JOURNAL OF ECONOMICS AND BEHAVIORAL STUDIES

Vol. 15 No. 4 ISSN 2220-6140

Editorial

Journal of Economics and Behavioral Studies (JEBS) provides distinct avenue for quality research in the everchanging fields of economics & behavioral studies and related disciplines. Research work submitted for publication consideration should not merely limited to conceptualization of economics and behavioral developments but comprise interdisciplinary and multi-facet approaches to economics and behavioral theories and practices as well as general transformations in the fields. Scope of the JEBS includes: subjects of managerial economics, financial economics, development economics, finance, economics, financial psychology, strategic management, organizational behavior, human behavior, marketing, human resource management and behavioral finance. Author(s) should declare that work submitted to the journal is original, not under consideration for publication by another journal and that all listed authors approve its submission to JEBS. Author (s) can submit: Research Paper, Conceptual Paper, Case Studies and Book Review. Journal received research submissions related to all aspects of major themes and tracks. All submitted papers were first assessed by the editorial team for relevance and originality of the work and blindly peer-reviewed by the external reviewers depending on the subject matter of the paper. After the rigorous peer-review process, the submitted papers were selected based on originality, significance and clarity of the purpose. The current issue of JEBS comprises papers of scholars from Uganda, Kenya and South Africa. Factor Inputs and the Growth of the Manufacturing Sector, Credit Accessibility and Growth of Small and Medium Enterprises, Testing The Efficacy of Debt Overhang Theory, Female Labor Force Participation and Uganda's Economic Growth, Impact of Strategy Implementation on the Performance of State Agencies, Corporate Strategies, Financial Performance and Determinants of Uganda's Debt Sustainability were some of the major practices and concepts examined in these studies. The current issue will therefore be a unique offer where scholars will be able to appreciate the latest results in their field of expertise and to acquire additional knowledge in other relevant fields.

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PAPERS

Journal of Economics and Behavioral Studies (JEBS)
Vol. 15, No. 4, December 2023 (ISSN 2220-6140)

Factor Inputs and the Growth of the Manufacturing Sector among the East African Community Member States: Testing the Efficacy of the Extended Neoclassical Growth Hypothesis

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Abstract: The study aims to examine the relationship between input factors and growth rates in the output of the manufacturing sector in the five East African Community (EAC) member states. The relatively small manufacturing sector's GDP contribution to the combined GDP of the EAC member nations is the driving force behind this inquiry. We evaluate the applicability of the 1992 Mankiw, Romer, and Weil neoclassical growth framework and its subsequent developments in this study. Using a linear dynamic panel model, we utilize this methodology to obtain estimations using the first difference generalized method of moments (D-GMM. The study's findings make it clear that the gross capital formation input component is essential for forecasting changes in the rate of expansion of the manufacturing sector's output. Conversely, the East African Community's member states' manufacturing sector output growth does not seem to be much impacted by variables such as adjusted population growth and human capital. Based on our research, the East African Community (EAC) member states' output fluctuations in the manufacturing sector may be partially explained by the neoclassical growth model and its expansions. This shows that the growth framework that has been chosen might not be thorough enough to provide a thorough assessment of the variables influencing the expansion of the manufacturing sector output in the EAC member nations. The findings of our study indicate that the manufacturing sector's output growth in the EAC member states could be enhanced through the implementation of policies and programs that provide incentives for augmenting capital stocks. This can be accomplished by increasing investments from the domestic private sector as well as foreign direct investments.

Keywords: *Manufacturing sector output, extended neoclassical growth theory, D-GMM, EAC member states.*

1. Introduction

The manufacturing industry is widely recognized as a significant indicator of economic progress on a global scale. Scholarly works like those of Su and Yao (2017) and Herman (2020) demonstrate the critical role this sector plays in facilitating structural transformation, creating worthwhile employment opportunities, and fostering sustainable economic growth. Saba and Ngepah (2021) state that ongoing economic expansion is attributed to the manufacturing industry. Aiginger and Rodrik (2020) state that it is commonly known that investments in the manufacturing sector can spur economic expansion in all global economies. It is well known that a country's ability to grow and prosper is influenced by its industrial sector. Consequently, the United Nations Conference on Trade and Development UNCTAD (2020) noted that developed economies can be identified by allocating a significant portion of their budget to this sector and making it a priority. World Bank (2021) research states that the East African Community (EAC) nations' manufacturing sector's output contribution to GDP has been inadequate since the 1960s, averaging between 5.5% and 12%. This outcome is comparatively unsatisfactory when compared with the manufacturing sector's average value generation among the world's top manufacturers, which is 30%, according to the World Bank's 2021 report.

The existing literature points out that the proliferation of industrialized nations can be attributed to substantial investments in the manufacturing industry. However, new research, as reported by Xia (2019), Behuria (2019), and the East African Economic Outlook (2021), suggests that this claim is not accurate for the East African Community's member nations. The absence of value addition in the transportation of essential commodities, such as coffee, has impeded the progress of the manufacturing sector and as affirmed by UNIDO (2021), subsequently hindered the overall economic development of the East African Community (EAC) member states. Numerous scholarly works have employed the extended neoclassical growth framework to examine the underlying factors contributing to variations in economic growth across various countries. This method has been used by numerous scholars; some prominent examples are Almas (2001) and Hoeffler (2002). Mankiw, Romer, and Weil (1992) built on Solow's 1956 neoclassical growth model by emphasizing the role that human capital along with labor, physical capital, and exogenous technology plays in determining long-term growth.

The nations that comprise the East African Community (EAC) have received relatively less attention than developed countries and OECD members in the majority of previous studies that have used the extended neoclassical growth framework to examine differences in economic growth between countries. The objective of this study is to establish a reference point for the extended neo-classical growth model under the previously mentioned conditions. This would enable a more thorough investigation of the possibility that variations in factor input endowments could explain output differences in the manufacturing sector among member nations of the East African Community. It is anticipated that the process of contrasting significant growth models like the extended neoclassical growth model will yield insightful information about how well the selected growth framework works. Furthermore, this approach has the potential to propose substitute policies that could prove to be highly beneficial in harmonizing the policies that the member nations of the East African Community (EAC) undertake to enhance the overall progress and expansion of their nations.

The current collection of empirical research concerning the connection between input factors and growth in the manufacturing sector has predominantly centered on developed nations. There is a deficit of study on the nations that make up the East African Community, and only a small number of studies have been done on the entire African continent. Between 2008 and 2019, Olarewaju and Msomi (2021) examined the influence of physical capital on the Southern African Development Community's industrial sector. Anyanwu (2018) used the IVSLS technique to examine how human capital contributed to the growth of manufacturing value added (MVA) and the manufacturing sector in Africa between 1990 and 2011. The study conducted by Obere, Thuku and Gachanja (2013) employed annual time series data spanning 1963-2009 and used the auto-regression vector approach to investigate the correlation between urban population and growth in Kenya. Most of the extant literature has centred on investigations conducted within a single country, using time series analytical methodologies. This highlights the need for the current study to employ an alternative analytical approach. Furthermore, a significant proportion of the extant research has omitted the period following the global financial crisis, from mid-2007 to early 2009. This study makes a valuable contribution to the current body of literature by using panel data spanning the period 2000-2020 to investigate the effect of input factors on the growth of the manufacturing sector in East African nations.

2. Empirical Literature Review

This subsection provides an overview of the existing empirical literature pertaining to the topic under investigation in the present study. This study emphasizes the interconnected fields of investigation, specifies the respective contributors, outlines the extent and approach used, and presents pivotal outcomes. Anyanwu (2018) investigated the contribution of human and physical capital to the increase of manufacturing value added (MVA), measured as a percentage of GDP, in Africa's manufacturing sector. The years 1990–2011 were covered by the time series data used in the analysis. The researcher used fixed effects in the instrumental variable two-stage least squares (IV-2SLS) method for both years and sub-regions. His research findings show that the expansion of the manufacturing sector across the continent is influenced differently by several human capital indices. The research findings indicate that secondary education exhibits a significant negative correlation with MVA, while tertiary education displays a robust positive correlation with MVA. According to the study's findings, there are additional variables that may be more erratic in nature, such as how natural resources are used, domestic investments made by the government, trade openness, foreign direct investment (FDI) stock, age dependency, private sector credit, social and political globalization, civil war, and the level of energy use.

Taiwo, Adebayo, and Oluwaseun's (2021) study set out to determine how physical capital development affected the growth of the manufacturing industry in sub-Saharan Africa between 1986 and 2018. The assessment of physical capital was based on primary, secondary, and tertiary enrolment, as well as the total labor force. Meanwhile, the evaluation of industrial and manufacturing development was based on industrial value added. The findings of the study demonstrate that, although the use of physical capital has contributed to the growth of industrialization, indicators of human capital have significantly and favorably affected value added in the industrial sector. According to the research, the development of the industrial sector was affected negatively by physical capital. Research by Olarewaju and Msomi (2021) looked at how physical capital affected South Africa's manufacturing sector from 2008 to 2019. The study used a panel data set including 696 observations

from 56 general manufacturing enterprises collected over a 12-year period. In addition to static (two-stage least squares, fixed effect, and random effect) and dynamic panel regression analyses.

The study employed the value-added intelligent co-efficient model and the two-step system generalized method of moments (SGMM). The research findings indicate a significant and evident correlation between the Southern African Development Community's manufacturing, physical capital, and suboptimal return on assets. The study found a significant and direct correlation between human and structural capital and return on assets. However, capital used showed an insignificant and inverse relationship. Underwriting risk, insurer size and leverage was found to have a significant inverse effect on return on assets. In the Southern African Development Community, a U-shaped association was found between physical capital and the industrial sector. The objective of Le, Duy, and Ngoc's (2019) study was to assess the relationship between physical capital and foreign direct investment (FDI) and labor productivity in Vietnam's manufacturing sector. The study looked at time series data from 1986 to 2014 to assess the degree and direction of the impact that physical capital and foreign direct investment (FDI) have had on Vietnam's manufacturing sector. The link under inquiry was examined using the cointegration regression approach in the research. The existence of cointegration among the variables has been confirmed by the limit test results.

According to Toda and Yamamoto's Granger causality research, the physical capital index and foreign direct investment have a one-way relationship with the productivity of manufacturing workers. The study's empirical findings supported the positive and long-lasting benefits of physical capital and foreign direct investment on worker productivity in Vietnam's manufacturing sector with strong statistical evidence. These findings imply that employees must enhance their skills and expertise consistently, while policymakers must implement concrete strategies to augment physical capital. Babasanya, Maku, and Amaefule (2020) conducted a study to examine the effects of national savings and the labor force on the manufacturing sector output of Nigeria for 35 years, from 1985 to 2019. This information was collected from a variety of sources, including the World Development Index (WDI), the National Bureau of Statistics (NBS), and the Central Bank of Nigeria's (CBN) 2017 statistical bulletins. The data was analyzed using the vector error correction model (VECM). The results of the VECM analysis show that the labor force and national savings have a long-term positive impact on manufacturing sector production, whereas currency rates and inflation have a long-term negative impact. The study's findings show how a number of important variables, including national savings, manufacturing labor force participation, inflation, and currency rates, affect the manufacturing sector's ability to grow and remain sustainable.

Consequently, it was recommended that the government undertake a comprehensive evaluation of the manufacturing industry and implement a restructuring plan, which should involve providing financial support to the sector and increasing its utilization of domestically sourced raw materials. The relationship between the labor force and the manufacturing sector was examined in Ogundipe and Olarewaju's (2020) study using data from the Economic Community of West African States (Ecowas). After accounting for technology, the Ecowas region's industrial sector's performance was assessed using static panel regression analysis on time series data covering the years 1990–2019. The analysis concluded that, after taking technical concerns into account, labor force composition had a significant effect on the industrial sector of the Economic Community of West African States (Ecowas). The region's manufacturing production was positively impacted by two important factors: individual internet usage and the existence of safe internet servers. Okunade (2018) used an autoregressive distributed lag (ARDL) model to examine how Nigerian manufacturing company output was impacted by labor force participation. The time series data for the study covered the years 1981–2016. The research findings indicate a positive but negligible correlation between the labor force and manufacturing business output.

