance the productivity of the agricultural sector through the subsidies provision of the required inputs, which would minimize the total cost of production and speed up the productivity process of poultry in Tanzania.

Keywords: *Per-Urban Areas, Broilers production, Tanzania*

1.0 Introduction

Broiler meat production is the most common of all the white meat other than poultry, pork, and rabbit that are consumed globally. This is because it is fairly cheap, low in fat, and has limited religious and cultural barriers compared to other meat products. Broiler meat production provides employment and regular income for entrepreneurs through its value chain activities. The popularity of broiler meat production can be attributed to a short production cycle, low production cost and product prices, ready market, and high feed-meat conversion ratio (OECD - FAO, 2020). Tanzania has three major poultry production systems: traditional indigenous, improved family chicken and commercial specialized chicken systems (LMP, 2015; Da Silva *et al*., 2017). The traditional indigenous family subsystem is an extensive scavenging dual-purpose system, with levels of

low egg (50 eggs/ year) and meat, 1.5 kg for mature chicken production and therefore local backyard system, low input – low output and absence of biosecurity. The improved family chicken subsystem, with improved local/ imported tropical breeds is a semi-intensive, semi-scavenging moderately high productivity, i.e. 150 eggs/year; and 1.8 kg live weight at maturity subsystem and therefore a more intermediate production system, medium input – medium output based on the use of dual-purpose breeds with some attention to biosecurity (Sanka *et al*., 2020). Chickens are important sources of animal-sourced food for numerous reasons. First, 86% of the livestock keeping households in the country own chickens (MLDF, 2015). About 80% of the chickens are owned by women who have control over decisions on sales and consumption of chicken meat and eggs (Galie *et al*., 2015; Tavenner *et al*., 2019; Shapa *et al*., 2021). Secondly in other parts of the world especially developing countries, chickens are sold alive and do not necessarily need central slaughterhouses and cold chains. Third, a chicken is a unit fit for rural household consumption compared with ruminants which generate too much meat to be consumed in one meal. Chicken eggs are also appropriate units for daily consumption and can be stored for some days without cooling. Fourthly, managing a chicken enterprise is relatively easy, requiring a small capital investment with promising income generation within a short period of time and hence, attracting more women and youth (Hundie *et al*., 2019; Ngongolo *et al*.,, 2021). White meat including that of chicken is considered a healthier food than red meat, and therefore, the trend of consumption is expected to increase steadily (Weber et al., 2017).

Poultry production in Tanzania includes both commercial (broilers and layers) and conventional systems based on indigenous breeds, as well as improved, dual purpose breeds mainly kept in a free range system. Commercial poultry processing is practiced primarily in urban and outlying areas, the traditional production of poultry is the largest, contributing about 70% of the flock and providing the bulk of poultry meat and eggs consumed in rural areas and 20% in urban areas (Nduthu 2015). Poultry production in rural areas is regarded as a cherished asset to local societies due to its share in poverty alleviation, provision of food, and its role in supporting gender equality (Guèye E., 2000). For a long time, the marginalized and remote rural villages of Africa have been keeping poultry as a source of income and mainly involving women as they decide on most of household expenditures particularly food consumption (Bebe BO *et al*., 2012). Schroeder D *et al*., (2016) establish the demand for broiler production to rise from the current 53.47 million to 137 million by the year 2050 .This anticipated rise in demand for animal products will be

met through improved poultry production and management interventions (Meijer S. *et al*., 2020). The poultry sector contributes about 3 percent of the Gross Domestic Product (GDP) derived from agriculture in Tanzania, equivalent to 1% of the total national GDP (TALIRI, 2015). However, despite the central role that the poultry production plays, its potential is not yet fully explored (Olsen JE *et al*., 2021). It is argued that if this sector is managed effectively and efficiently, its contribution to the national economy could be higher (Bekunda M *et al*., 2016). Further initiatives for improving agricultural practices seem necessary to render the sector more efficient and sustainable in order to respond to the foreseen food demand increases and to cushion the livelihood of the millions rural poor farmers.

Poultry production plays an important role in meeting economical and social obligations for the household and national at large, especially for poor families. In addition to slaughtering for home consumption, chickens are sold to raise money for the purchase of food, medicine, clothes and payment of school fees, bride price, farm implements, shops establishment etc. Chickens are regarded as a special food during festivals, ceremonies, entertaining visitors and as a gift. Economic studies of peri urban poultry keeping have shown that the industry is a viable and promising alternative source of income for households (Salum, et al., 2002).

In Tanzania, poultry farming plays an important role in both urban and rural settings in terms of food security, source of income and in meeting other social obligations such as dowry and rituals (Data Driven Insights, 2018). The national flock comprises of 83 million birds; of which 38.7 million (47%) are indigenous breeds, 33.4 million (40%) broilers and 11.1 million (13%) layers (URT, 2020). According to the large scale, commercial producer survey conducted by the NBS in 2016, the total number of chickens reared on large-scale farms was 277 thousand, 179 thousand of which are broilers. This represents 19% of stated broiler production and less than 1% of total chicken production. Chicken production contributes about 1.8% of the Gross Domestic Product (MMA and Transcend Enterprises Limited, 2018). In 2018, the estimated monetary value of meat and eggs was TZS 874 billion and 364 billion respectively (URT, 2022). In the 2021/2022 financial year hatcheries in Tanzania produced 70,323,00-day-old chicks (DOC) comprising of 60,463,872 broiler, 1,999,128 layers and 7,860,000 dual-purpose chicks. There are 26 hatcheries, and the parent stock farms have a capacity of 1,200,000 parent stock. In the financial year 2021/2022 Tanzania produced and recorded (formal market) 80,601.3 MT of poultry meat (MLF,

2022). On the other hand commercial poultry production is mostly practiced in urban and peri-urban areas and productivity levels are relatively higher.

Chawker et al., (2021) demonstrated the poultry production, marketing, and consumption at the smallholder level remain low due to the limited genetic potential of indigenous breeds, inadequate husbandry practices, higher disease prevalence, bird mortality, inadequate inputs access and delivery system and other marketing-related constraints. Approaches to address various constraints need to adopt integrated research and development efforts. This may include developing innovations that enhance the production and productivity of existing breeds; building the capacity various value chain actors; establishing a public-private partnership for effective input delivery and output marketing; and improving the overall performance and competitiveness of the value chain. Research and development efforts to improve the production and productivity of existing breeds may involve improving the genetic potential of existing breeds, introducing locally adapted and farmer-preferred improved breeds and developing innovative and context-specific management practices that enhance the competitiveness and efficiency of different production systems.

The peri-urban environment in Tanzania, as in other developing countries, occurs at the interface between peri-urban, rural and urban areas. A rapidly increasing population and dwindling agricultural lands characterize these areas. The poultry industry in Tanzania is divided into traditional and commercial production systems. The traditional system contributes to over 70% of the flock, supplying most of the poultry meat and eggs consumed in rural and about 20% consumed in urban areas. The main indigenous breed subtypes include; *Kuchi, Kishingo, Sukuma, Kinyafuzi and Kiduchu*. Both commercial and traditional systems are constrained by diseases, poor quality feeds, inadequate technical support services, low genetic potential of the local breed and weak farmer organizations. In addition, there is inadequate regulatory framework in hatcheries and breeding farms (FAOSTAT, 2022a).

Boilers chicken production in Tanzania estimated that there are 24 million broilers and 6 million layers in Tanzania (Meijer-Willems, et al., 2018) whereas others estimate that Tanzania has an estimated chicken population of 32 million commercially bred birds 24 million broilers and eight million layers. Furthermore, the exotic chicken has a huge potential for further commercialization in Tanzania throughout the poultry value chain of the broiler and layer industries in Tanzania.

Based on the literature, in this paper the main objective was to analyses the determinants of broiler production in peri urban area in Dar es Salaam of the broiler entrepreneurs in Ilala Municipal. Furthermore, broiler keeping has been expanding and grown highly in Ilala district by small-scale farmers and has a great potential for improving welfare in household. Therefore, the analysis of this study was to figure out those productions input costs in the number of chicken produced in one production year in this study was constituted by the following variables; Cost, Experience, Interest, Education, Skills, Family size and Personal income (Total revenue) in the Ilala district.

2.0 Literature Review

The benchmark economic model of broiler production has been, the Scott (2023) elaborates how porters five force model shapes every industry and also it helps to identify weaknesses and strengths in industries. It can also be used to identify industry's structure so that corporate strategy can be developed. Industrial competitive environment can be analyzed using five force model and is also used as a guideline. It helps to identify the number of the competitors and their power, the new entrance, suppliers' power, buyers' power and competition that affects the profitability the company makes (Isabelle et al., 2020). The five Forces system "went beyond a more superficial emphasis on the relative pace of market growth" in assessing the industry's attractiveness (Grundy, 2006). The additional benefit according to (Grundy 2006) is that the managers rely on the external environment rather than on the standard "SWOT" analysis. The Five Forces Model aims not only to determine the benefit and disadvantages of the market, but also to identify the ' economic foundation 'and thus the causes of competitiveness (Porter, 2008).

From yet a different perspective focus, (Porter, 2008) argues that the five competitive forces indicate whether or not a sector is sufficiently attractive and make it easier for investors to forecast positive and negative market shifts before they become evident. He further suggests that this deeper thought about competition is a more successful or better Strategy that dominates investment analysis today, rather than financial forecasts and trend extrapolation. Although the author of this theory argues that these five factors are the central or main determinants of companies' competitive success or failure, other scholars argue in favor of this new product development being able to provide a business with strategic strengths in the face of competition. This can be done by providing value from the introduction of new product technologies, new product pricing, new product positioning, branding of new products and marketing of new ones.

Porter (1980, 1985, 2008) stated that some of the basic business decisions are simply the essence of the markets reached by the enterprise and how the enterprise will operate in the chosen markets. Economic tactics concentrate on how a company can achieve its most attractive market position (Pearson, 1999). A corporation's income is essentially the difference between its revenue and its expenditures. Hence the willingness of the organization to pursue the right strategic path for the fifth powers offers high profitability.

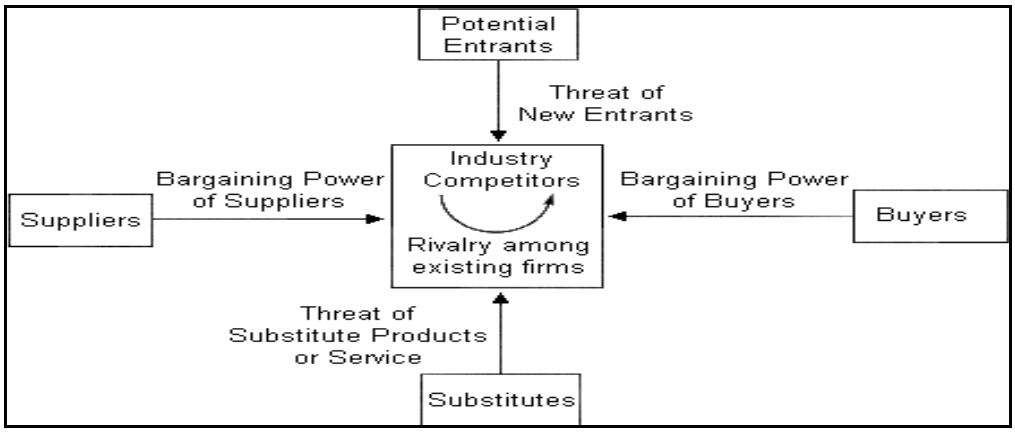

Figure 1: Michael Porter's "Five Forces" Model (2008) - Summary and interpretation of live chicken product

Wilson *et al*. (2022) grouped constraints faced by smallholder poultry farmers into three major categories – financial, technical and institutional constraints. Financial constraints were related to farm size, while technical constraints were related to farmers' knowledge of chicken production and management concerns such as veterinary measures, feed access and availability, and management practices. Other technical factors included knowledge and awareness of farmers on record keeping, entrepreneurship and marketing skills, and gender roles in different managerial aspects at the household level (Wilson *et al*., 2022). Institutional constraints included public support services and physical infrastructure (i.e., roads, water supply, energy availability and communication technology), market infrastructure, finance availability and credit facilities (Mapiye *et al*., 2008). The major constraints identified by Wilson *et al*. (2022) were chicken diseases, poor availability of day-old chicks, theft and limited access to quality feed and/or feed ingredients. Other challenges included; limited knowledge of managerial practices, market availability, predators, limited access to vaccines and medications, lack of capital, and limited extension services and personnel to offer advice'

Emokaro *et al*, (2014) studied the production and marketing estimated technical efficiency of broiler producers in Nigeria using the stochastic frontier approach. The study revealed technical efficiency of 81%, and sources of inefficiency were farmer's age, gender, nature of farming and age squared of the broiler, while factors such as house hold size, education level, experience in farming and age at which the broilers were sold were not influencing inefficiency of the farm. Otieno *et al*. (2012) used the technique to assess the technical efficiency of cattle production in Kenya. Wikedzi (2013) used the technique to analyse technical efficiency of dairy cattle in Tanga City, while, (Mlote *et al*.2013) estimated the technical efficiency of small scale cattle fattening using stochastic production function.

Baliyan, (2017) used cross-sectional data from 60 broiler farmers, to study "Socio- Economic Factors as Determinants of Farm Management Skills among Broiler Farmers in Botswana". The analysis of variance (ANOVA) as analytical technique was used to determine the influence of socio-economic factors and post hot analysis was also used to determine the influence in each level of the variable to the farm management skills. The findings revealed that all socio-economic variables have significant influence on farmer management skills. This also was used by (Ogalo, 2016) to study "Factors Influence Poultry Production in Eldoreti Town Kenya". This technique was also adopted in this study to analyze the influence of socio-economic factors to the profitability among small-scale farmers in a study area.

Omondi (2018) carried a study in the Kisumu and Thika cities of Kenya the gross- margin was used as analytical tool to find out economic feasibility of 160 small-scale poultry producers. The findings showed that urban poultry production is profitable and important for food security. (Gad., *et al* 2015) also were used gross-margin analysis to identify factor affect the performance of small and media of poultry production in Karuri Kenya. (Rodica, 2012) used Goss-margin as analytical tool in analysis of poultry production. This study also adopted gross-margin analysis to determine profitability of poultry farming in a selected area.

Jackson, W. (2020), conducted a study on Economic analysis of small-scale poultry production in Dodoma region: a case of CHAWAKUBODO cooperative society. Cross-sectional design was used with sample size of 200 of small-scale producers who were members of CHAWAKUBODO. Descriptive Gross- margin and Pearson`s correlation analysis were used for

data analysis. The study found that most of the farmers (66.92%) were women with average age of 46.45 who spent 6.83 years in poultry farming and they have primary education level (57.14%). The study discussed the factors such as; costs of feed and outbreak of diseases were the major constraints facing poultry production information on markets, transport problems, technological barriers. The study discovered that many smallholder farmers were poultry production is profitable among small-scale farmers. Hence, there is the need to support these sectors especially by the government toward the growth of the poultry sector notably through financial institutions, external services such as veterinary services, control of quality of drags and vaccination services. It shows that majority of emerging producers lack knowledge on financial and marketing skills and it was found that producers were not able to meet the quality standards set by fresh produce markets and food processors.

The main objective of the present study was to analyses the determinants of broiler production in peri urban area in Dar Es Salaam in Ilala Municipal. The study employing the stochastic production frontier approach and to determine the number of chicken produced in one production year in constituted by the following variables; Cost, Experience, Interest, Education, Skills, Family size in order to develop policy parameters to improve the existing situation.

3.0 Methodology

The Study Area

The study was conducted in Dar Es Salaam region at Kitunda ward at Ilala Municipality Tanzania. The choice of the region had been attributed by many factors; first the regions have significant number of chicken keepers which are located in the peri urban geographical area at Kitunda ward. Kitunda is an administrative ward in the Ilala municipality of the Dar es Salaam Region of Tanzania. According to the (National Census,2022), the Kitunda ward has a total population of number of households of 11,470. Secondly, the researcher is based in peri urban area and participated on social and economic development through chicken keeping in the research area. (Figure 1).