However, it is noteworthy that most productive firms in Nigeria are experiencing gross underuse of their capacity. The study uncovered a significant degree of labour force underuse in Nigerian manufacturing enterprises, which reduced the favorable effect of labour force on elucidating the growth in production of Nigerian manufacturing firms. The report recommended that policymakers and the government implement measures aimed at enhancing the workforce in manufacturing firms. These measures include facilitating the acquisition of modern machinery at affordable rates, prioritizing a consistent power supply and promoting the appreciation of the workforce in Nigeria. Zhou (2019) developed a general equilibrium model that integrated Rostow's research on the function of a principal separator in the modernization process. The author presented

evidence that increased population size facilitated the manufacturing sector's adoption and utilization of technology, leading to higher returns on scale. Determining the elasticity of demand for agricultural products was crucial in evaluating the advantages of population increase or technological developments in agriculture for the manufacturing sector.

An analysis of China and the United Kingdom during the early 1800s demonstrated that research and development were crucial factors for achieving consistent growth. It was also found that attaining autonomous modernisation necessitated a combination of a sufficiently large consumer market and a supply side characterised by advanced technologies. The extant literature is deficient in its coverage of the member states of the East African Community (EAC). The endogeneity of some explanatory variables in the output model has been addressed by a small number of writers using panel data analytical methods, while a significant body of empirical research has used time series analytical methods. This research addresses the problem of endogeneity of regressors in an output function by utilizing panel data analytical methods on factual data related to the member countries of the East African Community (EAC) to expand the body of existing scholarly literature on the subject.

3. Methodology

Data, Research Design and Research Approach: This study's research methodology is quantitative in nature, and data analysis is done utilizing a longitudinal research design. The variables utilized in the pan-African model are derived from the World Bank's development indicators.

Model Specification: Within the parameters of the Mankiw, Romer, and Weil (1992) neoclassical growth model and its extension, the current study employed a multiple linear regression model. The empirical model incorporates study variables that are derived from the theoretical model adopted. The present study examines a linear dynamic panel model, expressed as follows:

$yit = \alpha yi,-1 + x'i,t\beta + \mu i + \gamma t + \epsilon_(i,t)$ (1)

where y_it represents the dependent variable, $\alpha yi,-1$ denotes the lagged dependent variable, $x'i,t$ is the vector of independent variables, β represents the corresponding coefficients, μi and γt are the in dividual and time fixed effects respectively, and $\epsilon_(i,t)$ represents the error term.

The cross-sectional component of this study is represented by the variable "i" and is specific to each of the different nations that are being studied. The variable "t" represents the temporal dimension, which is determined between 2000 and 2020. The variable being examined is called yit, and it has to do with the expansion of the manufacturing industry. The initial lag of the variable under investigation is represented as $yi, t-1$. The stimulus variables in the model are denoted by x_{it}'. The partial slope coefficient of the dynamic variable is represented by a, while the gradient coefficient vector of the regression variables is represented by β. The unobserved heterogeneity effect is represented by μ_i. The time dummy, denoted by γ_t, captures shocks that affect $y_{i,t}$ across the individual countries being studied. Finally, the idiosyncratic error term is represented by $\epsilon_{i,t}$. The methodology employed in constructing the empirical model for estimation adheres to the framework established by Mankiw, Romer and Weil (1992).

Specifically, we adopt a non-linear constant return to scale (CRS) production function, which takes this form:

$$equalmsy_{i.t} = Agcf_{i,t}{}^{\beta_2} humc_{i,t}{}^{\beta_3} (n+g+\delta)_{i,t}{}^{(1-\beta_2-\beta_3)} e^{(\mu_i+\gamma_t+\epsilon_{i,t})};\ 0 < \beta_2 + \beta_3 < 1 \quad (2)$$

The expression being presented is denoted as β_2 multiplied by *humc* subscripted by i and t. $(n+g+\delta)_{i,t}$The equation presented in (2) is a mathematical expression that involves the exponential function and several parameters, namely β_2,β_3,μ_i,γ_t, and $\epsilon_{i,t}$. The inequality constraint $0 < \beta_2 + \beta_3 < 1$ is also specified.

The variable $msy_{i,t}$ represents the value added in current US dollars of the manufacturing sector output of a given country *i* at a specific time *t*. The variable A denotes a productivity parameter that is determined exogenously. Meanwhile, $gcf_{i,t}$ refers to the gross capital formation of country *i* at time *t*, measured in current US dollars. The measure of human capital in country *i* at time *t*, is represented by the variable $humc_{i,t}$which is calculated as the total *per capita* expenditure on investment in education in current US dollars. Meanwhile, the

variable $(n + g + \delta)_{i,t}$ denotes the population growth rate of country *i* at time *t*, which is adjusted for extrinsic technological advances, represented by g, and head extrinsic depreciation. The aforementioned equation (1) defines the variables μ_i, γ_t and $\epsilon_{i,t}$, while δ, as in the augmented Solow growth model (Mankiw, Romer and Weil 1992), represents a distinct parameter.

Additionally, *e* denotes Euler's constant. By defining $(1 - \beta_2 - \beta_3)$ as β_4 and applying the natural logarithm to the model variables, we can linearise equation (2) and introduce a dynamic dependent variable as a potential explanatory variable. This results in a dynamic linear econometric model that can be used for empirical estimation as:

$$Ln(msy_{i.t}) = \beta_0 + \beta_1 Ln(msy_{i.t-1}) + \beta_2 Ln(gcf_{i,t}) + \beta_3 Ln(humc_{i,t}) + \beta_4 Ln(n + g + \delta) + \mu_i + \gamma_t + \upsilon_{i,t} \quad (3);$$

Assuming that *Lne* equals 1.

Equation (3) involves several variables expressed in natural logarithmic form. Specifically, *Ln(msy)* represents the natural logarithm of output in the manufacturing sector, while β_0 corresponds to the natural logarithm of parameter A. Additionally, $Ln(msy_{t-1})$ denotes the natural logarithm of the manufacturing sector output from the previous period, $Ln(gcf)$ refers to the natural logarithm of gross capital formation, $Ln(humc)$ pertains to the natural logarithm of human capital, and $Ln(n + g + \delta)$ signifies the natural logarithm of population growth that has been adjusted for extrinsic technological advancements, as well as extrinsic depreciation, δ, and intrinsic growth, g. Finally, μ_i, γ_t and $\epsilon_{i,t}$, are defined as in equation (1).

Diagnostic Checks: Diagnostic checks refer to the process of evaluating and verifying the accuracy and reliability of data or information. The research conducts critical diagnostic evaluations on the variables included in the empirical model to assess the behavior of the data before estimation (pre-estimation diagnostic checks) and the validity and/or robustness of the estimates following estimation (post-estimation diagnostic checks). Pre-estimation tests comprise the first three diagnostic evaluations that are discussed below; post-estimation diagnostic assessments comprise the other evaluations: (i) One way to assess how much there are linear correlations between the predictor variables is to perform a multicollinearity study. This was done using pairwise correlation and the results were not greater than ±0.8, thus indicating no multicollinearity, as noted by Rendón (2012). (ii) Tests for unit roots using panel data. Because the panel data under analysis is not firmly balanced and has a time dimension that is bigger than its cross-sectional dimension (i.e., T > n), Choi (2001) proposed the Fisher-type panel unit root test, which is applied in the current study. This test is thought to be appropriate for panel data characterized by these conditions.

(iii) The panel was subjected to a cointegration test. In this study, long-term correlations between the variables in the empirical model are examined by the incorporation of a cointegration test into a panel model. The study makes use of the Johansen-Fisher cointegration test technique, which is appropriate for variables with different degrees of integration and was created for panel data. This methodology is based on the work of Maddala and Wu (1999) (iv) The Wald tests for simple and composite linear hypotheses are the main topic of this research. This study's main goal is to ascertain the entire regression's statistical significance. The null hypothesis, according to which every coefficient in the calculated regression model is equal to zero, is evaluated by this statistical test. When the Wald chi-square statistic's estimated probability value is equal to or less than the pre-established significance criterion of 0.05, the null hypothesis is rejected. (v) This study's main objective is to investigate serial correlation. The Arellano-Bond test, which Arellano and Bond originally proposed in 1991, is used in this work to determine if the first-differenced residuals have a serial correlation.

In particular, the test performs D-GMM estimation and then looks for the existence of AR (1) and AR(2) (vi) The residuals' normality test. The normal distribution of the expected residuals is assessed in the current study using the Jarque-Bera (JB) normality test. The JB test is used to assess the null hypothesis, which states that the residuals have a normal distribution. When the estimated probability value of the chi-square statistic is less than or equal to the pre-established significance level of 0.05, the Jarque-Bera test considers the null hypothesis to be rejected. (vii) To assess a model's validity, a statistical method known as the over-identifying restrictions test establishes if the additional limits added to the model are statistically significant. Here, we investigate the over-identifying limits using the Sargan test, which assesses the general validity of the tools used for the D-GMM estimation. When considering the instruments collectively, the validity of each one is based on the null

hypothesis. If the reported chi-square probability value in a statistical hypothesis test is less than or equal to the predetermined significance level of 0.05, the null hypothesis is deemed rejected.

(viii) In econometrics, the Hausman specification test is a statistical method used to assess which model fixed effects or random effects are more appropriate for a certain dataset. The Hausman specification test is used in this work to determine whether or not there is a systematic variance in the coefficients among the D-GMM, the IV estimator, and the OLS estimator. The basic premise is that the coefficients between the respective estimates produced by the two estimators do not differ systematically. Within the framework of statistical hypothesis testing, the null hypothesis is considered rejected when the reported chi-square probability value is equal to or less than the predetermined significance threshold of 0.05. If the null hypothesis is disproved, the IV estimator is a better model since it demonstrates a systematic difference in the coefficients.

4. Results

This section offers a presentation, analysis, and discussion of the results obtained from the data examination. The initial part of this study includes the fundamental descriptive statistics related to the model variables. Subsequently, a thorough evaluation of multicollinearity, unit root tests, cointegration tests, and, lastly, the regression estimates are provided. The results of the diagnostic tests conducted after estimation are summarised and co-presented in the regression estimates table.

Key Descriptive Statistics on Model Variables: The primary descriptive statistics that are looked at in this study are the arithmetic mean, the standard deviation, and the minimum and maximum values. The computation of descriptive statistics is performed based on the study variables in their initial units.

Table 1: Key Descriptive Statistics on Study Variables (all countries in the panel)

Variable	Mean	Std dev	Min	Max
Manufacturing sector output (MSY)	2.38E+09	2.36+09	8.66E+07	7.92E+09
Gross capital formation (GCF)	5.69E+09	6.43E+09	2.42E+07	2.56E+10
Human capital (HUMC)	4.58E+10	4.91E+10	1.39E+09	2.17E+11
Adjusted population growth (n+g+δ)	2.932724	0.495842	1.481261	5.654993

Source: Authors' compilation.

According to Table 1's descriptive statistics, the manufacturing sector in the five EAC countries added $2.38 billion to GDP on average between 2000 and 2020. The minimum contribution recorded was roughly $86.6 million, while the maximum contribution amounted to $7.92 E+09 billion. On analyzing the raw data, it was found that the manufacturing sector's output made the smallest contribution to Burundi's overall GDP in 2003. Conversely, the manufacturing sector's output made the largest contribution to Kenya's overall GDP in 2019. In terms of gross fixed capital creation, over the period of analysis from 2000 to 2020, the five member nations of the East African Community (EAC) invested, on average, $5.69 billion. Based on the raw data analysis, Tanzania recorded the most investment, approximately $25.6 billion, in 2020, while Burundi recorded the lowest investment, roughly $24.2 million, in 2000.

The statistical summary in Table 1 indicates that, based on the total amount spent on education in the current study, the five EAC nations invested in human capital for an average of $45.8 billion between 2000 and 2020. In 2000, Burundi reported a minimum expenditure of about $1.39 billion on education, whereas in 2018, Kenya reported a maximum expenditure of roughly $217 billion on education. Table 1 presents descriptive statistics that reveal the adjusted population growth mean for the five members of the East African Community (EAC) to be about 2.9% a year during the study period (2000-2020). The minimum and maximum values were recorded respectively at roughly 1.5% and 5.7% a year. On analysing the raw data, it was determined that Rwanda experienced the lowest adjusted population growth rate in 2004, while the highest adjusted population growth rate was recorded in the same country in 2000.

Multicollinearity Checks: A correlation matrix was created by analyzing the pairwise correlation coefficients between the explanatory variables in the empirical model. A transformation process was applied to the variables before the correlation analysis. Compiling the estimated correlation coefficients in Table 2.

Table 2: Correlation Coefficients among the Explanatory Factors (probability values are shown by figures in parentheses)

Explanatory variable in the model	1	2	3
Gross capital formation's natural logarithm (*Lngcf*)	1		
Human capital's natural logarithm (*Lnhum*)	0.1004 (0.4082)	1	
Natural logarithm of adjusted population growth [Ln (n+g+δ)]	0.0515 (0.6018)	-0.0230 (0.8499)	1

Source: Authors' compilation. 1= Gross capital formation's natural logarithm, 2= Human capital's natural logarithm, 3=Natural logarithm of adjusted population growth.

Table 2 displays the estimated pairwise correlation coefficients between the explanatory variables in the analyzed model. These values fall within a range that keeps the regression model free from major multicollinearity issues. Stated otherwise, the empirical model's predictors exhibit pairwise correlation coefficients with absolute values not exceeding ±0.8. Therefore, the selected explanatory variables in the model for empirical analysis are considered suitable for inclusion without concerns about multicollinearity in the model under study.

Stationarity Tests on All Model Variables: The panel data under examination lacks robust balance and shows a larger time dimension than the cross-sectional dimension. Consequently, we employ the Fisher-type panel unit root test approach, recommended by Choi (2001) and deemed suitable in these circumstances, on the model's variables. The third table contains a summary of the panel unit root tests that were run on each of the model's variables.

Table 3: Unit Root Test Results on All Variables in the Empirical Model

Variable name	Variable in levels	Variable in first difference	Order of integration of the variable
	Estimated statistic (p-value in brackets)	**Estimated statistic** (p-value in brackets)	
Manufacturing sector output's natural logarithm (*Lnmsy)*	**P: 5.3221** (0.8687) Z: **0.9945** (0.8400) L: **0.9207** (0.8176) Pm: **-1.0460** (0.8522)	**P: 29.4462***** (0.0011) Z: **-3.4254***** (0.0003) L: **-3.5647***** (0.0006) Pm: **4.3483***** (0.0000)	I(1)
Gross capital formation's Natural logarithm (*Lngcf)*	**P: 9.0002** (0.5321) Z: **-0.3086** (0.3788) L: **-0.2918** (0.3863) Pm: **-0.2236** (0.5885)	**P: 29.9281***** (0.0009) Z: **-3.4719***** (0.0003) L: **-3.6250***** (0.0005) Pm: **4.4561***** (0.0000)	I(1)
Human capital's Natural logarithm (*Lnhumc)*	**P: 6.6023** (0.7624) Z: **0.9546**	**P: 91.0266***** (0.0000) Z: **-5.7725*****	

	(0.8301) L: **0.9655** (0.8289) Pm: **-0.7597** (0.7763)	(0.0000) L: **-11.2314***** (0.0000) Pm:**18.1181***** (0.0000)	I(1)
Natural logarithm of adjusted population growth [*Ln(n+g+δ)]*	**P: 84.9695***** (0.0000) Z: **-6.1369***** (0.0000) L: **-10.3155***** (0.8289) Pm: 16**.7637** (0.0000)	- - - -	I(0)

Source: Authors' compilation: P=Inverse chi-square statistic; Z=Inverse normal statistic; L=Inverse Logit t-statistic; Pm=Modified inverse chi-square statistic. *** indicates significance at 1% level.

Table 3 presents the results of the unit root test and indicates that the variables in the empirical model display different levels of integration ordering. The results of the unit test demonstrate that the original form of the four computed statistics for the variables *Lnmsy, Lngcf,* and *Lnhunc* rejecting the non-stationarity null hypothesis is not advised. However, at their respective initial differences, the same four statistics actually reject the null hypothesis of non-stationarity for these variables. However, the results of the unit root test show that every one of the four computed statistics refutes the null hypothesis. According to this the variable is non-stationar at the level of *Ln(n+g+δ).* The findings from the unit test indicate that the variables *Lnmsy, Lngcf*, and *Lnhunc* exhibit an integration of order one, I(1), while the variable *Ln(n+g+δ)* demonstrates an integration of order zero, I(0).

Cointegration Test Results: The Johansen-Fisher cointegration test is used in cases where the model's variables exhibit varying orders of integration. The integration orders of our model variables were found to be distinct. The results of the cointegration test are summarised in Table 4.

Table 4: The Johansen-Fisher Co-Integration Test Results (the test assumes a linear deterministic trend)

Hypothesized No of CE(s)	Fisher Stat[a] (from trace test)	Prob	Fisher Stat[a] (from Max-Eigen test)	Prob
None	117.0***	0.0000	104.8***	0.0000
At most 1	29.98***	0.0000	22.75***	0.0009
At most 2	12.98**	0.0434	11.16*	0.0835
At most 3	10.57	0.1026	10.57	0.1026

Source: Authors' compilation. [a] Probabilities are computed using asymptotic chi-square distribution.*, ** and *** denote significance at 10%, 5% and 1% levels respectively.

Table 4 displays the results of the Johansen-Fisher cointegration test. It illustrates how, at a 5% significance level, the Max-Eigen statistic and the trace statistic both reject the null hypothesis of an "at most 1" cointegrating equation. These cointegration test findings indicate that there is cointegration between the variables under study, indicating that the empirical model has at least one cointegrating equation. The panel model that was taken into account for the investigation shows relationships of long-term equilibrium. Although cointegration links are indicated by the panel model, we have chosen not to employ cointegration regression estimate approaches such as completely modified OLS, dynamic OLS, or panel vector error correction. Alternatively, the first-differenced generalized method of moments (D-GMM) estimator proposed by Arellano and Bond (1991) could be employed in the investigation. The estimation takes into consideration measurement error, endogeneity of the regressors, and unobserved country-specific effects. It also incorporates instrumental variables. Because of the gross capital creation variable's potential endogeneity, the D-GMM estimator was chosen. As demonstrated by studies like Nkoa and Wujung (2014), Nweke, Odo, and Anoke (2017), and

Onwiodiokit and Otolorin (2021), this variable has been shown in the past to be an endogenous regressor in growth functions.

Regression Estimates: The D-GMM estimator was used in the study to mitigate the influence of unobserved effects specific to each country and the endogeneity of the variable *"Lngcf"*. Table 5 provides a summary of the regression estimates along with the outcomes of the diagnostic tests conducted after estimation.

Table 5: D-GMM Estimation Regression Estimates

Dependent Variable: Natural Logarithm of Manufacturing Sector Output (*Lnmsy*)			
Independent Variable	**Coef**	**Std Err**	**Prob**
Natural logarithm of manufacturing sector production lagged by one period $(Lnmsy)_{t-1}$	0.7427***	0.073937	0.000
Gross capital formation's natural logarithm (*Lngcf)*	0.2780***	0.083541	0.001
Natural logarithm of human capital (*Lnhumc)*	0.0043	0.004405	0.326
Natural logarithm of the adjusted population growth [$Ln(n+g+\delta)$]	-0.2366	0.254907	0.353
Const.	-0.9089	1.731771	0.600

Instrumentisation
Instrumented variable: *Lngcf*
GMM-type Instruments for first difference equation: $Lnmsy_{t-2}$, $Lnhumc_{t-1}$, $Lngcf_{t-2}$, $Ln(n+g+\delta)$
Standard instruments for first difference equation: $\Delta Lnhumc$, $\Delta Ln(n+g+\delta)$
Instruments for the level equation: Constant
Diagnostic tests
1. Wald chi-sq. test for Ho: All slope coefficients are simultaneously zero: p>chi-sq. = 0.000
2. Arellano-Bond test for Ho: No AR(1) in first difference errors: p>Z = 0.1537
3. Arellano-Bond test for Ho: No AR(2) in first difference errors: p>Z = 0.1321
4. Jarque-Bera normality of residuals test for Ho: Normally distributed residuals: p>chi-sq. = 0.087
5. Sargan test of over-identifying restrictions for Ho: instruments are jointly valid: p>chi-sq. = 0.242
6. The Hausman specification test for Ho: The difference in coefficients between the D-GMM estimator and the OLS is not systematic: p>chi-sq. = 0.002

Source: Authors' compilation after D-GMM estimation. *** indicates significance at a 1% level.

The following are the results of the post-estimation diagnostic tests: The null hypothesis is rejected because the Wald chi-square statistic is significant at a level that is lower than the chosen significance threshold. This suggests that the model as a whole has statistical significance. Based on the computed Z-statistics, the Arellano-Bond test results show that the null hypothesis that there is no first-order and second-order serial correlation cannot be rejected. This is supported by the corresponding p-values which exceed the significance level. These results imply that serial correlation is not inhibited by the residuals derived from the estimations. The chi-square statistic from the Jarque-Bera test produces insufficient information to reject the null hypothesis at a 5% significance level. This implies that the residuals of the computed regression have a normal distribution (iv) The Sargan test of over-identifying limitations demonstrates the general validity of the instruments used in the D-GMM estimate because the chi-square statistical test is unable to reject the null hypothesis at the 5% level. (vii) The Hausman specification test rejects the null hypothesis since the chi-square statistic's p-value is less than the significance level. The observation implies that there is a consistent variation in the coefficients of the D-GMM estimator and the OLS estimate, thereby signifying that D-GMM is a more desirable estimator.

Interpretation and Discussion of the Regression Estimates: The effect of the physical capital input on the manufacturing sector growth in the EAC member countries. In the model under discussion, the physical capital input was approximated using gross capital formation. The partial slope coefficient for the natural logarithm of gross fixed capital creation is positive and statistically significant at the 5% significance level, according to regression estimates shown in Table 5 (Coef = 0.2780, $p < 0.05$). These findings suggest that gross capital formation has a major beneficial role in assisting the member states of the East African Community in their

efforts to increase their industrial output. Mankiw, Romer & Weil (1992) highlighted the favourable effect of physical capital on output growth, a notion that has been reiterated by numerous related empirical studies, like those by Adejumo, Olomola and Adejumo (2013), Olarewaju & Msomi (2021), and Taiwo, Adebayo and Oluwaseun (2021). The aforementioned findings provide a rationale for the East African constituents to execute measures, like augmenting assistance towards both domestic and foreign investments, to amplify gross capital formation as a catalyst towards accomplishing the EAC industrialization blueprint of 2012-2032.

The Effect of the Human Capital Input on Manufacturing Sector Growth in the EAC Member Countries: The study assessed the human capital input by quantifying the overall expenditure on education. According to the data presented in Table 5, the estimates suggest that the partial slope co-efficient on the natural logarithm of human capital is positive. At the 5% level, though, it is not statistically significant (Coef = 0.0043; $p > 0.05$). According to this estimate, the expansion of the industrial sector in the nations that make up the East African Community is not significantly predicted by human capital. This result is not quite in line with what we had anticipated. However, low levels of investment in human capital may be the reason why the human capital component has not been able to influence the growth of manufacturing sector output in the East African Community (EAC) member countries. This, in turn, could be clarified by the relatively trivial proportions of budgetary allotments to the education and health sectors by the EAC member countries in their overall annual budgets. As a result, individuals experiencing poor health could exhibit reduced productivity, which could potentially hinder the growth of the manufacturing sector. The study's findings are not entirely consistent with a specific body of relevant research that, when considered in the context of the empirical literature, has demonstrated a substantial and positive association between output growth and human capital (such as those by Mamuneas et al., 2006; Anyanwu, 2018; and Rumanzi et al., 2021). Our study's conclusion regarding the relationship between human capital and output growth aligns with the results of previous similar studies, including Johansson's (2015) investigation.

The Effect of Population Growth on Manufacturing Sector Growth in the EAC Member Countries: Table 5 displays the regression estimates, which reveal that the partial slope co-efficient on the adjusted natural logarithm of population growth for extrinsic technological advances (g) and head extrinsic depreciation (δ) is negative. At the 5% level, this coefficient (Coef. = -0.9089, $p > 0.05$) is not statistically significant, though. The negative sign is consistent with the predictions of the neoclassical growth theory, which was developed by Mankiw, Romer, and Weil (1992) after Solow (1956) initially presented it. This theory posits that long-term economic growth is restricted by a surge in population. The findings of this study, which evaluates the relationship between population expansion and industrial output growth, contradict those of Zhou (2019) and Strielkowski (2019), who found a favorable association between the two.