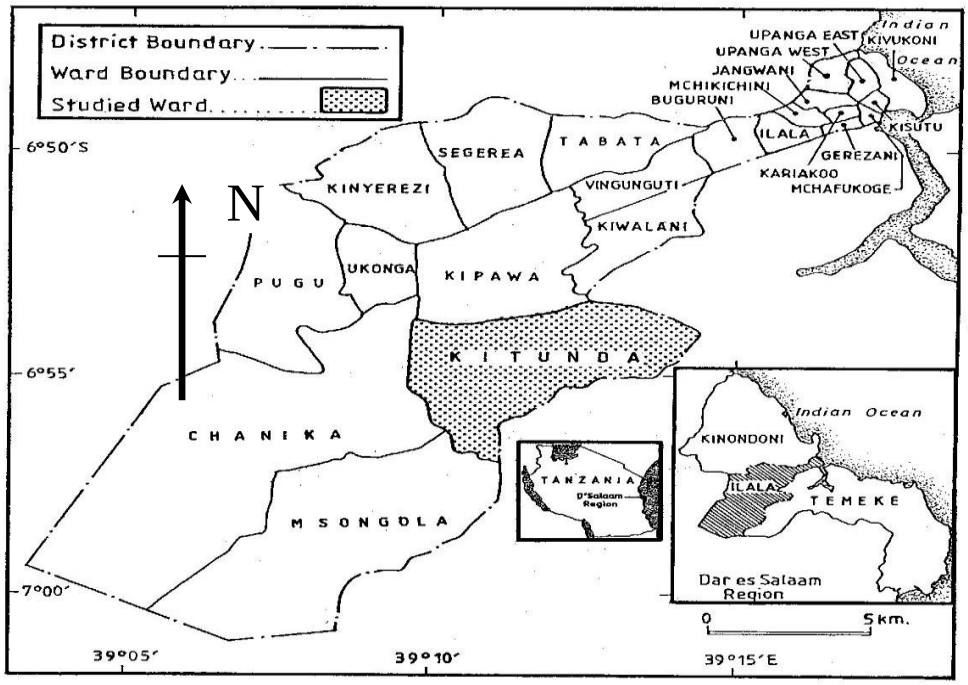

Figure 2: Map of Dar Es Salaam region, Ilala Municipal showing Kitunda ward.
Source: CARTOGRAPHIC UNIT, (2023) – University of Dar Es Salaam (UDSM)

Selection of Study Area and Data Collection

Data used in this study were obtained from 100 broiler entrepreneurs in Kitunda ward from Ilala district, Dar es Salaam region. A survey approach was used to collect quantitative information on different inputs used for the production of broilers as well as output and socio-economic structure of farms. For sampling, the simple random sampling method was used Tabachnick *et al*, 2007) suggest a sample size of $N > 50 + 8m$ for multivariate data analysis (where N is the sample size, number of broiler producers in unknown target population (Ilala district, Dar es Salaam region) and m is the number of independent variables.

$N > 50 + 8m$

$N=50+(8*6)$

$N=50+48$

N=98 *…… minimum sample size required for unknown population*

Population of the Study

According to (Kothari, 2007), the term population means an entire group of individuals, events or objects that have common observable characteristics. It refers to all elements that meet certain criteria for inclusion in a given

universe. The study used case study based approach and targeted population was smallholder's farmers on broiler production. The household in Dar es salaam in Ilala district is 5,967 for the Population and Housing (Census, 2022).

Analytical Framework of Broilers Production

In this study, the determinants influencing the broilers production was carried out by taking the costs of various inputs into consideration. The descriptive statistical and econometric methods were used to analyze the primary data collected from smallholder household heads using structured questionnaire. Descriptive methods such as; measures of averages and percentages; and statistical methods such as one-way ANOVA tests and two-sample t-test was used to describe and analyze the determinants of broilers production per batch of the broiler production of the sample households. Multivariate linear regression analysis was used to analyses the level of determinants of the broilers production to the farmers. SPSS software package was used to run the probit regression and multivariate linear regression models, and to analyze the quantitative data. Quantitative data were entered in IBM SPSS Statistics Version 26 for all necessary arithmetic conducted for estimation of costs.

The stochastic frontier model was originally pioneered by Aigner, *et al*., (1977) who proposed a composed error term. Building on that, Van den Broeck *et al*., (1977) independently improved the production function by specifying an error term consisting of two components. The improvement of that model is a decomposition of the error term and generation of a stochastic frontier model (Aigner, et al., 1977, Meeusen and van den Broeck, 1977, Battese and Corra, 1977). Their result is that the error term is assumed to have two additive components; one component captures pure random factors and the other one accounts inefficiency error that is inability to maximize or work on stochastic frontier.

The primary production model previously was specified as follows:

$y = f(x_i ß) exp \varepsilon_i$ … … … … … … … … … … … … … … … … … … . … … …..(1)

provement which is the decomposition of error term leads to the following model:

$y = f(x_i ß) e^{vi - ui}$ …… … … . . … … … … … … … … … … … … … … ……. (2)

Applying to this study as an example, Y_i is the poultry output, $f(.)$ define the Cobb Douglas production function, x_i is a set of inputs, ß is a vector of parameters to be estimated and $v\_i - u\_i$ denotes the error term: vi is assumed to be independently and identically distributed as $N(0, \sigma\_v\hat{}2)$ and

represents external factors to the farmer; u_i is the second random component which accounts for technical inefficiency effects and it is stochastic as well as assumed to have a particular distribution specification, that is, half-normal distribution, truncated normal distribution or exponential distribution (Hatirli *et al*., 2006).

The determinants were used in the production of broilers were specified in order to calculate the total production in the study. The inputs may be in the form of Y_c = Number of chicken produced (output), C_p = Cost of production, I= interest per month, E= Education of the keeper, S = Skills of the keeper, E_p= Experience in keeping chickens and F_s = Family size. In specifying a fit function relation, the Cobb Douglass production function was selected. The Cobb Douglass function has been used by several authors to investigate the relationship between various inputs and output of agricultural crops (Singh et al., 2004; Hatirli et al., 2006; Rafiee et al., 2010); it is a power function can be expressed in a mathematical form as follows (Singh et al., 2004):

The maximum likelihood estimation of equation Eq. (2) provides estimators for β and variance parameters, $\sigma^2 = \sigma^2{}_v + \sigma^2{}_u$
The subtraction of v_i on both side of eq. (2) result to:
$\bar{y_i} = y_i - v_i = f(x_i ß) e_i{}^u$ … … … … … … … … … … … … ..... (3)
Where, $\bar{y}\_i$ is the observed output of the $i\wedge th$ farm. Note that the $\bar{y}\_i = y\_i$ for an efficient farmer. For a given level of output$\bar{y}_i$, the efficiency input vector for the $i\wedge th$ farm $x\_i\wedge t$ is derived by simultaneously solving Eq. (2) and the input ratios$x_i/x_i = k_(i)$ $(i > 1)$,
where k_1 is the ratio of observed inputs.
On the assumption that the production function in Eq. (2) is self-dual, the dual cost frontier can be derived algebraically and written in a general form as follows:
$ci = h(wi, \bar{y_i}\,; \alpha)$ … … … … . … … … … … … … … … … … … … … … (4)
Where, c_i is the minimum cost of the $i\wedge th$ farm associated with output $\bar{y}\_i$, w_i is a vector of input prices for the $i\wedge th$ farm and α is a vector of parameters. The economically efficient input vector for the $i\wedge th$ farm $x\_i\wedge e$ is derived by applying shepherd's lemma and then substituting the farm's input prices and output level into the resulting system of input demand equations.

$$\frac{\partial ci}{\partial wki} = xke(wi\bar{y}i_i\psi)\ k = 1,2, \ldots\ m = input \ldots \ldots . \ldots \ldots . . \ldots \ldots \ldots \ldots (5)$$

Where, ψ is a vector of input parameters. The observed, economically efficient costs of production of the $i\wedge th$ farm are equal to $w'\_i\ x\_i$, $\bar{w}\_i\ x\_i\wedge t\ and\ \bar{w}\_i\ x\_i\wedge e$ respectively.

In this functional form the parameters to be estimated, α_i, represent the elasticity of output with respect to each input *i* which implies the percent change in output augmentation from a 1% increase in the i^{th} input cost.

Model Specification

The total production of broilers is affected by average value of inputs. Data was analyzed with Cobb-Douglas function to observe the effects of different determinants of production of broilers yield. Following equation was formed for input affecting the production of broilers in Ilala district as under assuming that total production is a function of input, for economical analysing the impact of each input on production of broilers yield. This study regards the economics analysis production of broilers as inputs in a given area of study. Given that these measurements were made on each observation, a bivariate probit model was adopted. Using a probit regression model the dependent variables will take values: l if individual input went for pricing and 0 if the individuals input did not go for pricing. This model assumes that the error is normally distributed. A probit regression model is adopted to show whether there will be positive, negative or no association between broiler production and the independent variables. Based on the theoretical framework, factors that determine uptake of broiler production in Tanzania was explored using binary probit regression model that lies on an interval of between 0 and 1.
This relationship is being expressed as:
1 if the event takes place (an individual uses inputs costs for production)

$$Y_i = \begin{cases} 1 \\ \\ \\ 0 \text{ otherwise} \end{cases}$$

Equation (1) expressing the econometric model for stochastic production function is specified as:

$$y^*_i = x_i \text{ '}\beta + \varepsilon_i \quad \ldots\ldots (6)$$

Where: y^*_i is variable showing the broiler production,
x_i '= is a vector of variables related to the individual inputs
β = is a vector of parameters and
εi = is error term

$Y = 1$ *if* $y^*_i > 0$ *i.e* $(x_i \text{ '}\beta + \varepsilon_i) > 0$ and

$Y = 1$ *if* $y^*_i < 0$ *i.e* $(x_i\ '\beta + \varepsilon_i) < 0$

The values 0 and 1 are used in order to allow the definition of probability of occurrence of an event as a mathematical expectation of the variable Y.
This study aims to establish the relationship between the independent variables and the outcome variables for differences models, the Eq. (4) for the evaluation of farm specific determinants of smallholder broiler producer's, the following translog stochastic frontier production function with decomposed error term was estimated, can be expanded in the following form;

$$\ln Y_i = \alpha_0 + \alpha_1 \ln C_1 + \alpha_2 \ln I_2 + \alpha_3 \ln E_3 + \alpha_4 \ln S_4 + \alpha_5 \ln Ep_5 + \alpha_6 \ln Fs_6 + \mu_i \quad \cdots (7)$$

Where; Y_c = Number of chicken produced (output),
C_1 = Cost of production,
I_2= interest per month,
E_3= Education of the keeper,
S_4 = Skills of the keeper,
Ep_5= Experience in keeping chickens and
Fs_6 = Family size.

Description of explanatory variables used for models specification

Cost of production	=	(χ_1)	Total cash in Tshs
Continuous	+		
Interest per month	=	(χ_2)	Cash in Tshs
Continuous	+		
Education	=	(χ_3)	1 if access, otherwise 0
Dummy	-		
Skills	=	(χ_4)	1 if access, otherwise 0
Dummy	-		
Experience	=	(χ_5)	1 if access, otherwise 0
Dummy	-		
Family size	=	(χ_6)	1 if access, otherwise 0
Dummy	-		
Output of chicken	=	(Y_c)	Number of chicken
Continuous	+		

Basic information on the inputs and output were entered into Excel's spreadsheet and simulated using SPSS 23.0 software programs.

4.0 Results and Discussion

Descriptive Statistics of Broilers Production

In this study determinants influencing the broiler production was carried out by taking the costs of various inputs into consideration. The results obtained from economic analysis are presented in Table 1, the average costs and sum of inputs per batch of the broiler production was considered. Accordingly average total cost value per farmer in batch were calculated as input costs had average of Tshs. 55,170.87, highest average and maximum cost per batch is Tshs 280,000.00 for cost of family size in broiler keeping while minimum cost is the training attended is Tshs 0.00 per batch, this reveal that the farmer deal with broiler production had attended free cost of training for chicken keeping. The average total costs of broiler production are positive and significant relationship between expenses on the feed, medicine/vaccine and rental charge from number of chicken sold in one year production (total output) indicates that if more feeds, medicine and vaccines are given to the family poultry, there was more than proportionate increase in the output of family poultry. It is, therefore, logical to assess the costs affecting broilers production and associated activities of off-farm participation of farm operation in the study areas. The results implying that the application of costs of inputs in the broilers production is considered a value added goods and products. The results clearly demonstrate the substantial benefits of more efficient input use in the production of broilers that improvement in resource use efficiency can contribute remarkably to increase revenue at the farm level.

Table 1: Inputs Cost in Broilers Production to Farmers

Costs for the inputs in TSHS per batch in broiler keeping at Ilala district					
Variable	**Sample**	**Min**	**Max**	**Mean**	**Stan. Dev**
Cost of Training attended	100	0.000	50,000.00	5,66.67	314.02
Cost Loan borrowed in year	100	4,000.00	24,000.00	16,324.12	920.62
Cost of chicken sold in one production year	100	1,000.00	11,000.00	7,359.34	471.27
Cost of spent on keeping	100	30,000.00	120,000.00	55,000.00	3220.22
Cost of Family size in broiler keeping	100	30,000.00	280,000.00	142,000.00	8400.11
Average total cost in year	100	**12,800.00**	**97,000.00**	**55,170.87**	

Econometric Model Analysis of Input Costs

The results of exponential production function models Table 2 estimate showed seven parameters used to analyse the determinants of broiler production, Cobb-Douglas type of model was considered appropriate. The results of economic model estimation of broiler production are show in Table 2. For the data used in this study presence of autocorrelation in the residuals from the regression analysis was tested using the Durbin–Watson statistical test (Hatirli et al., 2006; Rafiee *et al*.,2010). The test result revealed that Durbin–Watson value was as 1.75 that indicating, there was no autocorrelation at the 5% significance level in the estimated model. Meanwhile, the R^2 of about 0.88, this implies that the 88.0% of the total variation in dependent variable (endogenous variable) is being explained by the explanatory variables. As shown in Table 2, R is the correlation coefficient indicating the relationship between the study variables. Thus, it revealed a strong and positive relationship as evidenced by 1.75 Durbin-Watson. The coefficient of determination (or R squared) was 0.88 indicating a variation of 88.0% in broiler production performance due to changes in the independent variables. However, 22.0% were not explained by this study's independent variables. Similarly, the F-value of 30.814 being significant wasalso an indication that the model has a good fit to justify the factors influencing the broiler chicken keeping operations in the study area.

The estimated regression coefficients for the model (Eq. (4) are presented in the standardized coefficients of Table 2. The results revealed that, C_p = Cost of production, I= interest per month, E= Education of the keeper, S = Skills of the keeper, E_p= Experience in keeping chickens and F_s = Family size were the most important inputs, significantly contributed to total production; While, the use of bank interest, keeping experience, training attended and family size were indicating that coefficient for broilers production had negative sign indicating that the relationship has negative influence. The value of coefficient of bank interest borrowed in year for broilers keeping was - 0.088. The coefficient was significant at one per cent. The coefficient indicated that by one per cent increase in bank interest borrowed in year of broilers farm beyond expected costs, the yield of broiler keeping decrease by 8.8% Tshs per acre. The coefficient for family size in household results presented in Table 2 showed that there was a negative impact of the family size in broilers production. A beta coefficient of -0.173 was observed confirming that family size is statistically insignificantly. The coefficient showed family size costs has decreased the yield of broilers production by 17.2%. Therefore, yield loss due to dependent family was one of the major problem of production of poultry. Also, all of the statistically

significant inputs showed the positive relationships with output. Moreover, broiler entrepreneurs in broilers production such as average total cost of production, experience of broiler entrepreneur in keeping, training attended to entrepreneur about broiler production, total revenue earned, and education level of broiler entrepreneur are influencing the broiler production in Kitunda ward.

Table 2: Analysis of Econometric model estimation of input costs for broilers production

Coefficients[a]						
$\ln Y_i = \alpha_0 + \alpha_1 \ln x_1 + \alpha_2 \ln x_2 + \alpha_3 \ln x_3 + \alpha_4 \ln x_4 + \alpha_5 \ln x_5 + \alpha_6 \ln x_6 + \alpha_7 \ln x_7 + \mu_i$						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	- 8.976	30.209		1.332	.275
	Total cost in year	.000	.000	.464	1.906	.153
	Bank Interest borrowed in year	.000	.000	-.088	-1.832	.164
	Keeping-Experience	-1.405	3.553	.011	-.395	.719
	Training attended	-32.455	15.316	.274	-2.119	.124
	TR from chicken per year	.000	.000	.002	5.633	.001
	Family size in household	-22.493	10.854	-.173	-2.072	.130
	Education level of farmer	20.498	13.030	.092	1.573	.214
Durbin-Watson		1.75				
R^2		0.88				
F-value		30.814**				

a. Dependent Variable: Average number of chicken sold in one production year
b. Significant at $P = 0.05$

5.0 Conclusions and Policy Implications

The main objective of this study was to analyse the determinants of broiler production in peri urban area in Dar Es Salaam of the broiler entrepreneurs in Ilala Municipal, Tanzania. In this study, the descriptive statistical analysis of determinants of broilers production in Ilala district of Tanzania was carried out. Analysis of econometric model between determinants and the total production of broilers was developed using the Cobb-Douglass production function. For this purpose, total interest borrowed, total revenue earned, family size of broiler entrepreneur and education level as social economical determinants, which have been addressed in relation to access broilers production in Kitunda ward entrepreneurs. In terms of total interest borrowed, it is indicated that broiler entrepreneurs were not adopt

system of acquire loan from financial institution to increase change production. The said scenario may be explained and concluded that, additional sources of funds are therefore not required for the poultry operators due to lack knowledge of loan to sustainable solidify their financial base with assured them on possess increased output level. Moreover, the results of econometric model development revealed that, C_p = Cost of production, E= Education of the keeper, S = Skills of the keeper and E_p= Experience in keeping chickens were the important costs significantly contributed to total production of broilers and showed the positive relationships with output. While, inputs showed negative sign it also indicated that additional units of these inputs were contributing negatively to production, i.e. less production with more input.

The beta coefficients of the model showed that Bank Interest borrowed in year negative that indicate the highest variable cost item in the broiler enterprise in the study area. The determinants of influencing broiler production were also analysed, and the result showed that the training of the farmers influenced the production level. Therefore, it can be concluded that most of the broiler farmers in the study area were operating on a small scale. The level of profitability of the broiler enterprise can be increased through better use of resources available, given technology, and addressing the constraints to the enterprise. The high cost of inputs was the highest constraint in the study area, followed by the inadequate market and inadequate funds. Based on the conclusion, it can therefore be recommended that the funds should be made available to the farmer by providing micro-credits to the farmers because inadequate funding was the highest constraint identified by the farmers. Improvement in feed and feeding systems should be the other area of intervention. Provision of proper trainings to chicken producers on how to formulate supplementary rations to live chicken, using locally available feeds ingredients, could be important.

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Role of Servant Leadership Conglomerate Conflict Behaviour on Team Performance, Conflict Resolution Efficacy, and Turnover Intentionin Tanzania's Higher Learning Institutions

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Abstract
This paper explores the intricate relationship between servant leadership, conflict management behaviour, and organisational outcomes in the context of Tanzania's higher learning institutions. Through a longitudinal study involved 800 respondents from four public universities, the research investigates the interplay between servant leadership and conflict management styles, specifically focusing on integrating and compromising behaviors. The study employed a comprehensive methodology, utilising questionnaires distributed over two waves with a one-year time lag. The findings revealed a positive correlation between servant leadership and integrating conflict management styles, specifically avoiding and accommodating. However, the anticipated correlation between integrating and compromising conflict behaviours in servant leadership is not confirmed. The study further examined the prevalence of cooperative conflict management patterns among Tanzanian university leaders, highlighting a combination of problem-solving and compromising strategies. A significant aspect of the research involved cluster analysis, which revealed distinct conflict behaviour patterns in Tanzanian universities. The result showed a preference for compromising and low-integrating (co-operative) patterns, as well as high-integrating and low-compromising (competitive) patterns. Notably, these patterns were not mutually exclusive, indicating a nuanced approach to conflict management. In the second part of the study, the paper delved into the impact of servant leadership's cooperative behaviour on team performance, conflict resolution efficacy, and turnover intention. The results affirmed the positive relationship between integrating and compromising conflict management styles and team performance, while forcing behaviour showed a negative correlation. Moreover, the study identified a negative relationship between accommodating and forcing conflict management styles and turnoverintention. The paper concluded that servant leaders in Tanzanian universities adeptly combined different conflict management styles, mitigating the adverse effects of conflicts on team performance and turnover intention. Even though avoiding and accommodating conflict

behaviours were used together, problem-solving and compromising strategies were used a lot. This showed that servant leadership was used in a more complex way in Tanzanian higher education. The study contributed valuable insights into the dynamics of servant leadership, conflict management, and organisational outcomes, emphasising the need for a contextual understanding of leadership behaviours and their cultural implications.

***Keywords**: Servant leadership, Combined Conflict Behaviour (CCB), team performance, resolution efficacy, turnover intention.*

1.0 Introduction

Currently, organisations rely on teamwork interaction to complete their duties and achieve their goals. In fact, employees continually contend with differences in interests, beliefs, or ideas during the contact process, which can lead to disputes. Conflict can be defined to be the dissonance between two or more parties (individuals or groups), if at least one of the parties is offended, or is hindered by the other (Elgoibar, Euwema, & Munduate, 2017). Conflict occurs when there are perceived incompatibilities between the interests of the two parties (Rahim, 2001, Rahim, Civelek, & Liang, 2018). Nevertheless, companies are noticeably underrepresented in the conflict management literature due to the limited attention given to these entities by conflict resolution experts (Melin, 2021). Naturally, conflict in organisations results from mixed motives and situations (Euwema et al., 2003). To minimize the negative impact of conflict on both enterprises and communities, it is advantageous for firms to take a proactive approach and carefully consider the necessary steps to achieve a Social Licence to Operate (SLO) which is one of the causes of conflicts in mining industries (Vanclay and Hanna, 2019; Veenker and Vanclay, 2021). Thus, understanding and selecting proper conflict management styles can pose challenges to leaders. Due to its mixed nature, conflict, if not timely and well managed, may escalate and disrupt the relationship between employees, spiral its negative impacts such as reducing employee performance, impairing resolution efficacy and increasing turnover intention.

In this process, conflict management becomes a key competency for managers and professionals (Euwema et al., 2004). Although some studies have explored the relationship between leadership style and the selection of conflict resolution techniques, a significant vacuum has existed in the lack of leaders' firsthand accounts of their experiences, reflections, and analyses in their decision-making process for conflict management styles Kowszyk,

Vanclay, & Maher, 2023). Moreover, selecting and properly blending different conflict management styles becomes essential for leaders, but they also need a relational leadership style (Avolio et al., 2009; Kowszyk, Vanclay, & Maher, 2023). After all, servant leaders, through behaving selflessly (Graham, 1991; Liden et al., 2008), are predisposed to create a long-term relationship with employees (Liden et al., 2008;Stone et al., 2004). Servant leadership refers to "an understanding and practice of leadership that places the good of those led over the self-interest of the leader, emphasising leader[ship] behaviours that focus on follower development, and de-emphasising glorification of the leader" (Hale & Fields, 2007, p. 397). By behaving ethically, servant leaders would allow employees under them to interact more openly, fairly, and honestly with others (Liden et al., 2008). Arguably, this type of interaction allows employees to become more responsible and co-operative in resolving their differences, which can also foster employee performance, improve resolution efficacy, and reduce turnover intention.

Indubitably, leadership plays a crucial role in the process of enhancing employee performance, resolution efficacy and reducing turnover intention. Employees performance can refer to the ability of employees to deliver quality work and services of the required organisational standards whereas resolution efficacy refers to an individual belief that they can resolve conflicts of any kind whenever they arise (Alper et al., 2000; Jehn et al., 2008). Bandura (2000) suggests that individual efficacy beliefs are crucial in handling difficulties faced in the workplace. As such, servant leaders can find solutions to their problems and encourage efficacy by providing guidance, selecting less coercive conflict management styles, and properly blending them with the aim of reducing turnover intention. Turnover intention is an employee's voluntary decision to quit a business over a certain period of time (Tett &Meyer, 1993, Lazzari, Alvarez, & Ruggieri, 2022). In this regard, literature connects the cost of losing human capital, hiring and training new personnel, and diminishing service quality with turnover intention (Glebbeck & Bax 2004; Mitchell et al., 2001; Wright & Bonnett, 2007). Additionally, turnover intention constitutes a negative indicator of organisational effectiveness (Glebbeck & Bax 2004; Griffeth & Hom, 2001). Such a condition heightens the importance of leaders' competence as well as the ability to select and blend different conflict management styles to ease the turnover intention in the organisation and have a positive impact on resolution efficacy. Servant leaders accomplish this feat through empowering, being trustworthy, and behaving ethically (Liden, 2008). In the context of leadership, certain styles have been identified as more effective in

managing conflicts. These styles emphasise a process that is collaborative, multidimensional, and dynamic. Studies by Sfantou, Laliotis, Patelarou, Sifaki-Pistolla, Matalliotakis, and Patelarou (2017) highlights the importance of these qualities in conflict management.Moreover, servant leaders can be more inclined towards encouraging employees to adopt and use less coercive conflict management styles. The encouragement is achievable through self-confidence building (Lord, Brown, & Freiberg, 1999), and can increase employees' willingness to co-operate fully in resolving their conflicts in addition to improving employee performance and resolution efficacy while reducing turnover intention.

Besides the voluminous existence of literature on conflict management styles, only a few empirical studies focus on how servant leadership can successfully manage conflicts in organisations. Previous research by Hunter et al. (2013) evidentially linked servant leadership with less withdrawal (turnover intentions and disengagement); however, they paid less attention to when and to what extent different conflict management styles can be combined to successfully manage conflict and reduce its negative impacts on team performance and resolution efficacy while reducing turnover intention. Regardless of leadership influence on selecting conflict management styles, the impetus should be on how culture determines conflict patterns. This study employed the Conglomerate Conflict Behaviour (CCB) or Combined Conflict Behaviour theory to clarify the selection of conflict management styles.

The paper argues that servant leadership can effectively and timely combine different conflict management styles especially less assertive styles to improve employee performance and resolution efficacy in addition to reducing turnover intention. Proper selection of conflict management styles creates a positive work environment amenable to fostering co-operation and readiness among employees to reconcile their differences, hence boosting team performance and resolution efficacy in addition to reducing turnover intention.

Servant Leadership

The concept of "servant leadership can be traced to Robert Greenleaf who defined a servant leader as a "servant first", one who must have innate feeling of service and not driven by the desire to lead (Greenleaf, 2002). Even though various scholars have come up with several definitions and characteristic, Liden et al. (2008) provided a comprehensive conceptualisation and extensive validity testing of the servant leadership

dimensions in terms of emotional healing, creating value for the community, conceptual skills, empowering, helping subordinates grow and succeed, putting subordinates first, and behaving ethically but without necessarily validating servanthood and relationship. Empirically, these dimensions have been linked to positive outcomes at individual, team and organisational level (job satisfaction and effective conflict management, team performance). It is evident that servant leadership is a unique leadership theory which can be used to explain the leadership process and outcomes (Walumbwa *et al*., 2010). It has also been documented that employee attitudes towards the leader and to their job depend on effective conflict management (Irving, 2005), which servant leadership has a potential of delivering.

This study employed the servant leadership style because it contains the moral dimension which is not well explained in authentic and ethical leadership styles (Walumbwa et al., 2008). Moreover, servant leadership deals with the development and success of stakeholders within and outside the organisation. Moreover, servant leadership puts followers' individual interest first, and develop them to grow and become servant leaders themselves (Greenleaf, 1970; Liden et al., 2008), which is unique from transformational leadership that emphasises on employees to achieve organisational goals (Graham, 1991; Smith et al., 2004). Finally, servant leadership also includes aspects of altruistic and self-reflection behaviour (Walumbwa *et al*., 2008), which is also less expressed in transformational leadership theory.

Servant Leadership and Conflict Management Behaviour

Recently, research on servant leadership has gained popularity in various fields. Its definition stems from Greenleaf's ideas of servant leaders. Servant leadership emphasises on morality (Graham, 1991; Liden *et al*., 2008) and humility, which help to cultivate servant leadership likely to guide participation, provide a socialised power motivation, and support work relationships (Morris, 2005). Consequently, the issue of employees' satisfaction is vital, hence the inescapable need of creating conducive work environment.

Empirically, servant leadership has been linked with many positive outcomes. Particularly, Irving (2005) reported a statistically significant positive correlation between servant leadership at the organisational level and team effectiveness at the team level. This positive correlation existed between the servant leadership's attributes of love, vision, empowerment, trust and humility, and the team's effectiveness. Irving's (2005) study infers

that servant leadership might have a positive relationship with effective conflicts management. Similarly, Yoshinda, Sendjaya, Hirst and Cooper (2013) report that servant leadership promotes individual creativity and collective innovation.

Thompson's (2002) study reported that, even though the institution studied was not a servant organisation according to Laub's schema, it nevertheless confirms that the perception of servant leadership positively impacts on job satisfaction. Another study by Hunter, Neubert, Witt, Penny and Weineberger (2013) linked servant leadership to less withdrawal (turnover intentions and disengagement). In Africa, Walumbwa and colleagues (2010) report partial mediation on the relationship between servant leadership and self-efficacy, procedural justice climate, and service climate. Conflict management styles can be defined as "patterned responses or clusters of styles that people use in conflict" (Hocker & Wilmat, 2010). However, conflict management styles are contingent since the pattern of relations might vary systematically and meaningfully in different situations, conflicts or (groups of) actors (Euwema & Van Emmerik, 2007). They should be based upon cultural/contextual factors such as; power base, gender and age (Al-ajmi, 2007; Al-Hamdan, 2009; Tsai & Chi, 2009, Elgoibar, 2017).

Although scholars have thus far developed five styles of conflict management, there is no single best conflict management style (Pierce & Gardner, 2002). This study, follows Van de Vliert, Euwema and Huismans' (1995) theory of Conglomerate Conflict Behaviour (CCB). Under this theory, conflict is "an individual's reaction to the perception that one's own and another party's current aspirations cannot be achieved simultaneously". Currently, emphasis is on the use of multiple modes of conflict. In the Western contexts, the most commonly reported assertive styles in use are force and problem-solving (Euwema et al., 2003). In serious conflict situations, the same person may mix force with problem-solving. Other applicable components of less forceful reactions might include compromise, accommodation and avoidance. Thus, the "term conglomerated conflict refers to the use of mixing of various degrees of several modes of conflict handling" (Van de Vliert et al., 1995).

Notably, the theory of CCB is more complex than other models and taxonomies (Euwema *et al*., 2007) based on Blake and Mouton's (1970) conflict management grid. The complexity arises because theorists under the CCB convention use dual concerns, for example, concern for own and other's goals to conclude diverse of styles. What remain unknown are the styles that

servant leadership combines with in managing conflicts. The most important thing in the CCB theory is that, both co-operative and competitive patterns are not mutually exclusive. The co-operative pattern includes some elements of competitive pattern and, conversely, the opposite is true (Euwema & Van Emmerik, 2007, Garcia et al, 2017). Empirically, managers who blend different conflict management styles are more effective primarily because they can blend more different styles (Munduate et al., 1999) than those who do not. However, the amount of conglomeration differs because the co-operative style comprises relatively high levels of integrating and low application of force whereas competitive behaviour has relatively low integration but with a high level of force (Euwema *et al*., 2007).

Servant leadership characteristics relate negatively with forcing behaviour, but it was positively associated with integrating and avoiding in church related conflicts (Iao-Man Chu, 2011). This study in the developing country's context of Tanzania, uses integrating and compromising approach because their combination can reduce the possibility of producing stagnation and compromising when playing a moderation role, thus making both styles appropriate and effective (Rahim et al., 1999). Moreover, the two styles help to minimise the use of dominating and avoidance techniques (Rahim & Bonoma, 1979). Against this backdrop, we hypthesise:

H1a: *There is a positive relationship between servant leadership and integrating conflict management styles* (problem-solving and compromising).

H1b: Integrating and compromising conflict behaviour of servant leadership are positively correlated

Conflict Management Styles and Employee Team Performance, Resolution Efficacy and Turnover Intention

The selection of the conflict management styles discussed thus far might have a positive or negative impact on specific employee-related outcomes. These outcomes include; satisfaction with conflict management styles, conflict resolution efficacy, team performance, and turnover intention. Previous literature highlights how individuals react to conflict. They offer two approaches namely;. individuals using single and individuals using a combination of styles (simultaneously or sequentially) styles. However, there is no single best conflict management style (Pierce & Gardner, 2002). Data suggest that mediators use the problem solving/settlement approach more than a transformative and facilitative approach, and the problem solving approach to be more effective in labor contexts (Kenny, 2019). Therefore,

this study applied the dual concern model conceptualisation to measure conflict management styles used by servant leaders.