5. Conclusion

This research aimed to estimate the increase of manufacturing sector output in each of the five East African Community (EAC) member nations by evaluating the predictive ability of input factors, as outlined, in Mankiw, Romer, and Weil's (1992) extended neoclassical growth model. The impact of variations in three main input parameters was investigated in this study, specifically: physical capital stock, quantified by gross capital formation; human capital stock, quantified by the overall investment in education; and labor stock, quantified by population growth, adjusted for extrinsic technological advancements and head extrinsic depreciation. Based on the estimates, the gross capital formation input variable proves to be a substantial predictor of changes in the growth of manufacturing sector output. On the other hand, population growth and human capital input variables do not show a significant ability to influence changes in the growth of manufacturing sector output in the East African Community nations. The findings of our research indicate that the neoclassical growth model and its expansions may be partially responsible for the variations in manufacturing sector output among the East African Community's (EAC) member nations. This shows that the existing growth framework may not be thorough enough to assess the factors influencing the expansion of the manufacturing sector output in the EAC member states.

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Journal of Economics and Behavioral Studies (JEBS)
Vol. 15, No. 4, December 2023 (ISSN 2220-6140)

Credit Accessibility and Growth of Small and Medium Enterprises in Bujumbura, Burundi

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Abstract: The purpose of this study was to investigate the effect of credit accessibility on the growth of small and medium enterprises in Bujumbura, Burundi. The study was guided by the following objectives: i) to determine the effect of creditworthiness to credit accessibility on the growth of SMEs in Bujumbura; ii) to establish the effect of business characteristics to credit accessibility on the growth of SMEs in Bujumbura, and iii) to examine the effect of information available to credit accessibility on the growth of SMEs in Bujumbura. The study employed a descriptive survey research design. The target population was 347 and the sample size determined using the Slovenes formula was 186, but 167 respondents participated successfully in the study. The research instrument was a questionnaire and data were analyzed using frequency and percentage tables, mean and standard deviations, and linear and multiple regression analyses. The study found that creditworthiness to access credit had a significant effect on the growth of SMEs (Adjusted R^2=0.059, p=0.001). In addition, the study revealed that business characteristics to access credit had a significant effect on the growth of SMEs (Adjusted R^2=0.242, p=0.000). Furthermore, the study revealed that information available to access credit had a significant effect on the growth of SMEs (Adjusted R^2=0.116, p=0.000). The study concluded that credit accessibility significantly affects the growth of SMEs. Thus, the study recommended that the owners of SMEs should strive to ensure that they have collateral security and proper documentation before they seek credit from financial institutions, SMEs should also form and register an association that is recognizable by law in Burundi. Likewise, the owners of SMEs should seek the support of professional auditors to audit their books of accounts at least every year.

Keywords: *Credit accessibility; growth; multiple regression analyses; small and medium enterprises; Burundi.*

1. Introduction

Governments throughout the world are nowadays turning their attention to small-scale enterprises. This is because attempts to promote economic progress by establishing large industries have usually failed to improve the lives of most of the population concerned (Awolusi, 2021; Cong et al., 2019). Therefore, Small and Medium Enterprises (SMEs) are now viewed as important in even and equitable economic development. Developed economies have enhanced their credit guarantee schemes for SMEs. In France, for example, the easing of the rules on SME lending in 2014 made it possible for loan guarantee schemes to cover up to 90% of the loan risk, compared with 50–60% previously (Alm, Liu & Zhang, 2019). In the United Kingdom, the government guarantees up to 75% of loans to businesses, in Japan 80% and in South Korea 100% (Etemesi, 2017). In some cases, governments have resorted to direct lending to SMEs through public institutions. Although governments have attempted to stimulate the supply of finance for SMEs and interest rates continue at an all-time low, SMEs remain reluctant to take up loans because of a lack of demand for their products and services.

In addition, in some regions, banks have been reluctant to lend because of increasing financial requirements from regulators (Abuka et al., 2019). In Africa, the current situation regarding SMEs and their finance opportunities remains uncertain. It does seem clear that the conventional sources of finance are not sufficient to meet the needs of SMEs in the current economic climate (Ndiaye et al., 2018). In South Africa, the future of SMEs is not very bright as small enterprises are likely to cease operations before the fifth year (Chipunza & Phalatsi, 2019). This makes South Africa one of the poorest performers in the informal sector. In Ethiopia, perhaps the most important challenge facing policymakers in industrial development is the financing and technological upgrading of the myriad of SMEs that form the backbone of the country's economy. To this end, the government of Ethiopia has continued to articulate policy measures and programs to achieve micro, small, and medium enterprises development, through appropriate alternative funding (Nega & Edris, 2016). In Uganda, the performance of SMEs was considered poor because of a lack of access to business services and

finance despite the significant role they played (Lakuma et al., 2019). Credit accessibility refers to the right to obtain or make use of or take advantage of borrowed money from a lender (Griffins, 2015).

Credit accessibility refers to the right to obtain or make use of or take advantage of borrowed money from a lender (Ellis, 2016). In this study growth of SMEs was operationalized as profitability in terms of an increase in sales revenue, increase in productivity, increase in market coverage, increase in asset base, number of employees, and customers. Small and medium-sized enterprises (SMEs) are defined by the Organization for Economic Cooperation and Development (OECD, 2005) as non-subsidiary, independent firms that employ less than a given number of employees. The most frequent upper limit designating an SME is 250 employees, as the European Union, and the United States consider SMEs to include firms with fewer than 500 employees. Similarly, SMEs are firms whose turnover does not exceed EUR 50 million (medium enterprises-50-249 employees), and that of small enterprises does not exceed EUR 10 million (10-49 employees). Alternatively, balance sheets for medium and small enterprises do not exceed EUR 43 million, and EUR 10 million respectively. In Burundi, SMEs according to Nkurunziza (2016) are categorized as below: a) Micro enterprises employ less than six (6) employees; b) Small firms employ between 6-9 employees and medium enterprises have between 10-29 employees.

The privatization drive and the Civil and Public Service reforms that began in the early 1990s in Burundi laid a foundation for an increased number of small business enterprises. Small and medium enterprises are the engine of the development of the informal sector in Burundi (Nkurunziza, Ndikumana, & Nyamoya, 2016). They have played a significant role in income generation, job creation, poverty reduction and reducing income inequality. The country's key policy stakeholders such as policymakers as well as other international and national actors must make more effort to develop the segment of SMEs. Indeed, many start-ups have been created but are, however, exposed to several challenges in their business operations. There is a high failure rate among SMEs in Bujumbura; this is revealed by the fact that more than 90% of start-up SMEs do not survive for more than 5 years (Nkurunziza, 2016). This is because the distribution of SME size in Burundi has implications for firm resilience particularly given Burundi's challenging economic environment, access to resources, productivity, wages, and, as a result, welfare. Using panel data, Nkurunziza (2015) found that the rate of firm survival is inversely related to firm size, with micro-firms displaying the highest rate of failure. Smaller firms also have the lowest rate of access to credit markets.

The government of Burundi has an external assistance policy for SMEs, through for example credit provision intended to help them survive, grow and eventually become more productive and pay higher wages. However, this brilliant policy has not contributed much to the reduction of SMEs' failure rate in the market. The causes of these failures were found to be highly connected to unfavorable market conditions such as insufficient demand, regulation, poor infrastructure, and insecurity, among others (Alliance for Financial Inclusion, 2017). Furthermore, several empirical studies have been done to assess the relationship between credit accessibility and SMEs growth across different African countries but with mixed results (Sakwa et al., 2019; Dlamini and Mohammed 2018; Etemesi 2017; Hussein 2017). Unfortunately, none of these studies was conducted in Burundi thus giving a contextual gap that the current study intended to close by exploring the effect of credit accessibility on SMEs growth. Consequent to the above problem, the main purpose of the present study was to investigate the effect of credit accessibility on the growth of small and medium enterprises in Bujumbura, Burundi. However, the specific objectives are as follows: (i) To determine the effect of creditworthiness to credit accessibility on the growth of SMEs in Bujumbura; (ii) To establish the effect of business characteristics to credit accessibility on the growth of SMEs in Bujumbura; and (iii) To examine the effect of information available to credit accessibility on the growth of SMEs in Bujumbura.

The study will be useful to the government in policymaking regarding the financing of Small and Medium Enterprises through commercial banks. The policymakers will obtain knowledge on the best mechanisms that should be adopted to finance Small and Medium Enterprises and find ways of enhancing the growth of SMEs. This study will therefore act as a guide in designing appropriate policies that will guide commercial banks in financing Small and Medium Enterprises. To the management of commercial banks, the study is invaluable as they will be able to uncover the causes of failure of Small and Micro Enterprises in repayment of their loans and effective ways of financing Small and Medium Enterprises, as well as taking appropriate measures against risks facing the Small and Micro Enterprises. Managers in the banking industry will find this study significant as it

will recommend the best approaches that should be taken when financing Small and Micro Enterprises in to order prevent their organizations from collapsing. The study will also be significant to scholars who will find this study useful as it will provide information on the relationship between credit accessibility and the growth of Small and Medium Enterprises in Burundi. It will also be of significance to researchers as it will provide the basis upon which further studies will be carried out on broad subjects related to credit accessibility and the growth of SMEs.

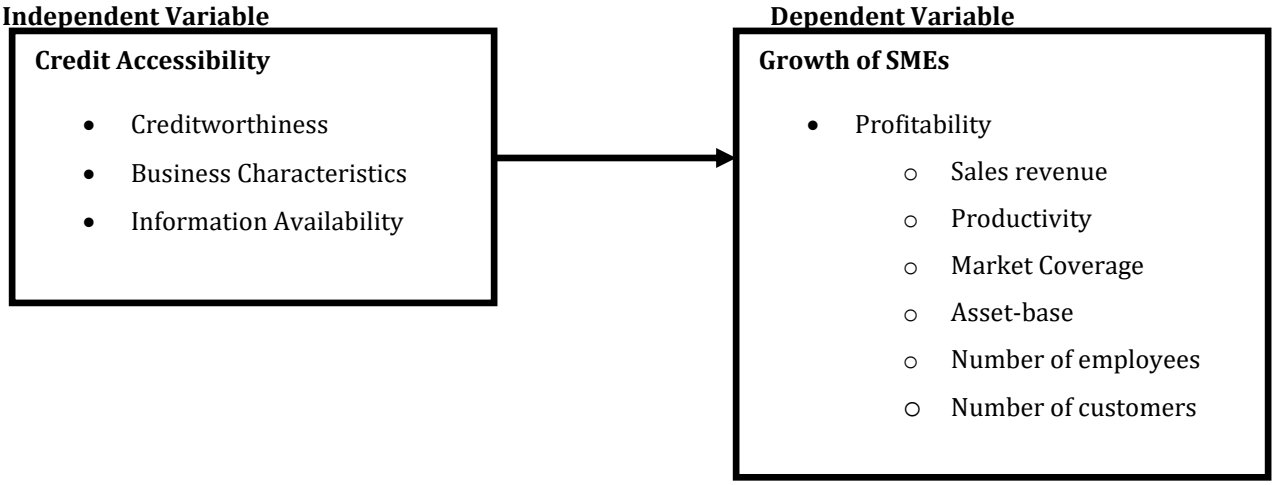
2. Review of Related Literature

This study was guided by two theories, the Pecking Order Theory and The Life Cycle Theory. However, the study was anchored on the Pecking Order Theory (POT) by Myers and Majluf (1984). The theory states that managers are given a preference to fund investment opportunities using three sources: first through the company's retained earnings, followed by debt, and choosing equity financing as a last resort. Pecking order theory starts with asymmetric information as managers know more about their company's prospects, risks and value than outside investors. According to Ugwu et al. (2019), asymmetric information affects the choice between internal and external financing and between the issue of debt or equity. Therefore, there exists a pecking order for the financing of new projects. Asymmetric information favors the issue of debt over equity as the issue of debt signals the board's confidence that investment is profitable and that the current stock price is undervalued (were stock price over-valued, the issue of equity would be favored). The issue of equity would signal a lack of confidence in the board and that they feel the share price is over-valued (Zulvia & Linda, 2019).

An issue of equity would therefore lead to a drop in share price. This does not however apply to high-tech industries where the issue of equity is preferable due to the high cost of debt issues as assets are intangible (Brealey, et al., 2008). Tests of the pecking order theory have not been able to show that it is of first-order importance in determining a firm's capital structure (Kimoro, 2019). This is because POT is considered valid and useful guidance to verify how information asymmetry affects the cost of financing, it provides valuable direction on how to raise funding for a new project, and it can explain how information can be used to change the cost of financing. However, several authors have found that there are instances where it is a good approximation of reality (Akoten, Sawada & Otsuka, 2006; BaasMechthild, 2006; Balogun, Agumba & Ansary, 2016; Dalberg. 2011; Deakins., North., Baldock & Whittam, 2008; Giang et al., 2019; Girukwishaka, 2017; Kallunki & Silvola, 2008; Khandker., Samad & Ali, 2013). Zeidan, Galil and Shapir (2018) document that owners of private firms in Brazil follow the pecking order theory. Giang et al. (2019) consider the POT to be an appropriate description of SMEs' financing practices because the 'Pecking order hypothesis is in keeping with the prior findings that debt is by far the largest source of external finance for small businesses.