The dual concern model describes five behaviours: forcing, avoiding, accommodating, compromising and problem-solving (De Dreu et al., 2001). The model also serves as contingency model under which researchers offer directions on how and when to use a certain strategy at the same time they offer "one-best-style approach". Under such circumstances, forcing is destructive whereas integrating is a constructive way of handling conflict (Blake & Mouton, 1981; Burke, 1970; Fisher & Ury, 1981; Pruit & Rubin, 1986; Rahim, 1992). Furthermore, the dual concern model, as a normative model, promotes integrating as the most effective style, particularly when linking outcomes and long-term effectiveness. Usually, forcing is non-co-operative, with risk of escalation and unilateral outcomes (Blake & Mouton, 1981; Burke, 1970; Fisher & Ury, 1981; Pruit & Rubin, 1986; Rahim, 1992) primarily because integrating and forcing are antipodes (Tjosvold et al., 1999). As a result, parties usually try to achieve personal outcomes and simultaneously reach mutual agreements by combining co-operative and competitive aspects (Thompson & Nadler, 2000, Gacia et al., 2017, Elgoibar, 2017). Thus, the leadership styles that were found to be more effective were those that placed an emphasis on a process that was collaborative, multidimensional, and dynamic (Sfantou, Laliotis, Patelarou, Sifaki-Pistolla, Matalliotakis, Patelarou, 2017).

In Tanzania, the focus is on which styles servant leaders in managing conflicts might apply since they need to manage conflicts constructively, which requires them to employ various conflict approaches to managing conflicts in organisations (Munduate et al., 1999). The Conglomerate Conflict Theory (Van de Vliert et al., 1995), on the other hand, assumes that components in a conglomeration may occur simultaneously or sequentially to engender effectiveness (Euwema & Van Emmerick, 2007; Medina & Benitez, 2011). Combining different styles occurs because conflicts often arise mixed motive situations (Euwema et al., 2003; Euwema & Van Emmerik, 2007). Mixed motive situations are situations that pose a conflict between securing immediate benefits through competition and pursuing benefits for oneself and others through co-operation with other people (Komorita & Parks, 1995; Sheldon & Fishbach, 2011).

Since teamwork and conflict management styles are increasingly taking center stage in daily organisational life, measuring team perfomance has also been heightened. Scholars such as Jehn and Bendersky (2003) and Mathieu

and Schulze (2006) argue that conflict management is an important predictor of group or dyadic conflict relationship. Malingumu (2022) agrees that there is no single best conflict management style because some conflicts require a different strategy than the five mentioned styles (compromising, accommodating, avoiding, forcing, and collaborating).This study found that compromising and collaborating are most common, yet force is employed in some circumstances. Previous research has further shown that the process of managing organisational conflicts can help reduce the negative effect of conflicts by restoring fairness, process effectiveness, resource efficiency, working relationships, and satisfaction with parties (Thomas, 1992). Kayanda, and Tangi, (2022) indicates that, heads of schools employ several strategies such as utilising collaboration methods and organising stakeholders' meetings and discussions to address and problems to effectively manage conflict in secondary schools. Thus, choosing constructive conflict management style can improve the willingness of team members to work together. Meanwhile, leaders' application of constructive conflict management requires the utilisation of less coercive styles such as encouraging teams to adopt and use them. Such less coercive styles also allow leaders to engage employees in the process of making important decisions, as free, autonomous and integral members of the team, hence ensuring their co-operation with their leaders in achieving positive outcomes. In this regard, we hypothesise:

H1a: *There is a positive relationship between servant leadership and integrating conflict management styles* (problem-solving and compromising).

H1b: Integrating and compromising conflict behaviour of servant leadership are positively correlated

H2: Servant leadership in Tanzania will be more inclined towards using co-operative than competitive pattern (problem-solving and compromising, low-key forcing)

H3a: Conflict management styles (integrating and compromising) will have a positive bearing on team performance.

H3b: Forcing conflict management behaviour will have a negative relation with team performance.

H 4: Conflict management styles (accommodating, avoiding and forcing) have a negative relationship with turnover intention.

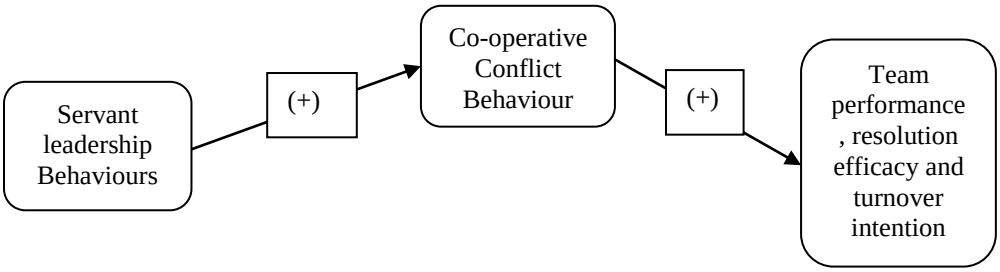

Figure1: The Conceptual Model Presenting the Relationship between SL, Co-operative behaviour, and CCB with Team performance, Resolution Efficacy, and Turnover intention

2.0 Method

Participants, Sample and Sampling Procedure

In two waves, with time lag of one year, a total of 800 respondents were invited from four public universities in Tanzania to fill out questionnaires. However, 361 questionnaires 45.13% were returned during the first wave. Since our study was longitudinal, during the second wave another 361 questionnaires were distributed to the same respondents who returned the questionnaires (using unique code identifiers). This time 198 questionnaires (54.85%) were returned. At time one, respondents were requested to fill in all variables (servant leadership, and conflict management behaviour) in the questionnaire except team performance, whose data was collected during the second streak as an outcome. The respondents were then requested to rate their leaders on SL and conflict management behaviour. Also, they rated their perceptions for their group behaviour for team performance. To reduce the common method bias, introductory letter was used to explain the purpose of the study with respondents after getting their informed consent assured that their responses would be treated with utmost confidentiality and their voluntary participation remained anonymous. Moreover, the importance of integrity was explained by being open and honest about the kind of responses they provide. These self-reporting questionnaires for all variables required the respondents to rate all the items in the questionnaire personally by rating themselves and their leaders.

Measures

Perceived prevalence of servant leadership behaviour. The study used a multidimensional measure of servant leadership with 28 items developed by Liden et al. (2008). The scale had been previously used to measure the employees' perception of the prevalence of servant leadership behaviour in organisations and its relationship to employee satisfaction as an outcome.

This scale confirmed the prevalence and existence of servanthood traits in Tanzania's public universities and its correlation with employee outcomes such as; job satisfaction, resolution efficacy, and reduced conflict. The servant leadership emerged to be a significant predictor of subordinate organisational commitment and in-role performance with a Cronbach Alpha of .95(Liden *et al*., 2008)

Integrating Behaviour. The study applied a sub-scale of the Dutch test of conflict handling (DUTCH) developed by De Dreu et al. (2001) to assess the integrating conflict behaviour (7 items) after a factor analysis, Problem-solving (4 items) and compromising (3 items). The study computed these variables as one factor as exemplified by this sample item: "I stand for my own and the organization objectives and interest" (De Dreu *et al*., 2001). Cronbach's alpha was .82.

Forcing Behaviour. A sub-scale of the Dutch test of conflict handling (DUTCH) (De Dreu *et al*., 2001) was used to assess the forcing conflict behavior (4 items). A sample item is, "I fight for a good outcome for myself". The Cronbach's alpha was .88.

Co-operative behaviour. A co-operative pattern is characterised by high problem-solving and compromising but low forcing). This behaviour measured using the sub-scale of the DUTCH tests of conflict handling (De Dreu *et al*., 2001). We used the measures of compromising, problem-solving and forcing was used. The Cronbach's alpha was .730.

Compromising. A sub-scale of the DUTCH was applied to test of conflict handling (De Dreu *et al*., 2001) to assess the compromising conflict behaviour (4 items) as illustrated by this sample item: "I emphasize that we have to find a compromise solution". Cronbach's alpha was .87.
Problem-solving. Additionally, a sub-scale of the DUTCH was used to test of conflict handling (De Dreu *et al*., 2001) used to assess the problems solving conflict behaviour (4 items). A sample item is "I examine issues until I find a solution that really satisfies me and the other party". Cronbach's alpha was .86.

Avoiding. Then a sub-scale of the DUTCH was used to test of conflict handling (DUTCH) (De Dreu *et al*., 2001) to assess the problem-solving conflict behaviour (4 items) whose sample item is "I avoid a confrontation about our differences". The Cronbach's alpha was .85.

Yielding: Furthermore, a sub-scale of the DUTCH applied to test of conflict handling (DUTCH) (De Dreu *et al*., 2001) to assess the yielding conflict behaviour (4 items). A sample item is "I try to accommodate the other party" with a Cronbach's alpha was .85.

Team performance. The study also used a modified individual competence measure (Heilman, Block, & Lucas, 1992) with a three-item scale and a sample item for the scale of "This team is very competent". The Cronbach's alpha was .91.

Efficacy of conflict resolution. The efficacy of conflict resolution style was measured on a 10-item scale also developed by Jehn et al. (2008) to determine which styles were effective in managing the task and process as well as personal conflicts in an organisation (e.g. "Disagreements about relationships conflicts were easily resolved using integrating only", "Disagreement about task clarity were usually resolved using integrating and forcing") (Jehn et al., 2008). The Cronbach's alpha was .85.

Turnover intention. This item was measured using a four-item scale developed by Kelloway, Gottlieb and Barham (1999) as exemplified by the following sample item: "I am thinking about leaving this organisation". The Cronbach's alpha was .92.

Reliability and Validity of the items

To ensure consistency of the results, various items were tested within each component (Foster, 2001), and to ensure reliability, the study tested for the internal consistency of each item using Cronbach Alpha. Its value was not only positive and significant but also featured at 0.70 or >0.70 (Nunnally, 1978). The Cronbach Alpha coefficient for all the 51 items was .95, hence making the study's instruments reliable. Also, the instruments validity was checked through co-sharing the instruments with colleagues. Thereafter, we piloted and analysed them accordingly. Consequently, we modified some of the items to fit the context for them to measure what they were supposed to measure.

3.0 Findings and Discussion

The preliminary analysis of the variables intercorrelations precedes factor analysis. Table 1presentsthe means, standard deviations and correlations for all variables in the study:

Table 1: Mean, Standard Deviation and Intercorrelations

Items	***Mean***	***SD***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
servant leadership wave1	3.4232	.75933										
Team performance wave2	3.9007	.72713	.34**									
Turnover intention wave2	2.4874	1.07424	.06	-.13								
Intergrating_LW2	3.3553	.47686	.42**	.31**	.10							
Compromising employee wave2	3.7183	.80690	.22**	.25**	.02	.13						
Forcing behaviour employee wave2	2.7132	1.13259	.11	-.04	.07	.17*	-.07					
Forcing behaviour leaders wave2	2.8258	.90610	-.27**	-.16*	.06	.18*	-.17*	.29**				
Problem solving leaders wave2	3.8182	.72160	.61**	.43**	.05	.59**	.173	.13	-.25**			
Yielding /accommodating behaviour employee wave1	3.3258	.87655	.42**	.22**	.159*	.75**	.07	.04	-.21**	.45**		
Avoiding behaviour leaders wave2	3.3636	.78596	.27**	.24**	.02	.78**	.11	.05	.03	.32**	.52**	

***Notes*:** *Correlation is significant at the .05 level (2-tailed); **correlation is significant at the .01 level (2-tailed)

Factor Analysis on Integrating, Forcing Behaviour, Compromising and Problem-solving

To test our hypothesis, correlation and regression analyses were used. In this study, we examined leaders' conflict patterns in Tanzania (i.e. co-operative and competitive pattern conflict management behaviour). Factor analysis were conducted to determine which conflict behaviour can form integrating conflict management behaviour. After conducting factor analysis, it was realised that problem-solving and compromising are not loading in one factor as we predicted; rather, it was avoiding and accommodating that loaded as one factor. As such, we used the items of avoiding and accommodating to compute integrating behaviour. After factor analysis, our data earned a total variance of 69.1% with Eigenvalue >1. The rotation converged in 6 iterations, with Kaiser-Mayer Olkin sampling adequacy being 0.85, degree of freedom 190, $p<.001$, and the Batlet test of spherity was 273.378, as Table 2 clarifies:

Table 2: Factor Analysis on Integrating, Forcing Behaviour, Compromising and Problem-solving

ITEMS	INTER	FOB	COMP	PSBL
Qn.24:1. My supervisor avoids confrontation about their differences	.664			
Qn.24:2. My supervisor avoids differences of opinions as soon as possible	.709			
Qn.24:3. My supervisor tries to make differences loom less severe	.586			
Qn.24:4. My supervisor tries to avoid confrontation with the other	.726			
Qn.25:1. My supervisor gives in to the wishes of the other party	.806			
Qn.25:2. My supervisor concurs with the other party	.692			
Qn.25:3. My supervisor tries to accommodate the other party	.728			
Qn.25:4. My supervisor adapts to the other parties' goals and interests	.746			
Qn.22:1. My supervisor pushes his own point of view		.875		
Qn.22:2. My supervisor searches for gains		.817		
Qn.22:3. My supervisor fights for good outcome for himself		.809		
Qn.22:4. My supervisor does everything to win		.817		
Qn.23:1My supervisor tries to realize middle of road solution			.788	
Qn.23:2. My supervisor emphasizes that we have to find a compromise solution			.790	
Qn.23:3. My supervisor insists that we both give in a little			.853	
Qn.23:4. My supervisor strives whenever possible towards a fifty-fifty compromise			.801	
Qn.21:1My supervisor examines issues until he finds a solution that really satisfies him and the other party				.848
Qn.21:2. My supervisor stands for his own and other's goals and interests				.678
Qn.21:3. My supervisor examines ideas from both sides to find mutually optimal solution				.784
Qn.21:4. My supervisor works out a solution that serves his own as well as other's interests as good as possible				.822

***Notes**: INT= Integrating, FOB=Forcing behaviour, COMP= Compromising, PSB=Problem-solving behaviour*

Servant Leadership and Integrating Conflict Management Behaviour

This paper examined the employees' perception of servant leadership conflict management behaviour on team performance, resolution efficacy, and turnover intention in Tanzania's higher learning institutions. Its hypothesis was divided into two components. As such, the findings are accordingly presented based on these two parts. The first part of the paper examined the relationship between servant leadership and integrating conflict management behaviour using one hypothesis which was divided into 1a and b. For hypothesis 1a, it was predicted that there was a positive relationship between servant leadership and integrating conflict management styles (avoiding and accommodating). The intecorrelation analysis between variables was used to obtain the findings. Our hypothesis 1a was confirmed (r=.41, $p < .01$) for all the universities under review though with different traits (leaders are integrating avoiding and accommodating, not problem-solving and compromising). For hypothesis 1b, we found integrating and compromising conflict behaviour of servant leadership to correlate. As such, Hypothesis 1b was not confirmed (r=.13, $p > .01$) for all the study universities. **See Table 1**.

Conflict Management Styles and Employee Team Performance and Turnover Intention

The second part examined the relationship between servant leadership co-operative behaviour and team performance, resolution efficacy, and turnover intention, which was completed by four hypotheses, that is, H_2, H_3, and H4. H_2 Servant leadership in Tanzania will be more inclined towards using the co-operative than competitive pattern (problem-solving and compromising, low forcing). Hypothesis 2 was confirmed. Descriptive statistics shows that problem-solving (M = 3.82), compromising (M = 3.71) and forcing (M = 2.71). As was predicted, university leaders used a combination of problem-solving and compromising frequently in Tanzania. **See Table 1**

This study was also interested in behavioural conglomeration. Since integrating and compromising correlate, the study further conducted cluster analyses to establish conflict pattern of leaders in Tanzania's universities. Cluster analysis helped to examine the pattern of correlations between the measures (highly correlated) observed (DeCoster, 1998). Also, it helped to identify the natural groupings within the dataset (Cohen et al., 2003; Euwema & Van Emmerick, 2007; Elgoibar et al, 2017, Garcia et al, 2017, Malingumu, 2022). Consequently, we used a two-step cluster analysis to determine how many cluster patterns appear in our dataset. The result indicated that the two clusters offered the optimal fit for our dataset with the cluster quality (silhouette measure of cohesion and separation) being fair. Figure 1 indicates that leaders in Tanzania's universities are highly inclined towards heightened

use of compromising and low integrating (cluster2) co-operative pattern as well as high integrating, low compromising (cluster 1) which is competitive pattern. Implicitly, these patterns are not mutually exclusive. In other words, both patterns (in competitive and in co-operative) in the integration was relatively high.

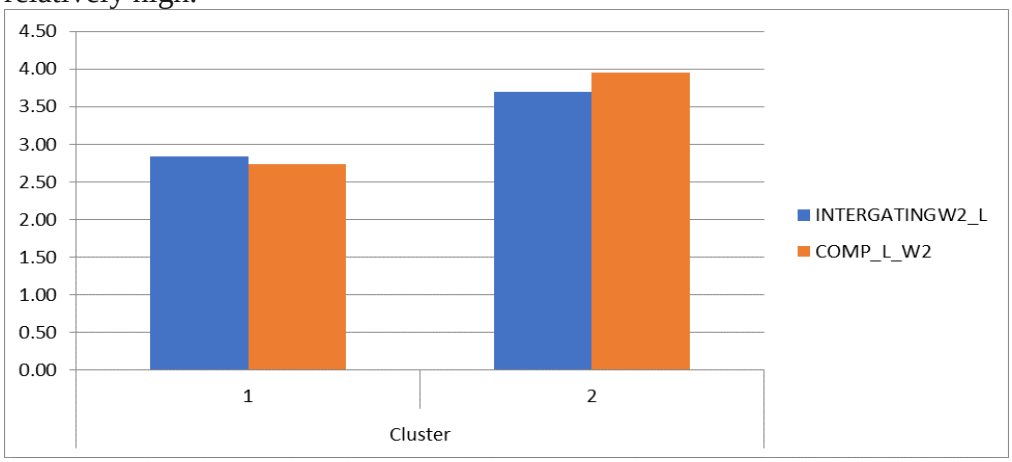

Figure 1: *co-operative patterns of servant leaders in universities*
Note: *Cluster 1=Competitive pattern whereas Cluster 2= Cooperative pattern*

Even though integrating comprises avoiding and accommodating, the findings after cluster analysis indicated that Tanzania's universities highly utilised problem-solving and compromising as the following results illustrate: Problem-solving (M = 3,36) in cluster 1 and (M = 3.50) in cluster 2; and for compromising (M = 3.8) in cluster 1and (M = 3.83) cluster 2.

For hypothesis 3a, it was predicted that conflict management styles (integrating and compromising) would have a positive bearing on team performance. The results confirmed our hypothesis through correlation. The result indicated that integrating r= .31**, p<.01; compromising r= .25**, p<.01. And for hypothesis 3b, we had predicted that forcing would have a negative relationship with team performance. Our hypothesis was also confirmed since forcing r= -.16*,P< .02. See Table 1.

Finally, for Hypothesis 4 that suggests a positive relationship between conflict management styles (when combining varyingly accommodating, forcing and avoiding) and turnover intention. The results confirm our hypothesis for two conflict management styles accommodating and forcing on turnover intention, that is, accommodating r= .159*, p<.05, that is accommodating in a different direction) while forcing was negatively and significant r= -.16*, p<.05; and avoiding r= .06, p<. n.s. See Table 1.

This study addressed the employee perception of the effect of servant leadership conflict management behaviour on team performance, resolution efficacy, and turnover intention in higher learning institutions in Tanzania. For the case of servant leadership and conflict behaviour, it emerged that servant leaders in Tanzania's universities integrate, avoid and accommodate; however, they are not using problem-solving and compromising as expected. Moreover, the study found out that the servant leaders integrating and compromising conflict behaviours also positively correlate. Van de Vliert et al.'s (1995) Conglomerate Conflict Behaviour theory to the effect that the merging of multiple conflict management styles lends credence to the study findings. Even though the study was conducted in higher learning institutions with academic and non-academic staff, the findings concur with those of Elgoibar's (2013, 2017) study conducted in Spain, who had concentrated on worker representatives in various organisations, who used several conflict management styles to resolve disagreements effectively. Such findings indicated that no single conflict management style fitting all scenarios; instead, a combination of different conflict management styles can help engender effectiveness. This scenario can result into a production of a defined behavioural pattern applicable in a particular context as the conflict patterns affirmed in this study (Elgoibar, 2013, Elgoibar et al, 2017, Garcia et al, 2017, Malingumu, 2022).

The second part of this study had examined how servant leadership can select and blend different conflict management styles to get positive results such as team performance. Servant leaders can select co-operative conflict management style that is, integrating and compromising, as cluster analysis and descriptive statistics comparing high and low means while blending different styles to improve team performance, resolution efficacy, and reduce turnover intention as illustrated in figure 1. These processes allowed servant leaders to set a stage for employees' willingness and readiness to co-operate in resolving their differences, hence improving team performance. This study's findings validate the CCB theory. Also, the study findings concur with Munduate et al. (1999) who found that combining different conflict management behaviour for effective conflict management in different contexts, such as in managerial behaviour in military peacekeeping (Euwema & Van Emmerik, 2007). The study findings also concurred with Elgoibar's (2013) research on worker representatives in organisations, which also confirms the same and supports the combination of conflict management behaviour at different degrees. Even though the current study did not hypothesise for other conflict management behaviours to positively correlate with servant leadership, servant leadership emerged to positively correlate

with all the conflict management behaviours such as yielding, problem-solving, and avoiding with the exception of forcing behaviour, with a negative correlation. Impliedly, servant leaders might choose to combine all other behaviours when they are faced with conflicts in a bid to improve the leader's effectiveness in conflict management, with the deployment of forcing conflict behaviour having a possibility of reducing the leader's effectiveness in managing conflict. Moreover, Malingumu (2022) concurs with the statement that there is no single best conflict management style; as the findings indicates that some of the conflicts do not require the five mentioned conflict management styles (compromising, accommodating, avoiding, forcing, and collaborating), but call for a different strategy to be addressed. In this study, it was observed that compromising and collaboration are the most commonly used, though in some cases, force is used. In the same line, our study concurs with Ronquillo; Ellis; and Toney-Butler (2023), who found out that the high incidence of employee turnover can be directly attributed to a failure to properly manage conflicts and to cultivate an environment that is conducive to positive growth and conflict resolution. The contention is that this occurs when a leader employs a conflict management strategy that does not involve collaboration.

Moreover, the current study confirmed that servant leaders have competency in selecting co-operative conflict management styles in line with Iao Man Chu (2011), who confirmed a relationship between servant leadership and integrating conflict management styles. Even though the current study was conducted in a different setting other than the church and in an African context, in this case universities in Tanzania yet confirms the same. This study, however, extends beyond Iao Man Chu's study by explicating styles that leaders in Tanzania use (that is, problem-solving and compromising). Apparently, the selection of a leadership is also informed by the prevailing cultural aspects, hence making such choices also contextual specifically in explaining the link and mechanisms under which integrating and compromising influence team performance. The study findings also corroborate with Orlan and DiNatale-Svetnicka (2013) who found out a significant positive relationship between compromising and collaborative styles in servant leadership but a negative relationship with competitive style. Additionally, the study was supported by Kayanda and Tangi (2022), who concluded that the heads of schools in Chato District employ several strategies to effectively manage conflict in secondary schools. According to the majority of respondents, common approaches include utilising collaboration methods and organising stakeholders' meetings and discussions to address and resolve problems. In addition, conflict resolution strategies

such as; teacher motivation, roundtable discussions, effective teacher communication, implementation of disciplinary measures, and issuing warnings to those responsible were employed.

H4 works assumes that two conflict management styles, i.e. accommodating and avoiding on turnover intention, that is, accommodating and avoiding servant leaders apply them increases turnover intention whereas forcing ended up with no impact; in fact, forcing was rather insignificant. These findings can be well-explained by cultural background and context under which conflicts happen. Even though we did not deal much with cultural connection, the findings set an alarm necessitating testing the variables by linking them to culture as supported by Hofstedde (1980) cultural dimensions and Elgoibar (2013) and Elgoibar et al., (2017) who also confirmed that conflict behaviour in Spain was explained by cultural aspects and historical background.

4.0 Practical implications

Based on the results, the study indicated two practical implications. Tanzania's higher learning institutions should prioritise investing in leadership training programmes that specifically target the development of servant leadership attributes. This involves promoting comprehension of the integration, avoidance, and accommodation of conflict management techniques, as these have been recognised as common conflict patterns that servant leaders in Tanzania might employ. Furthermore, institutions should promote the adoption of cooperative conflict management ways by encouraging leaders to recognise the widespread existence of a favourable association between integrating and compromising conflict management styles and team performance. One such approach is to encourage the use of problem-solving and compromising techniques as effective methods to improve team cohesion and productivity.

5.0 Limitations and Recommendations for Future Research

The study was conducted within the framework of Tanzanian public universities, and the findings may not be readily transferable to different cultural or organisational contexts. Leadership and conflict management behaviours may be influenced differently by cultural variances and organisational structures in distinct locations or types of institutions. The study was limited by the size of the sample and the pace at which participants responded. The study encountered difficulties in attaining a substantial response rate, as only 45.13% and 54.85% of the questionnaires were returned during the initial and subsequent phases, respectively. This had the

potential to affect the inclusiveness of the sample and the applicability of the results.

The study offered suggestions for three domains that could be explored in future research. Future research should prioritise the identification and examination of relevant elements that could mediate or moderate the relationship between servant leadership, conflict management approaches, and results. These variables may encompass factors such as; trust, communication efficacy, or organisational framework. Furthermore, it is recommended that future studies prioritise the examination of cultural elements, as they have been shown to have a substantial influence on leadership and conflict dynamics. Specifically, investigating the efficacy of cultural sensitivity training for leaders in improving their capacity to navigate diverse cultural environments within higher education institutions would be valuable. Furthermore, it is recommended that future study direct its attention towards examining the impact of organisational climate and culture on the correlation between servant leadership, conflict management, and employee outcomes. Gaining a comprehensive understanding of how these aspects interact has the potential to yield practical insights that may be used to implement effective organisational interventions and enhancements.

6.0 Conclusion

In conclusion, this study delved into the intricate interplay between servant leadership and conflict management behaviours and their implications for team performance, resolution efficacy, and turnover intention within Tanzania's higher learning institutions. A set of hypotheses that sought to explain the connections between servant leadership, conflict management behavior, and organisational outcomes served as the basis for the investigation. The findings of this study provide valuable insights into the dynamics of servant leadership and conflict management in Tanzanian universities. Notably, the servant leaders in these institutions demonstrated a propensity for integrating, avoiding, and accommodating conflict management styles, challenging the initial expectation of employing problem-solving and compromising approaches. Furthermore, the study uncovered a positive correlation between integrating conflict management behaviours, specifically avoiding and accommodating, lending support to the conglomerate conflict behaviour theory. Cluster analysis revealed two predominant conflict patterns among leaders, characterised by a heightened use of compromising and low-integrating (cooperative) behaviour as well as high-integrating and low-compromising (competitive) behavior. These patterns suggested a nuanced approach to conflict management, wherein

leaders strategically blended different styles to foster cooperation and improve team performance. The study's hypotheses were largely supported, affirming the positive impact of integrating and compromising conflict management styles on team performance. Conversely, forcing conflict behaviour exhibited a negative relationship with team performance. The examination of turnover intention revealed that accommodating and forcing styles were associated with increased turnover intention, emphasizing the importance of selecting appropriate conflict management strategies in organisational settings. Importantly, the study's findings align with existing literature, supporting the idea that no single conflict management style fits all situations. Instead, the combination of different styles can enhance effectiveness in resolving conflicts and improving organisational outcomes. The study contributes to the understanding of servant leadership in diverse cultural contexts, shedding light on the influence of cultural factors on leadership and conflict management choices. Thus, this research underscores the significance of servant leadership in guiding conflict management practices and highlights the need for leaders to adopt a flexible and context-specific approach. The patterns of conflict found and how they affect team dynamics have real-world implications for leaders and people who work in organisational development who want to improve performance and lower turnover in Tanzanian higher education institutions and maybe in other places with similar cultures.

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Intrinsic Motivation on Entrepreneurs' Intention to Adopt Crowdfunding: The Case of Kiva Lending Crowdfunding

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Abstract
The study investigated the entrepreneur's intrinsic motivation and its relationship to the adoption of crowdfunding using a Kiva lending crowdfunding platform as case study. A total 241 entrepreneurs in Tanzania were surveyed using Partial Least Squares-based Structural Equation Modeling (PLS-SEM 3) to examine whether perceived behavioural control, personal attitude, and self-efficacy were predictors of entrepreneurs' intention to adopt crowdfunding. The results indicated that an entrepreneur's self-efficacy, attitude, and perceived behaviour control significantly determine their intention to adopt crowdfunding. The study revealed that entrepreneurs who engaged in crowdfunding possessed a high degree of self-assurance in their abilities, indicating that they were confident in their capacity to perform the necessary tasks to complete the fundraising process. Moreover, the research highlights the importance of understanding the attitudes of entrepreneurs towards crowdfunding. Entrepreneurs with positive attitudes towards crowdfunding were more likely to engage in it to raise funds for their venture. The findings suggested that crowdfunding platforms should pay attention to the attitudes of entrepreneurs towards crowdfunding to understand their motivations and expectations better. This will enable crowdfunding platforms to tailor their services to meet the needs and expectations of entrepreneurs, ultimately resulting in a more successful crowdfunding experience for all parties involved.

Keywords: *Intrinsic motivation, Crowdfunding adoption intention, Kiva*

1.0 Introduction

The term crowdfunding is considered to be a form of crowdsourcing and alternative finance (Bretschneider et al., 2014). Crowdfunding is an open call, essentially through the internet, for the provision of financial resources either in the form of donation or in exchange for some form of reward and/or voting rights (Belleflamme et al., 2010a). There are four crowdfunding modes: lending, reward, donation and equity (Tomczak & Brem, 2013). The lending model is characterized by small and uncollateralized loans in capital return invested usually the loan is offered through the Field Partner (FP)

(Anglin et al., 2020; Luo et al., 2022), The reward model is characterized by giving back in return to the goods or services produced (Mollick, 2014a; Zhao et al., 2019), while the equity model entails buying of shares or debentures to invest in the new entrepreneurial business in return of dividend, profit or royalty (Estrin et al., 2018; Wallmeroth, 2019). The donation model is characterized by charitable mission with no financial or material return (Chen et al., 2019; Liu et al., 2017).

In Tanzania, the lending mode of crowdfunding is more dominant than other modes. Kiva platform is the main supporter of lending crowdfunding mode in the country. Kiva is among the global lending platforms operating in more than 80 countries founded in early 2005 in San Francisco and aims at alleviating poverty (Allison et al., 2015; Galak et al., 2011; Kiva, 2023). Kiva started active operations in Tanzaniain late 2007, by offering small and uncollateralized loans via different FPs like One-Acre fund, Tujijenge Tanzania, Anza and others (Kiva, 2023).

The loan process started with an entrepreneur applying for a loan to the FP, who will evaluate the application using pre-determined criteria before deciding on the request. The acceptance decision is preceded by soliciting an entrepreneur's detailed profile and physical visit to his/her location. The objective of these measures is to ensure the entrepreneur is well known to the FP and helps to reduce information asymmetry (Anglin et al., 2020; Courtney et al., 2017; Luo et al., 2022). After that, the entrepreneur's information is submitted to the crowdfunding organisation and subsequently posted on the platform. At this stage, lenders get more details on how to fund the entrepreneurs and the risks associated with funding. If an entrepreneur is fully funded, the fund goes to entrepreneurs through FP. The entrepreneur is expected to repay the loan as scheduled to FP, who then refunds the loan to the crowdfunding organization without any interest and keeps the interest paid by the entrepreneur for operational purposes. Lastly, the fund is reimbursed to funders and the cycle continues.

Entrepreneurs across the globe are among the people who have tapped the crowdfunding opportunity and have benefited from it significantly. The crowdfunding platforms in terms of resource provision in the world include Kickstarter, Indiegogo, Patreon, GoFundMe, Kiva, Crowdrise, and Realty Africa to mention a few. However, in emerging economies, particularly in Africa the adoption of crowdfunding among entrepreneurs is still very low(Group, 2015). Available literature reveals that the low adoption rate is attributed to macro factors such as non-conducive national regulatory environments, low utilization of e-commerce, and low utilization of

innovative strategies(Group, 2015). In addition to low adoption, the majority of crowdfunding loans have been directed to non-entrepreneurial projects such as lifestyle businesses rather than creative, technological or infrastructure (Group, 2015).