In addition, Girukwishaka (2017) and Kallunki & Silvola (2008) suggest that in SMEs, managers tend to be the business owners and they do not normally want to dilute their ownership claim. Hall et al. (2000), argue that the information asymmetry and agency problems arising between owner-managers and outside investors providing external finance which give rise to the POT are more likely to arise in dealings with small enterprises because of their "close" nature, i.e. being controlled by one person or a few, related people, and they are having fewer disclosure requirements. Girukwishaka (2017) provides an alternative to this constrained POT, proposing a modified pecking order of financing preferences for SMEs. Kallunki & Silvola (2008) reveal a stain in the application of the POT to SMEs in those less levered non-payers of dividends that are more profitable, which is consistent with the pecking order model. But less levered non-payers also have better investments. Giang et al. (2019) and Girukwishaka (2017) also proposed that the probability of obtaining outside funds is not related to a shortfall in internally generated funds, which is in contrast with predictions of the pecking order theory. Further, they document that the firms accessing the capital market do not follow a pecking order when choosing the type of security to offer.

Figure 1: Conceptual Framework



Source: Etemesi (2017); Hussein (2017); Ssentamu (2016); and Ochido (2016)

The diagrammatic representation in Figure 1 shows that credit accessibility is the independent variable measured using creditworthiness, business characteristics, and information availability. The dependent variable is the Growth of SMEs measured using profitability. The relationship between these two variables shows that the creditworthiness of an SME in terms of collateral or good credit history enables it to access credit which in turn it can use to expand its business services or products, thus earning more profits. In addition, when the business characteristics in terms of size, or age are acceptable to the creditors, they can be able to be awarded credit. For instance, larger and older SMEs are considered more stable in business and thus can easily access credit which can lead to the expansion of market coverage and employment of more staff, thus earning more profits. Similarly, businesses with clear information such as audited financial records are highly likely to be awarded credit thus improving the quality of their services which leads to customer satisfaction, loyalty and eventual profitability.

Credit Accessibility: Small and medium enterprises' access to external sources of funding depends largely on the development of financial markets, the regulatory environment within which financial institutions operate and their ability to assess, manage and price the risks associated with loan products for SMEs (Kivunzi, Wepukhulu & Opiyo, 2019). The latter functions take place within a particular socio-economic context, which is determined by the historical patterns of financial intermediation (Vuong et al., 2019). Accessibility to credit is significant for SMEs seeking to grow and expand their businesses. Bank credit usually comes in the form of a small business loan. Businesses often use these lines of credit to expand, explore new areas of their industry, acquire another company, or pay employees. These are essential to the overall success of a business. Lack of access to credit is indicated as a key problem for SMEs worldwide (Suidarma et al., 2018). Access to credit by SMEs is, therefore, vital for the growth and development of SMEs. The availability of external finance directly impacts the productivity and growth of this industry (Mogire, 2016).

It is well-recognized all over the world that banks are the main external capital providers for the SME sector in both developed and developing countries (Vera & Onji, 2010). However, most commercial banks ration credit, to reduce risk and avoid the risk of adverse selection and moral hazard (Kimutai & Ambrose, 2013). Therefore, the key factors that influence credit rationing by banks are loan characteristics, firm characteristics, and observable characteristics. Critical factors such as the availability of a business plan, collateral, maintenance of a good relationship (networking), managerial competency, a good credit score (capacity to pay; experience in credit use), and the borrower's character (attitude towards risk) define the requirements for SMEs to have access to financial institutions and bank credit (Aduda et al., 2012; Fatoki, 2014). Together with financial activities such as business registration, documentation/recording, and asset ownership, the profile of the business in terms of several employees.

Size, sector and form of the business in the economy form some of the crucial factors to be successful in accessing bank finance (Alhassan & Sakara, 2014). Van et al., (2018) noticed that access to credit is crucial for the development and survival of SMEs. They watched that policymaker's endeavor to seek budgetary segment policies to move money-related mediators to stretch out more credit to SMEs. However, access to credit remains a test to SMEs, particularly those in creating economies and keeps on overwhelming talk both inside the business cycle and at the hall of different governments. Ruslan and Adlin (2018) argued that financial characteristics such as business registration, accurate documentation of the transaction and financial activities as well as good business planning have a positive correlation with credit accessibility. They observed that asset ownership constitutes a lot of requirements towards accessing credit from financial institutions as all entrepreneurs who were able to access loans said they own assets such as houses, land, business products and fixed assets which are easily used as collateral depending on the amount of credit being sought. Adeyeye, Azeez and Olufemi (2016) argued that access to finance is a key determinant for business start-ups, development and growth for small and micro-size enterprises. It reported that they have very different needs and face different challenges with financing compared to large businesses.

The report observed that the lack of equity capital invested in small firms makes these businesses more irrelevant than other sources such as bank lending and other types of financial products. The economic environment has brought SMEs' needs into particular focus given the significantly lightened credit supply condition arising from the reduced ability and willingness of banks to provide the finance on which this sector is particularly reliant (Adeyeye et al., 2016). Ferrando and Ruggieri (2018) identified a lack of adequate finance and limited access to credit, rapid technological changes, new laws and regulations and high rates of interest as the major challenges facing SMEs in their financing endeavors. The broad picture that emerges from various surveys of SME financing strongly suggests that business owners in South Africa view access to financing as a significant problem for business activity (Ferrando & Ruggieri, 2018). The author noted that there might be a financing gap, despite the various public and private sector initiatives to facilitate access to financing. Ngo and Chi (2017) argued that despite the potential role of SMEs to accelerate growth and job creation in developing countries, several bottlenecks affect their ability to realize their full potential. Ngo and Chi (2017) observed that SME development is hampered by several factors including; seed capital, lack of managerial skills, equipment and technology, regulatory issues and access to international financial markets.

The fundamental reasons behind SMEs' lack of access to funding can be found in their peculiar characteristics while others argue that SMEs suffer from a financing gap because of market imperfection on the supply side (Giang et al., 2019). Buyinza, Tibaingana & Mutenyo (2018) further argue that SMEs face financing gaps probably because of a combination of reasons originating from both supply and demand sides. The supply side refers to providers of finance (Financial institutions and investors) while the demand side comprises SMEs which require funding from financial institutions and other providers of finance. The financing gap is most prominent in capital market financing. Most countries including the developed ones have problems with SMEs financing through the capital market. The effect of banking conditions, monetary policy and economic growth on small businesses may change as economic conditions change (Buyinza et al., 2018). A study conducted by the International Finance Corporation in 2010 to establish the level of credit accessibility by small and medium-sized enterprises showed that over 45% of informal and formal micro small and medium enterprises were either unserved or underserved. The survey also revealed that over 46% of small enterprises owned by women in developing countries were underserved by financial institutions (Alper & Hommes, 2013).

Credit Worthiness and SMEs' Growth: Shirley and Namusonge (2016) conducted a study to establish the factors influencing access to credit among SMEs in Kitale and found that collateral requirements by financial institutions significantly influence access to credit facilities by SME Financial institutions. This meant that businesses that lacked collateral could not access credit hence affecting performance negatively. Furthermore, the personal characteristics of the owner-manager contribute to the firm's ability and the likelihood of accessing external finance (Irwin & Scott, 2010). The reason is that the owners or managers of SMEs have a dominant position in the firm in their role as the primary decision-makers. According to Alina (2011), women SME owners appear to have a smaller amount of start-up capital since they face more credibility issues when dealing with bankers. In parallel, credit denial rates, credit discrimination against female entrepreneurs due to high-interest rate charges, and strict conditionalities among others are issues women have to go through until credit is issued to them. Thus, women notably in sub-Saharan Africa are more likely to be financially

constrained than male-owned firms (Nkuah et al., 2013). Again, the Owner-Manager's education and experience are employed by institutional financiers as a proxy for human capital. The educational background of the SME owner/manager is often positively related to the firm's usage of leverage (Nyanzu & Quaidoo, 2017). Owners with higher education are more likely to use and have access to formal loans/banking services than those without (Aterido, Beck, & Iacovone, 2013).

Business Characteristics and SMEs' Growth: In addition to firm size, age and ownership types, previous studies also include sector and export as dummy variables to test whether there is a difference in accessibility to finance in different sectors of the economy and between export and non-export enterprises. For instance, Kira and He (2012) indicated that firms in the industry sector can obtain debt finance much more easily than other sectors in Tanzania. In contrast, Malaga's (2013) study indicated that the manufacturing sector is more likely to use external finance than the services and industry sector in Malawi. Beck et al. (2008), however, found no difference in debt financing across sectors. About SMEs in Vietnam, Le (2012) found that firms in the service sector, followed by some manufacturing industries have a higher probability to succeed in obtaining bank loans. However, Vietnamese firms participating in export did not have easy access to credit as suggested in Thanh's et al. (2011) study. Balogun et al. (2016) revealed that business capital, size, and the historical record of the business play a role in accessing credit. Business size may be based on the number of employees hired or capital investment (Abdesamed & Wanab, 2014). Closely related to the business size is the capital required to start the business and ensure sustainable operations.

The total amount of capital required differs as per the type of business, and so while some entrepreneurs might require a large amount of money, some may require small amounts of money depending on the unique needs of the business. This means the size of the capital required to set up the business also plays a role in influencing the choice of the credit provider to fund the business. Fatoki and Smit (2011) explain that most financial service providers except for informal sources require SMEs to own at least some form of tangible assets that can be used as collateral to qualify for credit. Formal credit institutions often use the capital structure of the business to assess the current and future performance of the business to minimize default risk rates (Fatoki and Smit, 2011). However, for young and new entrepreneurs, even those with genius business ideas, demonstrating some ownership of assets usually becomes a stumbling block which quickly becomes a key non-starter to their businesses. According to Nyanzu and Quaidoo (2017), the geographical area where a firm is located in the proximity of banks is also believed to influence the firm's ability to gain external finance. SMEs located outside major cities face greater difficulties in acquiring external finance, especially long-term debt as compared with their counterparts operating in cities. In the same vein, SMEs close to their banks provide relationship advantages over their counterpart SMEs elsewhere (Fatoki & Asah, 2011).

Information Availability and SMEs' Growth: Information availability is one of the reasons affecting SMEs to access credit (Arinaitwe & Mwesigwa, 2015). The absence of information on their financial records makes it difficult for lenders to assess lending proposals submitted by new firms. Bass and Schrooten (2005) concluded that the lack of reliable information leads to comparably high interest rates even if a long-term relationship between borrower and bank exists. In a situation like this, having audited financial statements plays a major role. Audited financial statements are very useful in accessing credit from financial institutions. Often, banks require audited financial statements before granting credit. For example, Rahaman (2011) and Rand (2007) found that lenders in the UK pay much attention to accounting information to deal with the loan applications of small firms. Given the reduced information risk arising from audited financial statements, potential lending institutions may offer low interest rates as well. In other words, audited financial statements improve borrowers' credibility and therefore reduce the risk for lenders. However, most of the SMEs in Burundi have difficulty getting credit from formal financial institutions because they lack proper financial records. Most of the businesses in Burundi often keep multiple sets of books and do not have audited financial statements based on reliable accounting standards. On the other hand, these firms end up getting loans at higher interest rates because banks consider them high-risk borrowers (Nkurunziza et al., 2016).

Growth of SMEs: As SMEs grow, their requirement for finance tends to increase. The capacity to finance the increasing demand depends on internal finance. If a firm entirely relies on the internal fund, then the growth may be restricted (Nyoni & Bonga, 2018). Managers may forgo some profitable projects. If a firm goes for external finance, then the chances of risk increase. Iseselo et al. (2019) argue that firms with growth potential

will tend to have less capital structure. Growth opportunities can produce moral hazard effects and push firms to take more risks. To mitigate this problem, growth opportunities should be financed with equity instead of debt. Smith and Watts (1992) find the predicted negative relationship between debt and growth opportunity. On the other hand, SMEs with high growth will tend to look to external funds to fit the growth (Peprah, Buor, & Forkuor, 2019). Growth is likely to put a strain on retained earnings and push the firm into borrowing. Firms would look to short-term, less long-term for their financing needs (Desta, 2015). Nikolić et al. (2019) suggest personal factors such as demographic variables and business factors such as the amount of financing, use of technology, age of business, operating location, business structure and several full-time employees as important factors in examining the growth of small-scale entrepreneurs.