In Tanzania, like other emerging economies, crowdfunding adoption is low. Evidence form Kiva, a largest lending-based crowdfunding in developing economies, show that up to the year 2020 only 21,843 entrepreneurs have borrowed from the platform. This number equivalent to 0.61% of all entrepreneurs benefiting from Kiva, which is relatively low compared to other parts of developing world where a total of 3.6 million have borrowed from the platform from 80 countries (Kiva, 2020). Recent Kiva data is more alarming since the number of FP that are serving entrepreneurs in Tanzania have dropped from 13 in the year 2020 to just 3 in the year 2023 indicating a declining trend of entrepreneurs borrowing from Kiva (Kiva, 2023).

The causes of low adoption of crowdfunding in Tanzania has received little attention in theoretical and empirical research. However, inferences from the Theory of Planned Behaviour (TPB) indicate that intrinsic factors significantly influence entrepreneurs' intention to adopt innovations. Thus, in this context, entrepreneurs' intrinsic factors, particularly perceived behaviour control, personal attitude and self-efficacy are equally expected to influence the entrepreneur's intention to exploit crowdfunding opportunities. Unfortunately, the influence of these intrinsic factors has received little attention in lending-based crowdfunding compared to other modes of crowdfunding. For instance, some studies have examined the influence of personal factors on reward-based crowdfunding(Shneor & Munim, 2019) and donation-based crowdfunding(Chen et al., 2019; Li et al., 2018). Nevertheless, other crowdfunding studies focused on funders instead of recipients of funders' finances including entrepreneurs. In particular, such studies have examined the factors influencing funders to support entrepreneurs (Allison et al., 2013; Galak et al., 2011; Pope & Sydnor, 2011). In our view, it is important to unpack the influence of entrepreneurs' intrinsic factors on their intention to exploit crowdfunding opportunities as it predicts entrepreneurs' future use and conduct regarding crowdfunding opportunities.
Having pinpointed the macro factors towards crowdfunding adoption in Tanzania beyond our theoretical framework in the preceding part, we shift our attention to TPB theory and Social cognitive theory as a lens for entrepreneurs' intrinsic motivation factors such as attitude, perceived behaviour control and self-efficacy in predicting the intention to adopt crowdfunding.The theory of Planned Behaviour (TPB) is an extension of the

Theory of Reasoned Action (TRA) with an additional perceived behavioural control (PBC) construct to account for behaviours beyond an individual's complete voluntary control.

According to Ajzen (1991), intentions are the best predictors of individuals' future behavioural acts. The intention is guided by some factors that indicate peoples' beliefs on their expectations, desire, support, power, ability and motives towards it. According to the theory, human behaviour is guided by three kinds of considerations namely attitude toward the behaviour, subjective norms and perceived behavioural control. Perceived behavioural control (PBC), as an additional determinant of intention "refers to perceived ease or difficulty of performing the behaviour, This added construct is assumed to reflect experience as well as anticipated impediments and obstacles" (Ajzen, 1991). Attitude is referring to "an individual's positive or negative feelings about performing the target behaviour" (Ajzen, 1991). Subjective norms are "the person's perception that most people who are important to him think he should or should not perform the behaviour in question" (Ajzen, 1991). The TPB is the best theory in explaining intrinsic motives such as attitudes and perceived behaviour control towards adoption. In addition to these, self-efficacy is an intrinsic attribute revealed to impact entrepreneurs' adoption behaviour(Bandura, 1986; Wood & Bandura, 1989).
Self-efficacy is a key concept in social cognitive theory introduced by psychologist Albert Bandura which refers to the ability belief to succeed in specific situations. Self-efficacy plays a crucial role in explaining how people approach goals, tasks, and challenges(Bandura, 1986; Wood & Bandura, 1989).

Attitude and Entrepreneurs' Intention to Adopt Crowdfunding

In the crowdfunding context, personal attitude toward crowdfunding is the personal judgment of the desirability of opting for a new financing opportunity whose benefits outweigh traditional financing. The attitude-behaviour relationship has attracted the attention of social psychological research and has stimulated empirical investigation of this relationship in various fields (Alleyne & Broome, 2011; Asif et al., 2023; Baber, 2020; Heikal, 2014; Hsu et al., 2006; Tsordia & Papadimitriou, 2015; Wang & Zhao, 2023).

For instance, attitude has a significant positive effect on information and communication technology adoption intention (Wang & Zhao, 2023), In the telecommunication field, previous studies on the use of blogs show that attitude toward blogging significantly influencesa blog participant's intention to continue using blogs (Chin-Lung & Lin, 2008). Similarly, in investment

decision-making, empirical evidence shows that attitude is a significant predictor of investment intention as supported by TPB and risk propensity theories(Alleyne & Broome, 2011). In entrepreneurial studies, higher levels of attitude towards entrepreneurship behaviour lead to higher entrepreneurial intention (Tsordia & Papadimitriou, 2015). Similarly, crowdfunding studies revealed attitude significantly influences the intention towards crowdfunding participation (Baber, 2020).
Therefore, this study hypothesizes as follows:
H1: Entrepreneurs' attitude is positively related to their intention to participate in crowd funding.

Perceived Behaviour Control and Entrepreneurs' Intention to Adopt Crowdfunding

An individual's perceived control over the performance of certain behaviorsis referred to as perceived behaviour control (Ajzen, 2002). If there is a perception among members that lack of important resources such as skills and knowledge or it is difficult to perform an act, then their intention to perform related behaviour decreases. Perceived behavioural control encompasses a broader range of factors that may influence the ease or difficulty of performing a specific behaviour.

Available research has examined widely the relationship between perceived behaviour control and behavioural intention in different fields (Alleyne & Broome, 2011; Hajiheydari & Delgosha, 2023; Heikal, 2014; Tsordia & Papadimitriou, 2015). For instance, In India, perceived behaviour control best determines users' intention behaviour to post selfies using social networking sites(Kamboj & Sharma, 2023). In addition, some entrepreneurial studies show that higher levels of perceived behavioural control led to higher entrepreneurial intention (Tsordia and Papadimitriou, 2015). In marketing strategies, perceived behaviour control plays a significant direct role in consumers' intention to participate in collaborative consumption(Ramtiyal et al., 2023). Furthermore, online shopping research shows that buyers' perceived behaviour control is positively associated with their intention to continue shopping online (Hsu et al., 2006). Moreover, in the leisure and tourism sector, perceived behavioural control positively influences the desire to participate in crowdfunding. Borrowing from the empirical evidence in other fields, we argue that the intention of entrepreneurs to exploit crowdfunding opportunities is well associated with their perceived control behaviour.

Therefore, based on this understanding, the study hypothesizes as follows:

H2: Entrepreneurs' perceived control behaviour is positively related to their intention to participate in crowdfunding.

Self-efficacy and Entrepreneurs' Intention to Adopt Crowdfunding.
Self-efficacy (Can I do it?) refers to a belief that one can perform a certain behaviour or action. It explains why individuals with the same skills may perform differently (perform poorly, adequately or extraordinarily) in a certain behaviour(Wood & Bandura, 1989). Self-efficacy is the perceived capability rather than the actual one. Perceived capability appears when an individual weighs, integrates, or evaluates information which helps to regulate choices and efforts to perform the behaviour(Bandura, 1986). Simply, we can say, that self-efficacy is an assessment of individual own competence and ability in overcoming challenges and obstacles.

Self-efficacy has received adequate attention in the entrepreneurship field and is identified to be a strong predictor of entrepreneurial behavioural intention. Prior studies in different fields revealed that perceived self-efficacy and behavioural intention enjoy a positive relationship (Alamin et al., 2020; Ayodele, 2013; Darmanto & Yuliari, 2018; Hameed & Arachchilage, 2021).Moreover,self-efficacy plays an important role in the successful adoption processes of Information Systems security innovations(Hameed & Arachchilage, 2021). On the other hand, entrepreneurial self-efficacy influences entrepreneurial orientation (Stewart et al., 2023).

Based on available empirical evidence regarding the relationship between self-efficacy and behavioural action, this study hypothesizes as follows:
H3: Entrepreneurs' Self-efficacy is positively related to their intention to participate in crowdfunding.

2.0 Methods

Determination of the sample was aided by data from the baseline survey conducted by a research project titled Crowdfunding for Youth Entrepreneurs in Tanzania (C4YET).[1] The baseline survey involved 1953 entrepreneurs, but those who were aware of crowdfunding activities were 920. These entrepreneurs constitute the study's population since the study targeted respondents who are aware of crowdfunding practice. From the population of 920, the study selected a sample of 278 entrepreneurs located in five regions, namely Dar es Salaam, Mbeya, Arusha, Mwanza and Morogoro.

[1]C4YET is a project based in Mzumbe-Morogoro-Tanzania. Mzumbe University, in collaboration with Small Industries Development Organization (SIDO) and Copenhagen Business School (CBS)-Denmark aimed to generate an understanding of crowdfunding as an

The study analysed data using Partial Least Squares-based Structural Equation Modelling (PLS-SEM), which is the most suitable analysis technique for explaining variances.PLS-SEM is ideal for this study, as it maximizes the explained variance of the dependent construct(s) R^2 (minimizes the unexplained variance), is tolerant to distribution requirements insensitive to sample size and can handle multicollinearity among the independent variables.

3.0 Results and Discussion

Respondents' Characteristics and Responses to Crowdfunding Awareness Frequency Information

The results indicated that more than half of respondents (61%) were youth under 20 to 30 years old. The femalewas(52.7%) and the male was(47.3%) and their geographical distribution was(27.8%) in Arusha, (19.1%) in Mwanza, (11.2%) in Mbeya, (10.0%) in Morogoro and (32.0%) in Dar es Salaam.

The entrepreneurs crowdfunding awareness indicated that (100%) were involved in the baseline survey conducted by Mzumbe University, this is to prove that none of the respondents came out of the C4YET baseline survey. Tables 1 and 2 indicate the results

Table 1: Entrepreneurs' Profile Frequency Information

No	Measure	Details	Frequency	Percentages %	Cumulative Frequency %
1.	**Geographical location**	Arusha	67	27.8	27.8
		Mwanza	46	19.1	46.9
		Mbeya	27	11.2	58.1
		Morogoro	24	10.0	68.0
		Dar es Salaam	77	32.0	100.0
	Total		241	100	
2	**Age in years**	Less than 19	1	0.4	0.4
		20-30	147	61.0	61.4
		31-40	79	32.8	94.2
		41-50	12	5.0	99.2
		Above 50	2	0.8	100.0
	Total		241	100.0	
3	**Gender**	Male	114	47.3	47.3
		Female	127	52.7	100.0
	Total		241	100.0	

effective funding mechanism for entrepreneurs. The project sampled five big business regions in Tanzania (Dar es Salaam, Mbeya, Arusha, Mwanza and

Morogoro) and conducted a baseline survey to explore the crowdfunding awareness among 1953 entrepreneurs in Tanzania. About 920 entrepreneurs indicated that, there were aware of crowdfunding. https://c4yetnorth.org/

Table 2: Entrepreneurs' Crowdfunding Awareness Frequency Information

No	Response	Source of crowdfunding awareness	Frequency	Percentages %	Cumulative percentages%
1		**Hearing crowdfunding from social media**			
	Valid		189	78.4	78.4
	Missing		52	21.6	100.0
		Total	241	100.0	
2		**Hearing crowdfunding from friends and relatives**			
	Valid		65	27.0	27.0
	Missing		176	73.0	100.0
Total			241	100.0	
3		**Hearing crowdfunding from financial institutions**			
	Valid		26	10.8	10.8
	Missing		215	89.2	100.0
Total			241	100.0	
4		**Hearing crowdfunding when visited by Mzumbe University**			
	Valid		241	100.0	100.0
	Missing		0	0.0	100.0
		Total	241	100.0	

In evaluating the assumptions related to the reliability and validity of the measurement model, the first step was to run a PLS algorithm that uses the known elements to estimate the unknown elements of the model. The maximum number of iterations was300 with the stop criterion of 7 and initial weight of 1 (as a default in Smart PLS) (Ringle et al., 2015). The process was very useful because the path weighting scheme was estimated to maximize the values of R^2 or variance explained.

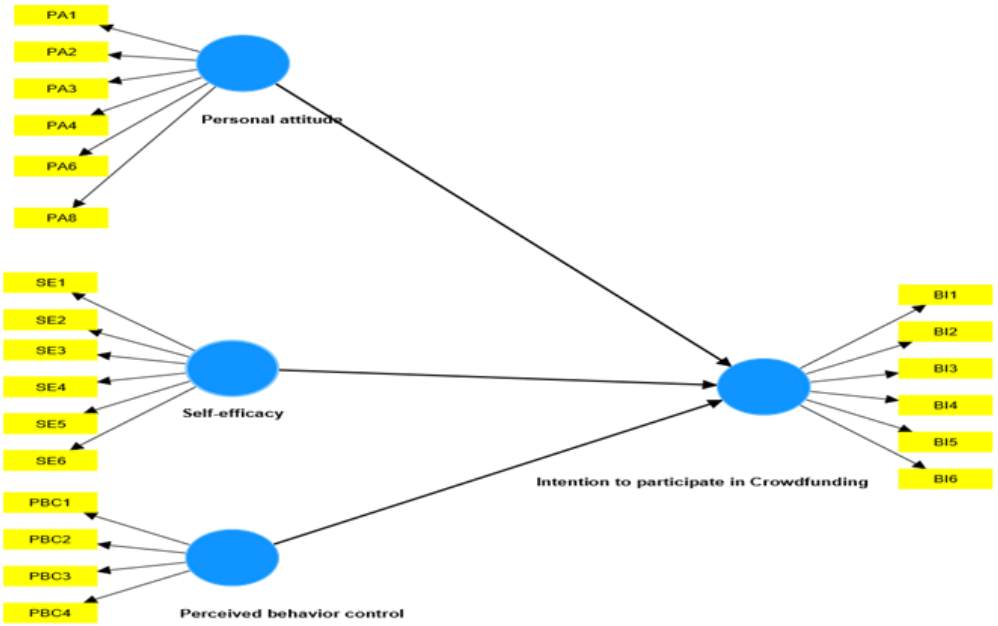

Figure 1: Measurement model

Internal consistency reliability, that is, how closely related the set of items comprising the construct are as a group was measured by Cronbach's alpha where above 0.6 is accepted (Hair et al., 2014). The results indicated all values were above 0.6, this indicated that the questionnaire used was reliable in measuring the studied constructs.

Composite reliability (CR) which quantifies how well a construct is measured by its assigned indicator was observed. The accepted cut-off value of CR is 0.60 (Hair et al., 2011). The results indicated all values are above the cut-off values.

Indicator reliability was also observed which specifies which part of an indicator's variance can be explained by the underlying latent variable. The recommended value of indicator loadings should be at least 0.60 although between 0.40 and 0.70 may be retained after analysing the impact of AVE and CR(Chin, 1998b; Hair et al., 2011; Henseler et al., 2009). In that case, all loadings were above 0.60 and the loading of one item was retained (0.525) after assessing the impact on AVE and CR.

Convergent validity assessed by Average variance extracted (AVE), which refers to the extent to which the average variance of the indicator is explained by the construct was also observed. According to Fornell and Larcker (1981),

AVE should be above 0.5.The results indicated all AVE exceed the cut-off values. Table 3indicates the factor loadings, Cronbach's alpha, CR and AVE.

Table 3: Reliability and Validity of the Measurement Model

No.	Construct	Item no.	Factors loadings	Cronbach's Alpha	CR	AVE
1	**Self-efficacy**	SE1	0.822	0.862	0.898	0.598
		SE2	0.821			
		SE3	0.839			
		SE4	0.792			
		SE5	0.739			
		SE6	0.602			
2	**Perceived behaviour control**	PBC1	0.838	0.847	0.895	0.680
		PBC2	0.893			
		PBC3	0.753			
		PBC4	0.810			
3	**Personal attitude**	PA1	0.845	0.844	0.886	0.571
		PA2	0.840			
		PA3	0.525			
		PA4	0.855			
		PA6	0.791			
		PA8	0.612			
4	**Intention to Participate in Crowdfunding**	B11	0.748	0.870	0.902	0.605
		B12	0.770			
		B13	0.783			
		BI4	0.787			
		BI5	0.819			
		BI6	0.758			

Apart from that, discriminant validity using Fornell-Larcker criterion (AVE of each construct should be higher than the squared correlations with all other constructs) (Fornell & Larcker, 1981), Cross loadings (the loading of each indicator is expected to be greater than all of its cross-loadings(Chin, 1998a; Hair et al., 2011) and Heterotrait-monotrait ratio of correlations (HTMT) were assessed, the proposed value should be lower than 0.85 (Benitez et al., 2020) or lower that 0.9) (Duarte & Amaro, 2018). The results indicated to fit all criteria. Tables 4, 5 and 6indicate the Fornell-Larcker criterion, Heterotrait-monotrait ratio and Cross loadings respectively.

Table 4: Fornell-Larcker Criterion

Construct	Intention to participate in Crowdfunding	Perceived behavior control	Personal Attitude	Self-efficacy
Intention to participate in Crowdfunding	0.778			
Perceived behavior control	0.453	0.825		
Personal Attitude	0.399	0.475	0.756	
Self-efficacy	0.470	0.467	0.435	0.773

Table 5: Heterotrait-Monotrait Ratio (HTMT)

Construct	Intention to participate in Crowdfunding	Perceived behavior control	Personal Attitude	Self-efficacy
Intention to participate in Crowdfunding				
Perceived behavior control	0.490			
Personal Attitude	0.441	0.540		
Self-efficacy	0.535	0.513	0.507	

Table 6: Cross Loadings

Constructs items	Intention to participate in Crowdfunding	Perceived behavior control	Personal Attitude	Self-efficacy
BI1	0.748	0.415	0.394	0.401
BI2	0.770	0.364	0.323	0.333
BI3	0.783	0.363	0.363	0.380
BI4	0.787	0.326	0.229	0.361
BI5	0.819	0.337	0.272	0.376
BI6	0.758	0.280	0.237	0.326
PA1	0.334	0.377	0.845	0.324
PA2	0.391	0.427	0.840	0.356
PA3	0.224	0.296	0.525	0.325
PA4	0.304	0.443	0.855	0.412
PA6	0.314	0.360	0.791	0.328
PA8	0.174	0.181	0.612	0.204
PBC1	0.431	0.838	0.454	0.461
PBC2	0.427	0.893	0.405	0.457
PBC3	0.201	0.753	0.331	0.222
PBC4	0.357	0.810	0.356	0.319
SE1	0.322	0.310	0.301	0.822
SE2	0.387	0.368	0.343	0.821
SE3	0.384	0.390	0.414	0.839
SE4	0.335	0.364	0.336	0.792
SE5	0.408	0.395	0.312	0.739
SE6	0.322	0.319	0.296	0.602

Source:

The fitness of the model was evaluated with the standardized root mean square residual (SRMR) value; the result was 0.071 indicating the fitness of the model. Henseler et al. (2016) suggested SRMR should be less than 0.08 which shows the overall fitness of the model. The R^2 (Coefficient of determination) that represents the proportion of the variance for a dependent variable that is explained by an independent variable was also observed. The results indicated R^2 to be0.309 adjusted R2 was 0.300. According toFalk and Miller (1992), recommended that R^2 values should be equal to or greater than 0.10 for the variance explained of a particular endogenous construct to be deemed adequate, Cohen (1988) suggested R^2 values for endogenous latent variables were assessed as follows: 0.26, 0.13, 0.02 as substantial, moderate, and weak respectively. Chin (1998a) recommended R^2 values for endogenous latent variables based on: 0.67, 0.33, and 0.19 as substantial, moderate, and weak. In social science small R^2 is beautiful (Moksony & Heged, 1990), R^2 is not expected to be high because human behaviour does change.

Non-parametric bootstrapping approximation method was employed. This is randomly sampled data with replacement to form a new sample of data referred to as a bootstrap sample. Bootstrapping with 5000 resampling was used to obtain standard errors of estimates. The hypothetical constructs which extended the causal relationships to the key dimensions; perceived behaviour control, personal attitude, and self-efficacy on the intention to adopt crowdfunding were tested with bootstrapping to identify the significance level between all the measurement constructs. See the results from table 7.The results indicated that perceived behaviour control (P=0.000), self-efficacy (P=0.001) and personal attitude (P=0.006) significantly influenced entrepreneurs' intention to utilize the crowdfunding opportunity.

Considering the Social Cognitive Theory perspective, an entrepreneur's self-efficacy is grounded on confidence in oneself in executing and accomplishing tasks that will produce desired results. The justification for this finding is grounded on the notion that an entrepreneur needs to develop a strong will of self-confidence to opt for crowdfunding as an alternative finance in the future. The results are also supported by other empirical studies done on behavioural intention (Alamin et al., 2020; Ayodele, 2013; Darmanto & Yuliari, 2018; Stewart et al., 2023).

Apart from that, attitude significant results depicted that entrepreneurs recognise crowdfunding to be a financing opportunity whose benefits outweigh traditional financing. The finding suggested that improving entrepreneurs' attitudes was crucial for the intention to adopt crowdfunding

in emerging economies. The results supported other existing empirical findings (Alleyne & Broome, 2011; Baber, 2020; Tsordia & Papadimitriou, 2015; Wang & Zhao, 2023).

Lastly, the significant relationship between Perceived behaviour control and entrepreneurs' intention to utilize the crowdfunding opportunity is also supported by other existing empirical findings (Alleyne & Broome, 2011; Heikal, 2014; Hsu et al., 2006; Kamboj & Sharma, 2023; Ramtiyal et al., 2023). These results were expected in measuring intention to adopt crowdfunding because entrepreneurs are also characterised by being a manager of the business and coordinating scarce resources (Casson, 1982; Sobel, 2021). The result reflects entrepreneurs' confidence and perception of the feasibility of utilizing crowdfunding as an alternative to financing. So, entrepreneurs use their intrinsic competence in capturing different business opportunities to manage their business ventures.

Our findings lend support to the applicability of TPB and SCT across diverse settings and enhance the understanding of behavioural influences in crowdfunding practices. Practically results of the study can be useful for entrepreneurs, FP and other crowdfunding stakeholders. These crowdfunding actors must consider intrinsic motivation factors in fostering crowdfunding opportunities in overcoming challenges in accessing traditional finances.

Apart from that, entrepreneurs' facilitators/counsellors must include intrinsic attribute packages in their programs to ensure crowdfunding opportunities are fully extracted. Similarly, the findings inform entrepreneurs on how they can leverage their intrinsic attributes to increase their chances of accessing financial resources from the crowd.

Table 7: Results of Hypothesis

Construct	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Results
Perceived behavior control -> Intention to participate in Crowdfunding	0.244	0.243	0.063	3.895	0.000	Supported
Personal attitude -> Intention to participate in Crowdfunding	0.158	0.166	0.058	2.723	0.006	Supported
Self-efficacy -> Intention to participate in Crowdfunding	0.288	0.268	0.089	3.251	0.001	Supported

4.0 Conclusions and Recommendations

The study investigated the effect of intrinsic motivators on entrepreneurs' intention to adopt crowdfunding in Tanzania. The study utilized The Theory of Planned Behavior (TPB) and Social Cognitive Theory to predict the intention to adopt crowdfunding.

This study was cross-sectional design conducted in five big business regions in Tanzania. A sample of 241 entrepreneurs were surveyed to study the influence of three entrepreneurs' intrinsic motivation factors on the intention to adopt crowdfunding in Tanzania. The results showed all hypotheses are significantly related to their intention of utilizing crowdfunding opportunities. The results suggested the important of considering intrinsic motivation factors such as attitude, perceived behavior control and subjective norms on the intention to adopt crowdfunding specifically in emerging economies.

Two areas for future research have been observed due to limitations of this study. These results may be limited by the use of a cross-sectional study and crowdfunding in Tanzanian context. Further studies could consider validating our proposed model using a longitudinal study to different respondents in other crowdfunding modes like rewards crowdfunding. On the other hand, the study focuses on Kiva lending crowdfunding platform based on the C4YET dataset of entrepreneurs who were surveyed in 2020 when surveying awareness of crowdfunding in Tanzania, the findings may not be generalized because only five regions were involved in the survey. More empirical evidence is recommended to the remaining regions.

Apart from that, the proposed model focuses on TPB and SCT to predict intention to adopt crowdfunding, more finding on the intention and actual usage using other adoption model like innovation diffusion model may be an adding value to the crowdfunding field.

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APPENDIX

Appendix 1: Variables and their Measurements

No.	Construct	Item no.	Indicators
1	**Self-efficacy**	SE1	I think that by using crowdfunding, I will be able to achieve most of the business goals that I have set for myself
		SE2	In the crowdfunding process whenever I face difficult tasks, I think I am certain that I can accomplish them.
		SE3	I think using crowdfunding can help me obtain crowdfunding benefits.
		SE4	I think using crowdfunding, I can succeed at almost any endeavour to which I set my mind.
		SE5	I think I am confident that I can perform effectively on many different tasks and be assured to repay the loan
		SE6	Compared to other people who requested funds from crowdfunding, I think I can do most tasks very well
2	**Perceived behaviour control**	PBC1	I think that the basic knowledge I have, crowdfunding loan will improve my business project.
		PBC2	I think that I would be able to learn on how to make use of the crowdfunding loan in developing my business project
		PBC3	I think that my business I have and ability will enable me to utilise the crowdfunding loans
		PBC4	I think it is within my control on whether to opt or not to opt crowdfunding loan to improve my business project (no external force)
3	**Personal attitude**	PA1	crowdfunding is a good idea to me to raise money for business
		PA2	crowdfunding is a good idea to me because a can access money easier
		PA3	crowdfunding is good idea to me because it does not require a lot of procedures
		PA4	crowdfunding is a good idea because I get facilities from FP
		PA6	crowdfunding is encouraging because of meeting with business friends
		PA8	crowdfunding is transparency, I feel good as an entrepreneur being publicized in the crowdfunding platform requesting funds to finance my business project
4	**Intention to Participate in Crowdfunding**	B11	I have an intention to raise capital for the business through crowdfunding in the coming future.
		B12	I predict to raise capital for the business through crowdfunding in the near future.
		B13	I plan to use crowdfunding in the near future
		BI4	I am ready to visit FP for crowdfunding loan processing

No.	Construct	Item no.	Indicators
			in the future
		BI5	I am determined to be among the crowdfunding beneficiaries in the future
		BI6	I will make efforts to prepare myself with all the documents needed in a crowd loan application in the future

Adoption of International Financial Reporting Standards and Financial Performance of Listed Manufacturing Firms in Nigeria

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Abstract
This study reviewed the literature on the effect of International Financial Reporting Standards (IFRS) adoption on financial performance of listed manufacturing firms in Nigeria. Forty-five journal articles on the subject published between 2012 and 2021 were analyzed. The study employed a narrative literature review. The review focused on determining whether there wre any significant differences between the financial performance measurements of listed manufacturing firms operating in Nigeria that were prepared using IFRS compliant financial statements and local Generally Accepted Accounting Principles (GAAP). Second, to determine whether financial performance indicators developed using IFRS-compliantfinancial statements exhibit superior performance than those developed using local GAAP. The Studies reviewed employed secondary data, which were sourced from the annual report of companies listed on the Nigerian Exchange Group, and the data were analyzed using panel regression analysis. According to the analysis of the literature, IFRS financial ratios are more accurate performance indicators than local GAAP financial ratios. Further investigation indicated that there were no notable discrepancies between the financial performance indicators (financial ratios) reported by listed manufacturing firms operating in Nigeria under local GAAP and IFRS-compliant financial statements. The study concluded that a company's financial performance (return on capital employed) improves in direct proportion to how closely it complies with IFRS disclosure guidelines. The study recommended that to sustain the positive effects of compulsory and voluntary financial performance disclosure, manufacturing firms should be concerned with the disclosure of important information at every point in time.

Keywords: *International financial reporting standards, Financial reporting standards Nigeria, Financial Performance, Listed manufacturing firms*

1.0 Introduction

International financial reporting standards (IFRSs) is seen as a recognized accounting standard because the standards are meant to minimize the gaps seen in each nation's generally accepted accounting principles (GAAPs) and facilitate international trade and investment (Okoughenu and Odunsi, 2022). The quest for high-quality financial reporting has increased as a result of discerning investors because the world has genuinely become a global village without any barriers resulting from differences in financial interpretation between different countries (Ogundeyi, Siyanbola, and Trimisiu, 2021). With such idea, global institutions like the International Monetary Fund and the World Bank have frequently encouraged developing countries to adopt IFRS; nonetheless, the majority of African states fail to follow either the adoption or the convergence track. Questions have been raised by few companies that have adopted IFRS regarding how well they were applied (Titus, 2021).

Thorough disclosure and fair presentation demanded by financial statements compliant with IFRS are anticipated to reduce disagreement resulting from various countries comparisons of financial statements, promote transparency, and ensure the quality of financial reporting of entities operating in both local and international markets, in which the firms' profit may be positively impacted (Salah, 2020). Around 140 countries around the world, including 50 developing countries, have legalized or mandated the use of IFRS for publicly traded companies (Salah, 2020). This was viewed as one of the most significant accounting-related inventions ever. More firms globally are moving to IFRS reporting now that it is generally recognized in many countries to ensure comparison of their financial statements by investors and the capital markets (Jibril, 2019).

In the public interest, IFRS seeks to establish a single set of principles-based financial reporting standards that are highly placed, uncomplicated to use, and universally acknowledged. This standard delivers transparent, high quality and comparable information in entities financial statements including other financial reporting to assist investors and other users of financial information in making informed economic decisions. Fewer researchers have concentrated on manufacturing firms as a whole than the vast majority of researchers who have conducted studies about the adoption of IFRS in different industries to the best of our knowledge. Some of the studies are; Augustine (2022), Mensah (2021), and Titus (2021). A large portion of these studies focuses on value relevance, price-earnings ratios, timely loss, management of earnings, and dividend yield. Some of the studies are; Nweke, Onyekwelu, and Eneh (2019), Ofoegbu and Odoemelam (2018),

Jibril (2019), and Salah (2020). This study attempts to review the literature on the impact of International Financial Reporting Standards adoption on the financial performance of listed manufacturing firms in Nigeria.

This study aims to address the following questions:

i) Do studies reviewed demonstrate that the financial performance measures prepared under IFRS financial statements and local GAAP of listed manufacturing firms are significantly different?
ii) Do financial performance measures prepared under IFRS financial statements indicate better performance than those under local GAAP?

The rationale for this research was typically supported by theoretical and empirical reviews because the answers to the above research questions may aid in improving the understanding of how IFRS adoption impacts listed manufacturing companies' financial performance, among standard-setters, practitioners, and managers.

2.0 Literature Review

International Financial Reporting Standards (IFRS) in Nigeria

The World Bank Group conducted a detailed study on Nigeria's compliance with standards and rules between November 2003 and March 2004. The objectives of the project included assessing the degree to which national accounting standards were being complied with and attempting to contrast them with international accounting standards (IASs). In their investigation, they observed that a review has not been conducted on the SASs in compliance with the recent IFRSs (World Bank, 2004).

Jibril (2019) emphasized that to guarantee uniformity, openness, and cross-border comparability of financial statements, international financial reporting standards (IFRS) need to provide standardized criteria. The International Accounting Standards Board (IASB) is a body saddled with the responsibility for the publication of IFRS. They specify the kinds of financial transactions that companies must undertake and disclose, as well as other occurrences that affect their bottom line (Ofoegbu and Odoemelam, 2018). IFRS was created to ensure that entities' financial statements were dependable and to ensure consistency from one company to another and from one nation to another (Salah, 2020). On September 2, 2010, the Federal Government of Nigeria officially announced that IFRS would be adopted in Nigeria and outlined the steps that would need to be taken to make that happen. The implementation of IFRS was approved by the federal government of Nigeria, bringing Nigeria to the list of countries that have done so globally.

Effect of Accounting Standards on Financial Performance

Financial performance, which is used as a success measure, reflects a company's capacity to provide returns. Financial ease grows when a company's profitability increases. The financial ratios recommended by Lotfy (2007) in evaluating a firm's performance include the, fixed asset turnover ratio, debt service coverage ratio, working capital turnover ratio, interest rate coverage ratio, and debt turnover ratio. Additionally, Nine IFRS-based ratios were pointed out by Zeller (2019)that, despite regional differences, are constant and comparable, they are; profitability margin, asset turnover, expense insight, capital structure, fixed asset usage, asset relationship, liquidity, inventory turnover, and performance return. According to Parrott (2017), the four financial indicators that financial experts most frequently use to analyze the financial performance of businesses are market value, liquidity, capital structure, and profitability.