Jurik et al. (2019) enlist entrepreneurs' managerial styles with variables such as planning and strategic choices; decision style; formulation of objectives; structure of the company and share of power; and human resources policies that are linked to and have an association with their growth. The measures used in their study are turnover, number of employees, profit as well as the largest and the smallest salary paid. According to Altman, Esentato and Sabato (2020), lending to small businesses is riskier than to large corporations owing to their asset base and repayment abilities. However, Nakku et al. (2019) assert that small business lending has a strong positive effect on lender profitability. Ochanda (2014) in his study on credit accessibility found that financial resources affected the performance of 92% of the firms studied when the measure of growth is profitability. The SMEs cited high interest rates and collateral demand as some of the factors that hindered most SMEs from accessing credit from formal lending institutions. The study also found that innovation was important in the growth of SMEs.

Profitability: Corporate performance has been identified as a potential determinant of capital structure (Chakrabarti & Chakrabarti, 2019). According to the pecking order theory in the presence of asymmetric information, a firm will prefer internal finance but would issue debt if internal finance was exhausted (Ali & Isak, 2019). The last alternative would be to issue new equity. Myers (1984) prescribed a negative relationship between profitability and debt. Profitable firms are likely to have more retained earnings. Successful companies do not need to depend so much on external finance. Profitability is a measure of growth that must be considered as it is unlikely that firm growth can be sustained without profits being available for reinvestment in the firm (Muneer, Ahmad & Azhar, 2017). Growth along this dimension can be considered in terms of net profit margins or return on assets. If we take the definition of entrepreneurship as the creation of rents through innovation (Musah & Ibrahim, 2014) where rents are defined as above-average earnings relative to competitors (Gomes, 2013), then profitability measures are particularly appealing. This also implies that economic success is required by high-performance firms. Alternative views are given by Delmar et al. (2003), who points out that while profits are an important indicator of success, the relationship of profits to size is only evident in the aggregate of firms or over long periods for individual firms.

Fitzsimmons et al. (2005) suggest that there is an identifiable growth profit trade-off, where to finance growth, the firm must forego profits. Gallani, Krishnan and Kajiwara (2015) investigated this relationship between growth and profitability and found little evidence of the growth versus profit trade-off. He suggested that there is potential for a cumulative type effect whereby profits engender growth and growth engenders future profit that allows some firms to continually face increasing returns to scale. Matsotso and Benedict (2014) considered the growth-profit relationship in terms of a system of equations. The starting point was to consider a profit equation with lagged growth rates as explanatory variables and lagged profit rates. The lagged growth terms allowed them to explore the direction of causality between growth and profitability, while the lagged profit terms allowed them to examine whether profits persisted in the short term. A study by Vijayakumar (2011) found that found positive influences between firm size and profitability. The study found that size has a positive effect on profitability. Stierwald (2009) also found that the size of the firm positively influences profitability. The study found a positive effect between size and return on assets (ROA). While Salman and Yazdanfar (2012) found that firm size has a negative effect on profitability.

Margaretha and Supartika (2016) conducted a study to examine factors affecting profitability such as firm size, firm age, growth, lagged profitability, productivity, and industry affiliation of SME firms listed on the Indonesia Stock Exchange. The Source of data used in this study is secondary data based on the index PEFINDO 25. The results showed that firm size, growth, lagged profitability, productivity and industry affiliation significantly

affect profitability, while the variable firm age does not significantly influence profitability. The results of the regression coefficient indicate that the variable firm size, growth, and lagged profitability have a negative effect on profitability, while the variable productivity and industry affiliation have a positive impact on profitability. Sakwa et al. (2019) conducted a study to assess the influence of collateral security on the performance of SMEs in the Turbo sub-county, Kenya. The study used a sample of 340 from a population of 2,901 entrepreneurs using both descriptive and correlational research designs. From the regression results, the study concluded that collateral security had a positive and significant influence on access to credit hence the performance of SMEs. Firms with collateral security accessed loans easily as opposed to those with none. Dlamini and Mohammed (2018) conducted a study to identify the factors that influence the choice of credit sources by SMEs in the agriculture sector.

The study used FinScope 2016 Survey data entailing 3,024 Eswatini SMEs selected through the two-stage stratified random sampling method. Out of these SMEs, 87 of them in the agriculture sector were able to access credit from informal, semi-formal and formal service providers in 2016, hence this study focused on them. The data were analyzed using multinomial logistic regression. The study found that keeping financial records, capital size required to start a business, the size of the business, age of the business owner, and interest rates are significant factors that influence the choices of agriculture SME owners between informal, semi-formal, and formal credit providers. Girukwishaka (2017) conducted a study to analyze the effects of credit access from commercial banks and the growth of small and micro enterprises operating in the Nairobi Central Business District. This study used a descriptive survey research design and targeted a population of 838 respondents operating SMEs in the Nairobi Central Business District. The sample size was computed using Yamane's (1967) formulae. Questionnaires were used to obtain important information about the population. The research established that there was a strong negative correlation between SMEs' growth and development and collateral requirements. However, the study found a strong positive correlation between SMEs' growth and development and knowledge of financial information (Rahaman, 2011; Rand, 2007).

More so a strong negative correlation between SME's growth and development and high-interest rates was found, while there was a strong negative correlation between SME's growth and development and interest rates capping. Hussein (2017) conducted a study to establish the relationship between credit accessibility and the growth of SMEs in Langata Constituency, Kenya. Access to credit was measured in terms of collateral, literacy level, interest rates and the number of financial institutions. A descriptive design was employed in this research. The target populations for this research included all 500 registered small-scale enterprises in Langata Constituency as of December 2016, from which a sample of 100 respondents was obtained. The questionnaire was the primary tool for data collection. Quantitative data collected was analyzed by use of descriptive statistics. A test of the relationship between independent and dependent variables was done using regression statistics. The study found that the number of lending institutions has a positive relationship with the growth of SMEs. On the contrary, entrepreneurial literacy is negatively related to SMEs' growth. In addition, findings revealed that the education level of the owner-manager had a higher chance of growing his/her business. The study, therefore, recommends that policies should be put in place to necessitate credit facilities for SMEs. Ssentamu (2016) conducted a study to ascertain the factors influencing access to debt finance by SMEs in Rubaga, Kampala, Uganda.

The study adopted the cross-sectional/correlational design. The study used a respondent sample of 130 SMEs operating in Rubaga, Kampala whose owners were the unit of enquiry. The Pearson Rank correlation coefficient and regression analysis were used for data analysis. The findings revealed a strong positive correlation between interest rates, collateral requirements for debt acquisition, age/trading experience and access to debt finance by retail SMEs in Kampala. The results also indicated that the age/trading experience of the SMEs influences debt finance highly. Correspondingly, given the latter observation and the realization that financial needs for small businesses change as they grow and gain experience, the study recommends that financiers need to organize regular and comprehensive financial literacy programs that target the growth-specific operations of SMEs. Furthermore, Ochido (2016) conducted a study to investigate how credit accessibility influenced the growth of small and medium-sized enterprises in Nairobi County, Kenya. In this study, the population of interest included SMEs that operated within Nairobi County. 30,252 small and medium size enterprises operated within Nairobi City County out of which a sample of 379 was used in the study. Regression and correlation analysis were applied to show the relationship between variables. The study revealed that the

majority of SMEs in Nairobi County were not performing as expected due to a lack of access to credit. Credit accessibility was found to influence the growth of small enterprises. Particularly high rates of interest negatively influenced the growth of small businesses in Kenya. The findings further indicated that term to maturity, uncertainty about loan amount, high interest rates, mismatch of funds and undue pressure for repayment had a large influence on the SME's choice of credit facilities. The study results also showed that aspects of lending such as credit history, asset base, availability of collateral, delayed payment by debtors and irregular cash flows influenced the SME's choice of credit facility (Pike, Puchert & Chinyamurindi, 2018).

Based on the study findings recommendations are; that financial institutions should consider revising their policies on the interest rate charged, credit policies and appraisal techniques and limitation on the amount of credit granted to SMEs. Ndede (2015) conducted a study to investigate the determinants of the acquisition of financial services by micro and small enterprises (MSEs) in Langata Sub County of Nairobi County in Kenya. The study design was descriptive with a target population consisting of 2,098 micro and small enterprises. A sample size of 250 businesses was determined through a stratified random sampling technique by sector. The study found that there was a negative but significant relationship between legal and regulatory framework, level of education, entrepreneurial training and acquisition of financial services by MSEs. Demographic factors also had a negative but significant relationship with the acquisition of financial services by MSEs in Langata. For practice, the study recommended that: firstly, accessibility to financial services can be enhanced by financial intermediaries and the government by working on a framework that relaxes the complexities in loan acquisitions (Menkhoff, Neuberger & Suwanaporn, 2006; Okura, 2008).

Nyangoma (2012) conducted a study to establish the extent to which credit terms and access to credit have affected the financial performance of SMEs in Kampala. The study was based on a correlation survey design. Primary data was collected using self-administered questionnaires issued to respondents who were owners/managers of the business. Correlation and regression analysis were carried out to establish the association among the variables. The results indicated a significant positive association among the variables of credit terms, access to credit and financial performance of SMEs. Credit terms contribute 33.1% of the variance in financial performance in SMEs. Regression analysis revealed that access to credit contributed 54.3% of the variance in the financial performance of SMEs. To improve access to credit by SMEs, commercial banks and other lending institutions need to adjust credit terms in line with what borrowers can afford. Several studies such as that of; Sakwa et al. (2019), Dlamini and Mohammed (2018), Etemesi (2017), Hussein (2017), Ssentamu (2016), Ochido (2016), Ndede (2015), Nyangoma (2012), have been done in the area of collateral security, credit access, credit acquisition, about SMEs' performance, or growth (Mateev., Poutziouris & Ivanov, 2013; Awolusi, Mbonigaba & Tipoy, 2018).

All the above studies were conducted in Kenya, Nigeria, Ghana, Uganda, and Tanzania. However, none of the studies was conducted in Burundi thus giving a contextual gap that the current study intended to close. Furthermore, the above studies measured credit access using collateral security, interest rates, the amount borrowed, repayment period, business size, and the age of the business owner. Growth was measured using net profits, ROA, market share, and return on investment. However, this study measured credit accessibility using creditworthiness, business characteristics, and information availability, while growth was measured using profitability thus closing the content gap that was registered in the previous studies. Consequently, the present study hypothesized the following: $H0_1$: There is no significant effect of creditworthiness to credit accessibility on the growth of SMEs in Bujumbura. $H0_2$: There is no significant effect of business characteristics to credit accessibility on the growth of SMEs in Bujumbura. $H0_3$: There is no significant effect of information available to credit accessibility on the growth of SMEs in Bujumbura.

3. Methodology

The study employed a descriptive survey research design because it gives an accurate profile of situations (Cooper & Schindler, 2003). This type of research design describes the characteristics of a particular phenomenon in a situation. The justification for using descriptive research design was to obtain information concerning the status of the industry and to survey what exists with respect to the conditions in a situation. According to Orodho (2003), descriptive design is suitable because it is used to obtain information that describes existing phenomena by asking individuals about their perceptions, attitudes, behaviors or values.

This design was used since it enabled the researcher to collect data across the sampled population using the same instruments at the same time. Descriptive research determines and reports the way things are and attempts to describe such things as behaviors, attitudes values and characteristics. This is also stated by Gay (2006) that descriptive study determines and reports the way things are and commonly involves assessing attitudes and opinions towards individuals, organizations and procedures.

The descriptive survey design also enabled the researcher to obtain information concerning the effects of credit accessibility and the growth of small and medium enterprises operating in Bujumbura, Burundi. Kothari (2003) suggests that for descriptive studies 10% of the accessible population is enough. The population of this study was the 347 small and medium enterprises operating within the central business areas of Bujumbura city. In each business, the researcher used purposive sampling to pick either the manager or the business owner because of the nature of the topic, that is, credit accessibility and growth of SMEs, thus they were considered the most informed persons in providing substantive information regarding the questions in the topic. Thus, the target population was 347 respondents (i.e. business owners, and managers). However, specifically, the researcher was interested in the following SMEs: Beauty shops, boutiques, Electronics and accessories, General Store shops, Pharmaceuticals, and Restaurants and catering outlets. The sample size of this study was computed using the Slovene formula (Aina, Awolusi & Odunlami, 2015; Awolusi, 2012). Therefore, the sample size of this study was 186 respondents; table 3.1 gives the summary of the target population and sample size.