Several emerging economies, like the, India, Saudi Arabia, Egypt, and United Arab Emirates, have adopted IFRS in recent years or are in the process of doing so (Salah, 2020). Adoption is seen to be an expensive and difficult process (Jermakowicz and Gornik-Tomaszewski, 2006). Numerous researches has been carried out to assess whether the adoption of IFRS had an effect on crucial financial ratios and the response of the market in this case. They employed a range of financial ratios to evaluate financial performance (Parrott, 2017). Wang and Welker (2011) stated that, the transition from local GAAP to IFRS alters the firm's financial status, which may cause investors to reevaluate the equity of the company. This change may result from adjustments to the statement of income and the recognition of unrealized gains and losses, which may have an effect on coverage ratios and profitability, or adjustments to the statement of financial position, which may have an effect on leverage and liquidity ratios (Blanchette et al., 2011).

Abdul-Baki et al. (2014) evaluated 24 financial ratios that were calculated using both IFRS and Nigerian GAAP during the course of a seven-year case study. The objective is to establish whether a significant change exists and whether such difference raises stakeholders' evaluations of the firm's financial performance and, consequently, its worth. The results showed that there are no statistically significant variations between the financial ratios computed using Nigerian GAAP and IFRS. Similar to this, Adeuja (2015) examines how the implementation of IFRS affected the financial performance of ten Nigerian banks both before (2010–2011) and after (2012–2013).

Findings showed that there were no statistically significant performance differences between periods before and after the mandatory implementation of IFRS, which started in 2012. Erin and Oduwole (2018) found that the results were the same. This might be the case because Nigeria's poor institutions and unsteady political, economic, and social conditions might make it challenging to efficiently implement IFRS. The improved comparability of the financial statements and increased disclosure provided by IFRS, however, reduce information asymmetry. Particularly, Nigerian GAAP was a translation to the International Accounting Standards (IAS), in addition to the fact that local GAAP evolved from common law countries.

Effects of Pre-and post-IFRSs Adoption Effect on the Market Risk of Companies

Pre-and post-IFRS adoption effect on the market risk of companies listed on the Nigerian Stock Exchange was evaluated by Okoughenu and Odunsi (2022). As of the end of 2020, the population of the study consisted of 158 firms. The study examined a sample of 56 companies listed on the NSE between 2003 and 2020 to collect data from their annual reports and financial statements (that is, 2003 to 2011 for the pre-IFRSs era and 2011 to 2020 for the post-IFRSs adoption era).Ordinary least square regression was used to evaluate the data, and the results showed that there was no discernible difference in market risk as measured by BTMV, GR, and DFL during the pre-and post-IFRSs adoption eras. Additionally, it was shown that the positive significant influence of the control variable (firm size) resulted in a considerable reduction in market risk in companies listed on the NSE in the post-IFRS adoption era compared to the pre-IFRSs adoption era. The study's conclusions showed that, compared to the time before IFRS implementation, the adoption of IFRS by NSE-listed companies had no discernible effect on market risk. However, it increased GR and DFL while lowering BTMR.

The impact of IFRS adoption on the tax payable by manufacturing companies from 2012 to 2021 was studied by Augustine (2022). Data from the annual reports of fifty selected Nigerian listed companies were analyzed using PPMC and panel data methodologies to determine the effect of IFRS adoption on tax payable. Depreciation (DEPR), Shareholders' Funds (SHDFUD), Long-Term Debt (LGTDEBT), and Noncurrent Asset (NONCURRENT) were found to have a negative impact on taxation, whilst Profit before tax (PBT) had a positive and significant impact. According to this, a rise in DEPR, SHDFUD, LGTDEBT, and NONCURASET reduced TAXATION for manufacturing companies. In conclusion, the adoption of IFRS significantly decreased the amount of tax that manufacturing

companies were required to pay since they deliberately and lawfully avoid paying taxes by deducting the value of their existing assets from their cost, purchasing new non-current assets, and using long-term debt (leverage). It is recommended that government monitoring measures be put in place to track business purchases, asset impairment, and transparently incurred loans in order to prevent the unjustified and artificial reduction in tax payable.

Mohammed, Abubakar, and Lawal (2021) examined the impact of adopting the International Financial Reporting Standard on earnings management toward small profit earnings to avoid small losses. Secondary data from the annual reports of six conglomerates that are listed on the Nigerian Stock Exchange were also included in the study. These reports contained information from both the pre- and post-IFRS years (2006–2010 and 2014–2018), respectively. The results show that over the post-IFRS Regime period, the quality of accounting information as judged by earnings management toward low profit earning has not greatly improved.

International Financial Reporting Standards (IFRS) and the financial performance of the industrial sector were examined by Titus (2021). This research project covers the 14-year pre-IFRS (2006–2012) and post-IFRS (2013–2019) periods. The sample size for this study consists of ten (10) Manufacturing Companies that are listed on the Nigerian Stock Exchange. The study's main statistical techniques for testing the presented hypotheses were the Wald Test Coefficient Restrictions Model and Ordinary Least Squares (Gauss-Newton/Marquardt steps) Model. Prior to the adoption of IFRS, the study discovered a weak and insignificant link between the revenue, profit, total assets, total liabilities, and earnings per share of Nigerian manufacturing enterprises as well as their return on assets and return on equity. The study recommends investors to consider the book values of equity, cash flow from operations, and profits values in the annual reports of firms prepared in accordance with IFRS before making any investment decisions based on the study's results.

IFRS and Financial Information Disclosure in Nigeria

International Financial Reporting Standards (IFRS) and Financial Information Disclosure of Listed Deposit Money Banks in the Nigerian Exchange Group were evaluated by Efuntade, Olaniyan, Efuntade, Solanke and Akinola (2021). Questionnaire was used in the study. A sample of 300 Nigerian respondents was chosen for the study. The collected data were evaluated using both descriptive and inferential statistics. The results showed that the implementation of IFRS has not yet had a substantial influence on

financial disclosure and that the breadth of information disclosure is not statistically significant among listed deposit money banks in the Nigerian Exchange Group. In conclusion, listed deposit money banks in the Nigerian Exchange Group should spend more time on financial information disclosure on subjects like voluntary financial information, relations and transactions on corporate social responsibility, fair value recognition, measurement, and evaluation, assessment of the nature and effects of business mergers, and employee compensation, emoluments, and fringe benefits. The overall analysis of the responses also revealed that Nigeria's level of firm disclosure is not yet satisfactory, particularly in regards to financial information disclosure on the foreign exchange transactions of listed deposit money banks in their financial statements, comprehensive report of the classification of assets and portfolio management, and interest incomes and interest expenses.

Using pre- and post-performance indicators, Ogundeyi and Siyanbola (2021) analyzed the effect of IFRS adoption on the corporate performance of selected banks listed on the Nigeria Stock Exchange. An ex post facto research design was employed by the study. Nine publicly traded companies' financial statements for the years 2006 to 2019 were used to gather the data. The documents have already been examined by the appropriate regulatory bodies, and the data analysis used descriptive and inferential statistics with panel data regression. The results showed that the adoption of IFRS significantly affects a subgroup of Nigerian deposit taking institutions' liquidity ($R2 = 0.40$, $F (3, 122) = 73.37$, $p = 0.000$-0.050). Additionally, the study found that the implementation of IFRS significantly affects the return on assets of a small number of Nigerian deposit money institutions ($R2 = 0.94$, $F (3, 122) = 1927.01$, $p = 0.0000.050$). A few deposit money institutions in Nigeria have proven that the implementation of IFRS has a significant impact on their capital adequacy ($R2 = 0.20$, $F (3, 122) = 17.15$, $p = 0.000$-0.050). A subset of Nigerian deposit money banks showed a significant impact of IFRS adoption on earnings per share, according to the study ($R2 = 0.59$, $F (3, 122) = 131.18$, $p = 0.000$-0.050). A conclusion was reached that the implementation of IFRS had a considerable positive influence on few Nigerian deposit money institutions' performance.

Mensah (2021) examined the pre- and post-IFRS adoption effects on the financial reporting quality (FRQ) of manufacturing firms listed on the Ghana Stock Exchange (GSE) using correlation analysis in addition to regression analysis using a conventional Fixed Effect (FE) model and the Ordinary Least Squares (OLS) method. Data from the audited annual reports of eleven manufacturing businesses were used to make 148 firm-year observations,

which were observed from 2001 to 2006 for the pre-adoption era and from 2007 to 2014 for the post-adoption era. The regression results showed a substantial adverse effect of IFRS adoption on earnings management, which suggested an improvement in the FRQ when using earnings management, measured by modified Jones' discretionary accruals, as a proxy for FRQ. According to the study, there were fewer earnings management strategies in use after the adoption of IFRS than there were before, which suggests that accounting quality was higher at that time. The findings of this study demonstrated that the adoption of IFRS enhances the quality of financial reports for companies trading on the Ghanaian capital market, which is supposed to foster more investor confidence and attract more funding.

Kwasau (2021) examined the statistical significance of the quantitative variances through comparison of the financial reports produced by Nigerian listed banks using NGAAP and IAS/IFRS. The study made use of secondary data. The annual reports of 14 Nigerian listed banks were used to compile this information. One hypothesis was developed and tested at the 5% level of significance. According to the findings, there were statistically significant quantitative discrepancies between financial reports created using NGAAP and IAS/IFRS. The study concluded that IFRS affect financial reporting in Nigerian deposit money banks.

The adoption of international financial reporting standards and the financial performance of listed Deposit Money Banks in Nigeria were examined by Ekwe, Abaa, and Okrolor in 2020. The objectives of the study were met by using an ex-post facto research approach. The main source of secondary data for this study was the annual reports and accounts of specific deposit money banks. The population of the study consists of all deposit money banks listed on the Nigerian Stock Exchange, whereas the sample size of the study consists of five randomly selected Nigerian banks. To test the hypotheses, analysis of variance (ANOVA) was used. According to the findings, the implementation of IFRS had raised the mean value of banks in Nigeria. Additionally, the findings demonstrated that the implementation of IFRS had a sizable influence on Nigeria's profit after tax for deposit money banks. IFRS may help increase deposit money banks' profits in Nigeria, according to this. Furthermore, it showed that neither earnings per share nor returns on assets or equity were significantly affected by the adoption of IFRS. In order to maximize the value of adoption, the report advises banks to regularly and appropriately train their staff to ensure that the banks receive the maximum benefits of IFRS. The study further demonstrated the need for relevant regulatory agencies to strictly enforce compliance with IFRS so as to increase

their performance, including an improvement in return on assets, profit and return on equity.

Nweke, Onyekwelu, and Eneh (2019) assessed the performance of small- and medium-sized businesses in relation to the effect of IFRS. An investigation of certain companies. The report described the issue, which includes the pricey IFRS training for workers, the expense of engaging a financial expert to redraft financial statements from earlier years, and the fact that some SMEs are still uncertain of the options available for IFRS for SMEs. Survey data and oral interviews with designated company representatives provided the information. The objectives of the study include determining the level of IFRS awareness among SME operators in Nigeria, investigating the level to which IFRS is adopted by small and medium-sized businesses, and identifying the challenges involved in implementing the IFRS guidelines for SMEs by Small and Medium-Sized Enterprises. Primary data were obtained via both oral interviews and questionnaires. There were 116 accountants and financial professionals in the study's sample. The sample that was chosen from the population consists of 90 people. The data were assessed using the Z test inferential statistic while evaluating the hypotheses with the Chi-square statistic. The findings showed that operation of SMEs in Nigeria have significant acceptance of IFRS standards, significant awareness of IFRS rules, and major implementation challenges. The researcher draws the following conclusions from the data: SMEs should ensure they take advantage of the opportunity presented by the adoption of IFRS; regulatory authorities should start awareness campaigns about the possible negative effects of implementing IFRS; and the tertiary institutions in Nigeria should include IFRS in the curriculum of accounting students.

Jibril (2019) uses deposit money banks to examine the effects of IFRS adoption on accounting quality in Nigeria. The annual reports and accounts of 15 banks listed on the Nigerian Stock Exchange from 2011 to 2014 (i.e., two years before and two years after adoption) were utilized to gather the data for the study, which was then analyzed using linear regression analysis. On the basis of data analysis, the study found that more significant loss recognitions occurred in the post-adoption phase. As a result of the study's findings, the researcher suggested that emerging nations should adopt IFRS as their financial reporting standard.

In the study by Adesanmi, Sanyaolu, and Awata (2018), the adoption of International Financial Reporting Standards (IFRS) and the market value of Nigerian manufacturing companies were examined. The last twelve (12)

years' data from listed manufacturing businesses were evaluated. To achieve the study's objective, panel ordinary least squares regression was used. The results of the pooled least squares regression showed a significant and favorable association between the market value of Nigerian manufacturing enterprises and the use of IFRS. The results showed a significant positive association between dividends per share and the market value of Nigerian manufacturing enterprises. The analysis concluded that the manufacturing industry's adoption of IFRS will increase firms' market value. This was due to the fact that IFRS adoption would improve the financial statements' quality, which will make the investors to have high trust in the business, which will increase the market value of the company.

Ofoegbu and Odoemelam (2018) studied the disclosure practices under IFRS on the performance of enterprises listed on the Nigerian Stock Exchange during a six-year period, from 2012 to 2017. Data were combined from 64 selected businesses listed on the Nigeria Stock Exchange (NSE) and 384 firm-year observations. A disclosure index was developed using text analysis and multiple regression techniques for both the mandatory and optional IFRSs. The study then examined the correlation between disclosure and performance using the firms' expressed return on capital employed (ROCE) as a performance metric. The study also examined the relationship between overall disclosure, business attributes, and performance according to the market. The results showed that there is no relationship between the financial success of the listed Nigerian companies and the degree of thorough disclosure. The results suggest that overall firm transparency is considerably and favorably related to share price, size, and audit firm size. The overall disclosure index, leverage, and company age all exhibit an inferior and adverse association.

3.0 Methodology

This study reviewed 45 journal articles which were sourced from Google Scholar and Research Gate. The researchers employed Ex-post facto research design using secondary data which were obtained from the annual report of companies listed on the Nigerian Exchange Group and the data were analyzed by adopting the panel regression analysis. The studies reviewed analyzed the pre-IFRS era and compared it with the post-IFRS era to ascertain their implications on the financial performance of the entities.

4.0 Summary of Findings and Conclusion

Different academics have examined the effect of IFRS adoption on the financial performance of listed manufacturing firms in Nigeria, and their

findings have varied, providing different explanations on the extent to which the accounting rules affect financial performance. The study also examined the claim that IFRS adoption will enhance listed manufacturing firms' financial performance in Nigeria.

In the empirical literature review on IFRS adoption and financial performance of listed manufacturing firms in Nigeria, it was noted that few researchers such as Augustine, (2022), Kwasau, (2021), Ekwe, Abaa, and Okrolor, (2020) and, Nweke, Onyekwelu, and Eneh (2019) focused more on the effects of post-IFRS adoption on entities without carrying out enough research on the comparison of the effects of pre-IFRS on entities. According to the scholars who compared the effects of IFRS adoption on firms before and after it such as Ogundeyi and Siyanbola (2021), Mohammed, Abubakar, and Lawal (2021), and, Okoughenu and Odunsi (2022) to mention a few, international companies operating in Nigeria have been significantly impacted. It was also noted that most studies used conventional least squares as a method of data analysis without taking into consideration alternative approaches.

Also, without considering other businesses, the majority of studies in Nigeria mainly focused on deposit-taking banks. The evaluation also looks into whether financial ratios calculated using IFRS suggest better performance than those calculated using local GAAP. The findings of the studies under evaluation demonstrated that IFRS financial ratios suggest better performance than local GAAP ratios. This is supported by works of Adesanmi, Sanyaolu, and Awata (2018), Ofoegbu and Odoemelam (2018) and, Mensah (2021) to mention a few.

Numerous Implications Stem from the Study's Conclusions

First, it encourages standard-setters in countries that ban the adoption of IFRS to pass laws and regulations that favor the adoption of IFRSs, which will lead to a greater degree of global convergence of accounting standards and better outcomes for all players. Additionally, it assists managers in assessing the financial statements of other businesses to assess prospective merger and acquisition opportunities. Also, to assess how well a business is performing in comparison to its competitors.

Lastly, it ensures comparison of financial reports of companies by investors in other countries, which helps with investment decision-making. The study, therefore, suggests that to sustain the possible positive effects of compulsory and voluntary financial performance disclosure, manufacturing companies

should be concerned, among other things, while disclosingvital information at the lowest practical cost.

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