Table 1: Target Population and Sample Size

Category of SMEs	SMEs Owner/Manager	Sample Size
Beauty shops	83	44
Boutique	74	40
General store shops	73	39
Restaurants and catering outlets	60	32
Electronics and accessories	52	28
Pharmaceuticals	05	03
Total	**347**	**186**

The study used the stratification method by stratifying Bujumbura into five strata, that is, North, South, East, West, and Central. The researcher selected the central stratum because it had the majority of SMEs concentration. Furthermore, the researcher used simple random sampling to select the SMEs of interest from the selected stratum. This was intended to avoid biases when selecting SMEs. After the SMEs were selected, the researcher used purposive sampling to select the SMEs owners or managers. The data source of this study was primary data collected using questionnaires during field data collection from the SMEs owners/managers. The data collection method employed in this study was the use of a survey questionnaire. The instrument used in this method was a questionnaire and it was self-administered to the SME owners or managers. Robson (2002) recommends the use of questionnaires in descriptive studies because self-administered typically cost less than personal interviews and sample accessibility is easy. The researcher can contact participants who might also be inaccessible, careful consideration where the participants can take more time to collect facts, talk with others or consider replies at length than is possible in an interview and finally in terms of anonymity where the surveys are typically perceived as more impersonal, providing anonymity than other communication modes (Thorn, 2009).

The study used a questionnaire as the research instrument of this study to obtain information regarding credit accessibility and SMEs growth from SMEs owners/managers. The questionnaires were self-administered using the drop-and-pick method. The questionnaires were preferred because of the following merits listed by Kothari (2004): cheap and can cover a wide range of respondents, provide respondents with adequate time to understand the questions asked and provide answers accordingly, a researcher can collect data from a wide range of samples from the target population, group or elements under investigation and questionnaires maximize objectivity since the researcher is dependent on respondent's views/ opinion. The questionnaire was divided into three sections, namely Section A, which captured information about the demographic characteristics of the respondents, Section B, which captured information about credit accessibility, and lastly, Section C captured information about the Growth of SMEs. A Five Likert scale was used to measure the instruments of credit accessibility and Growth of SMEs; where 1=strongly disagree, 2=disagree, 3=undecided,

4=agree, and 5=strongly agree. Validity is the extent to which a test measures what it is supposed to measure (Eze & Awolusi, 2018; Onikoyi, Awolusi & Boyede, 2014). This study used content validity to test the validity of the instruments. The content or face validity of a scale seeks to ascertain if the scale items are truly measuring what they are intended to measure. Despite being a systematic assessment of certainty, by definition, it is a subjective assessment (Hair et al., 2007).

To ensure content validity in this study, all the question items measuring each construct were mainly adapted from previous related studies and the original questionnaire. Based on the opinions of experts in the field of business administration, the questionnaire content was adjusted using the content validity index (CVI), and a CVI of 0.91 was derived (Awolusi, 2021). According to Amin (2005), a CVI greater than 0.70 is considered valid, thus the questionnaire instrument of this study was valid. The reliability of the questionnaire was ascertained using the internal consistency method (Pagano, 2009). After validating the questionnaire, a pilot testing was conducted on the questionnaire using ten (10) SMEs owners who were Boutique and General store shop owners in Kasanga and Kabalagala suburbs of Makindye division, Kampala. The pilot study helped the researcher to adjust the research instrument using the following validation criteria: how the participants responded to the questionnaire; if the questions were clear and easily comprehensible; if there was a need to include more questions in some constructs; or if there were some questions to which the respondents did not want to respond. From the pilot test, the researcher was able to understand the uncertainty of some items and did the needed modifications. Furthermore, the researcher used Cronbach's alpha correlation matrix to test the reliability of the instrument.

The rule of thumb for Cronbach's alpha Coefficient Value by Zikmund et al. (2010) was applied. The results of 0.858 (Credit Accessibility) and 0.705 (Growth of SMEs); show that there was a very good strength of association in credit accessibility, implying a high level of internal consistency and high reliability of the contents of the instrument (Zikmund et al., 2010). On the other hand, the growth of SMEs was found to have a good strength of association, implying a high level of internal consistency, and subsequent high level of reliability. The data from the retrieved questionnaires were entered into Scientific Package for Social Sciences (SPSS) version 22. Descriptive statistics were used to explain the profile of the respondent's using frequency and percentage tables, the central tendency of the dataset using means, and a measure of the dispersion of the dataset using standard deviations. Simple linear regression analysis was used to determine the effect of the independent variables on the dependent variable (Mukonga & Awolusi, 2019). In addition, multiple regression analysis was used to determine the variable in credit accessibility (IV) (i.e. creditworthiness, business characteristics, and information availability) that predicts the highest variance in the growth of SMEs (DV).

The general form of the Multiple Linear Regression Model used in this study was represented as:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$…….. Equ. 1

Where

Y: the independent variable (credit accessibility) is expressed as a linear combination of independent variables X_1, X_2, X_3

β_0: the regression constant i.e. Y= β_0 when X_1, X_2, X_3=0

β_1: Coefficient of creditworthiness (independent variable X_1)

β_2: Coefficient of business characteristics (independent variable X_2)

β_3: Coefficient of information availability (independent variable X_3)

ε: Error term

In this study, confidentiality and anonymity were ensured by not having to write the names of the respondents in any part of the questionnaire, and the final report publication. Neuman (2007) points out that the rights of subjects need to be protected or the statutory rights of members of the social community or groups being investigated, avoiding undue intrusion, obtaining informed consent, and protecting the rights to privacy of individuals and social groups. This study upheld Neumans' views on protecting the rights of the population targeted. Another ethical issue that was considered was the integrity of the researcher. According to Mugenda (2007), there are five elements a researcher must follow to do faithful and thorough work. These are accuracy in data collection and processing, use of appropriate research methodology, appropriate interpretation of the data, accurate reporting, and non-fabrication of data and or criminal misconduct (Awolusi, Mbonigaba & Tipoy, 2018). Therefore, the researcher did his best to adhere to these principles.

4. Results and Discussion of Findings

The researcher distributed 186 questionnaires during field data collection and was able to successfully retrieve 167 questionnaires that were correctly filled. This gave a response rate of 90%. The majority, 70.7% of the respondents were male while 29.3% of the respondents were female. The dominance of the male respondents implies that the SMEs in Bujumbura are mostly run by men. This could largely be because the women still cannot access credit for start-up businesses due largely to marginalization or stereotyping. In addition, the majority, 46.7% of the respondents were within the age group of 36-45 years, followed by 24% who were within the age group of 26-35 years, and 18% of the respondents were within the age group of 18-25 years. On the other hand, respondents within the age group of 46-55 years and more than 55 years were represented by 3% and 8.4% respectively. The dominance of SMEs owners/managers within the age group of 36-45 years was attributed to their ability to access credit from the financial institution due to their age.

Results

The Effect of Creditworthiness on the Growth of SMEs in Bujumbura: The first objective of this study was to determine the effect of creditworthiness on credit accessibility on the growth of SMEs in Bujumbura. Table 2 gives a summary of the findings.

Table 2: Model Summary of the Effect of Creditworthiness on the Growth of SMEs

					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.244[a]	.059	.054	.31357	.059	10.430	1	165	.001

a. Predictors: (Constant), creditworthiness

Table 2 shows that creditworthiness to credit accessibility has a significant effect on the growth of SMEs. This is because creditworthiness significantly accounts for a 5.4% variance in the growth of SMEs in Bujumbura (Adjusted R^2=0.054, p=0.001). This implies that if the SMEs are credit worthy in terms of availability of collateral, education and experience of the owner, or good credit repayment history, then it is likely that they can access credit which can later translate into an expansion of services/products, hence growth. **Ho_1:** There is no significant effect of creditworthiness to credit accessibility on the growth of SMEs in Bujumbura.

The decision rule was that: if p≤0.05, the null hypothesis would be rejected, and the alternative hypothesis accepted. According to the finding in Table 2, the null hypothesis that there is no significant effect of creditworthiness to credit accessibility on the growth of SMEs in Bujumbura was rejected and the alternative hypothesis was accepted.

Table 3: ANOVA of the Effect of Creditworthiness on the Growth of SMEs

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	1.026	1	1.026	10.430	.001[b]
	Residual	16.223	165	.098		
	Total	17.249	166			

a. Dependent Variable: Growth
b. Predictors: (Constant), creditworthiness

Table 3 shows that the regression model was a good fit for predicting the effect of creditworthiness on the growth of SMEs in Burundi (F=10.430, p=0.001).

Table 4: Coefficients of the Effect of Creditworthiness on the Growth of SMEs

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.050	.076		40.150	.000
	Creditworthiness	.108	.033	.244	3.230	.001

a. Dependent Variable: Growth of SMEs

Table 4 shows that a unit improvement in the creditworthiness of an SME would cause a 24.4% chance for such an SME to grow (Beta=0.244, *p*=0.001). This implies that each time SMEs improve their creditworthiness to financial institutions; they become more eligible to access credit that, if used for asset investment or improvement of the quality of services, would guarantee growth in terms of profitability.

The Effect of Business Characteristics on the Growth of SMEs in Bujumbura: The second objective of this study was to establish the effect of business characteristics on credit accessibility on the growth of SMEs in Bujumbura. Table 4 gives a summary of the findings.

Table 5: Model Summary of the Effect of Business Characteristics on the Growth of SMEs

				Std. Error of	Change Statistics				
Model	R	R Square	Adjusted R Square	the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.497[a]	.247	.242	.28056	.247	54.139	1	165	.000

a. Predictors: (Constant), Business Characteristics

Table 5 shows that business characteristics of credit accessibility have a significant effect on the growth of SMEs. This is because business characteristics significantly account for a 24.2% variance in the growth of SMEs in Bujumbura (Adjusted R^2=0.242, *p*=0.000). This implies that when an SME is older, larger in size, and located near a financial institution, then it is likely it can access credit which can later transform into growth if the loan is allocated for profitable ventures such as investments in assets, investments in new products and services, or acquisition of new technology.

Ho_2: There is no significant effect of business characteristics to credit accessibility on the growth of SMEs in Bujumbura**.**

The decision rule was that: if p≤0.05, the null hypothesis would be rejected, and the alternative hypothesis accepted. According to the finding in Table 5, the null hypothesis that there is no significant effect of business characteristics to credit accessibility on the growth of SMEs in Bujumbura was rejected and the alternative hypothesis was accepted.

Table 6: ANOVA of the Effect of Business Characteristics on the Growth of SMEs

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	4.261	1	4.261	54.139	.000[b]
	Residual	12.987	165	.079		
	Total	17.249	166			

a. Dependent Variable: Growth
b. Predictors: (Constant), Business Characteristics

Table 6 shows that the regression model was a good fit for predicting the effect of business characteristics on the growth of SMEs in Burundi (F=54.139, *p*=0.000).

Table 7: Coefficients of the Effect of Business Characteristics on the Growth of SMEs

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.644	.089		29.586	.000
	Business Characteristics	.238	.032	.497	7.358	.000

a. Dependent Variable: Growth of SMEs

Table 7 shows that a unit improvement in the business characteristics of an SME would cause a 49.7% chance for such an SME to grow (Beta=0.497, *p*=0.000). This implies that if an SME is older in the market, larger in size, or is publicly listed on a stock market, then there is a high likelihood that such an SME would be able to access credit which if used properly for the profitable venture will lead to profits and subsequent growth.

The Effect of Information Availability on the Growth of SMEs in Bujumbura: The third objective of this study was to examine the effect of information available to credit accessibility on the growth of SMEs in Bujumbura. Table 7 gives a summary of the findings.

Table 8: Model Summary of the Effect of Information Availability on the Growth of SMEs in Bujumbura

				Std. Error of	Change Statistics				
Model	R	R Square	Adjusted R Square	the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.349[a]	.122	.116	.30303	.122	22.842	1	165	.000

a. Predictors: (Constant), Information Availability

Table 8 shows that information available on credit accessibility has a significant effect on the growth of SMEs. This is because information availability significantly accounts for an 11.6% variance in the growth of SMEs in Bujumbura (Adjusted R^2=0.116, *p*=0.000). This implies that if SMEs have audited financial statements and proper record-keeping, they stand a high chance of accessing credit. Thus, when credit is successfully accessed and invested into the profitable course, the business will eventually grow. **Ho_3:** There is no significant effect of information available to credit accessibility on the growth of SMEs in Bujumbura.

The decision rule was that: if p≤0.05, the null hypothesis would be rejected, and the alternative hypothesis accepted. According to the finding in Table 8, the null hypothesis that there is no significant effect of information available to credit accessibility on the growth of SMEs in Bujumbura is rejected and the alternative hypothesis was upheld.

Table 9: ANOVA of the Effect of Information Availability on the Growth of SMEs

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	2.097	1	2.097	22.842	.000[b]
	Residual	15.151	165	.092		
	Total	17.249	166			

a. Dependent Variable: Growth of SMEs
b. Predictors: (Constant), Information Availability

Table 9 shows that the regression model was a good fit for predicting the effect of information availability on the growth of SMEs in Burundi (F=22.842, *p*=0.000).

Table 10: Coefficients of the Effect of Information Availability on the Growth of SMEs

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.470	.172		14.394	.000
	Information Availability	.262	.055	.349	4.779	.000

a. Dependent Variable: Growth of SMEs

Table 10 shows that a unit improvement in the information availability of an SME would cause a 34.9% chance for such an SME to grow (Beta=0.349, *p*=0.000). This implies that information available in terms of audited financial statements is highly likely able to help SMEs' credit accessibility which can lead to the growth of such businesses.

Table 11: Multiple Regression Model for Credit Accessibility and Growth of SMEs

				Std. Error of	Change Statistics				
Model	R	R Square	Adjusted R Square	the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.533[a]	.284	.271	.27518	.284	21.593	3	163	.000

a. Predictors: (Constant), Information Availability, Business Characteristics, creditworthiness

Table 11 shows that a combination of creditworthiness, business characteristics, and information availability significantly affects the growth of SMEs by a variance of 27.1% (Adjusted R^2=0.271, *p*=0.000). This implies that if SMEs are older in the market, larger in size, headed by educated and experienced owners/managers, and possess audited financial statements, then they are most likely to access credit which will help to propel them in the direction of growth.

Table 12: Multiple ANOVA of the Effect of Credit accessibility on the Growth of SMEs

Model		Sum of Squares	DF	Mean Square	F	Sig.
1	Regression	4.905	3	1.635	21.593	.000[b]
	Residual	12.343	163	.076		
	Total	17.249	166			

a. Dependent Variable: Growth
b. Predictors: (Constant), Information Availability, Business Characteristics, creditworthiness

Table 12 shows that the regression model was a good fit for predicting the effect of information availability, business characteristics, and creditworthiness on the growth of SMEs in Burundi (F=21.593, *p*=0.000).

Table 13: Coefficients of the Effect of Credit Accessibility on the Growth of SMEs

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.254	.161		13.990	.000
	Creditworthiness	-.001	.034	-.003	-.032	.974
	Business Characteristics	.205	.035	.429	5.946	.000
	Information Availability	.155	.058	.206	2.670	.008

a. Dependent Variable: Growth of SMEs

The equation below

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon \quad \text{..... Equ. 2}$$

Then becomes;

Credit accessibility=2.254 + (-0.003) (credit worthiness) + 0.429 (business characteristics) + 0.206 (information availability) + 0.161. Where

Y: the independent variable (credit accessibility) is expressed as a linear combination of independent variables X_1, X_2, X_3

β_0: the regression constant i.e. Y= β_0 when X_1, X_2, X_3=0

β_1: Coefficient of creditworthiness (independent variable X_1)

β_2: Coefficient of business characteristics (independent variable X_2)

β_3: Coefficient of information availability (independent variable X_3)

ε: Error term

Therefore, table 13 shows that business characteristics are the highest predictor variable of credit accessibility. This is because business characteristics in terms of age, size or the location of the business have a significant effect on the growth of SMEs (Beta=0.429, *p*=0.000). In addition, information available in terms of audited financial statements and proper bookkeeping commands a significant effect on business growth since a unit change in information availability causes a 20.6% variance in the growth of SMEs (Beta=0.206, p=0.008). However, creditworthiness was found to negatively affect SME's growth by a variance of -3% (Beta=-0.003, *p*=0.974). This implies that when SMEs cannot present collateral security, or proper documentation of their businesses, or have managers/owners who are educated and experienced in business, then it becomes challenging for them to access credit thus negatively affecting their growth.

Discussion of Findings

The Effect of Credit Worthiness to Credit Accessibility on the Growth of SMEs: The study revealed that creditworthiness to credit accessibility has a significant effect on the growth of SMEs (Adjusted R^2=0.059, *p*=0.001). This was attributed to the fact that most of the SME owners in Bujumbura cannot access credit

because of low asset base/collateral, low education level, low business experience, and poor loan repayment records. Indeed, empirical studies have proven that collateral increases accessibility to institutional finance (Fatoki & Asah, 2011; Fatoki & Odeyemi, 2010; & He, 2012). Many studies have also alluded that the lack of collateral is among the major barriers to accessing bank finance (Shinozaki, 2012). Time and again SMEs have lacked sufficient collateral or personal guarantors to pledge against formal loans, or they are unfamiliar with the bureaucratic procedures of accessing credit. Hence, insufficient access to it is harmful to overall economic growth. Financial constraints slow down capital accumulation, impede productivity improvements and increase the time it takes entrepreneurs to reach their potential. This study agrees with other studies such as that of Sakwa et al. (2019), and Ochido (2016) who found a positive relationship between collateral security and the growth of SMEs.

Indeed Sakwa et al. (2019), found that collateral security had a positive and significant influence on access to credit hence the growth of SMEs. Firms with collateral security accessed loans easily as opposed to those with none. Likewise, Ochido (2016) found that aspects of lending such as credit history, asset base, availability of collateral, delayed payment by debtors and irregular cash flows influenced the SME's choice of credit facility. Furthermore, other proponents such as Nyanzu and Quaidoo (2017), and Nofsinger and Wang (2011) found that SMEs owners'/managers' education and experience influenced their ability to access credit. For instance, Nyanzu and Quaidoo (2017) found that the educational background of the SME owner/manager is often positively related to the firm's usage of leverage. They found that owners with higher education are more likely to use and have access to formal loans/banking services than those without. In addition, Nofsinger and Wang (2011) found that the experience of the entrepreneur is one factor that explains the difference in external financing levels available to SMEs.

The Effect of Business Characteristics on the Growth of SMEs in Bujumbura: The study revealed that business characteristics of credit accessibility have a significant effect on the growth of SMEs (Adjusted R^2=0.242, p=0.000). This was attributed to the fact that the majority of the respondents indicated business age, size, and location were prerequisites for accessing loans from financial institutions. In agreement with the finding of this study, researchers such as Hernández-Cánovas and Martínez-Solano (2010) reported that small-sized enterprises bear a higher cost of debt than medium-sized enterprises because asymmetric information is reduced as firms become larger. Similarly, Drakos and Giannakopoulos (2011) further added that firm size can signal loan repayment ability; therefore, small firms are more likely to be credit-rated. Bigsten et al. (2003) elaborated their finding by indicating that firm size is a strong determinant in obtaining credit with the probability of success of 31%, 20%, and 13% for micro, small, and medium-sized firms, respectively, as compared to large firms. In South Africa, Fatoki and Odeyemi (2010) study found that credit applications from medium-sized firms are three times more likely to be successful than from small firms. A similar result was confirmed for other countries such as Allen et al. (2012) in India, Byiers et al. 2010 in Mozambique, and Kira and He, (2012) in Tanzania. In addition to firm size, age was also found by this study to be an influencer on credit access which later translates to the growth of SMEs.

Dlamini and Mohammed (2018) also found that the size of the business, the age of the business owner, and interest rates were significant factors that influenced the choices of agriculture SME owners between informal, semi-formal, and formal credit providers. Furthermore, Kamweru (2011) found that SMEs that are younger have no reputation and no established credit history that providers of external finance can use to evaluate their creditworthiness; as such they are more constrained in the use of external financing. On the other hand, he contends that older firms have a well-established credit history and have built a good reputation with providers of external finance; as such are less constrained in the use of external finance. However, contrary to the findings of this study, Abdullah and Manan (2011) found no significant impact of firm age on accessibility to finance. The former suggests that their result reflects the reliance on firm profit and the deficit nature of short-term debt financing. Similarly, Mulaga (2013) found that there is no statistical significance between SMEs age and the use of external finance (Malesky & Taussig, 2009; Malesky & Taussig, 2009).

The Effect of Information Availability on the Growth of SMEs in Bujumbura: The study revealed that information available on credit accessibility has a significant effect on the growth of SMEs (Adjusted R^2=0.116, p=0.000). This implies that without hard information on the risk of borrower default, an adequate assessment of borrower creditworthiness requires lenders to develop a closer relationship with the borrower and to rely

more heavily on soft information. In other words, overcoming information asymmetries is dependent on the intensity of the relationship between the lender and borrower. Such relationships are of particular importance in developing economies, where the information available on microfinance borrowers is more limited in scope in comparison to businesses in the developed world that follow more transparent and stronger accounting standards. In agreement with the findings of this study, Bass and Schrooten (2005) found that the lack of reliable information leads to comparably high-interest rates even if a long-term relationship between borrowers and banks exists.

In addition, Dlamini and Mohammed (2018) found that keeping financial records, capital size required to start a business, and interest rates are significant factors that influence the choices of agriculture SME owners between informal, semi-formal, and formal credit providers. However, Kira and He (2012) found that the absence of sufficient information leads to information asymmetry and may jeopardize access to finance. This, therefore, implies that a robust credit reporting system should collect and provide accurate, sufficient and timely information to enable lenders to make comprehensive assessments of the creditworthiness of SMEs. Inaccuracies may lead to unjustified loan denials or high borrowing costs. Furthermore, a study by Nanyondo, (2014) revealed that the quality of financial statements has a significant and positive association with access to finance which leads to growth (Lemmon & Zender, 2010; Lucumay, 2014; Mac, Bhaird & Lucey, 2010).

5. Conclusion, Recommendations and Implications

Conclusion: The purpose of this study was to investigate the effect of credit accessibility on the growth of small and medium enterprises in Bujumbura, Burundi. The study was guided by the following objectives: i) to determine the effect of creditworthiness to credit accessibility on the growth of SMEs in Bujumbura; ii) to establish the effect of business characteristics to credit accessibility on the growth of SMEs in Bujumbura, and iii) to examine the effect of information available to credit accessibility on the growth of SMEs in Bujumbura. The study employed a descriptive survey research design. The target population was 347 and the sample size determined using the Slovenes formula was 186, but 167 respondents participated successfully in the study. The research instrument was a questionnaire and data were analyzed using frequency and percentage tables, mean and standard deviations, and linear and multiple regression analyses. Consequently, the study concluded that creditworthiness significantly affects the growth of SMEs. This is because the availability of collateral security, high education level and experience of the owner/manager, and good credit history guarantees SMEs to easily access credit, however, without which, it is practically difficult to access such credit from formal financial institutions.

Secondly, business characteristics significantly affect the growth of SMEs. This is because small firms experience a challenge accessing loans from banks as compared to big firms. In addition, firms that have been in the market for a long find it much easier to access credit to promote their growth than those that are in the start-up stages. Furthermore, the location of an SME in an urban setting or near a financial institution makes it much easier to access credit than those in rural areas. Lastly, Information availability significantly affects the growth of SMEs. This is because SMEs with information such as bookkeeping, audited financial performance, or tax payment records stand, or projected performance indicators have a better chance to access credit than those with dismal information. However, it should also be known that SMEs may not fully understand the potential benefits to their business of raising finance, which means they do not apply and may hinder the growth of the businesses. Although financial institutions have put in their best efforts to advertise their willingness to lend, there is still a widespread perception among SMEs that lending is not available on affordable terms.

Recommendations: The owners of SMEs should strive to ensure that they have collateral security and proper documentation before they seek credit from financial institutions. In this way, financial institutions will not be reluctant to give them loans. Furthermore, to support start-up businesses and keep them from failing within their first five years of existence, the government should partner with financial institutions [in a public-private partnership] by giving financial services to SMEs at subsidized rates. Correspondingly, the National Bank of Burundi should regulate financial institutions against over-hiking interest rates, which eventually make most SMEs shy away, and the few that dare to get such credit do not see any verifiable benefits. SMEs should form and register an association that is recognizable by law in Burundi and come up with a SACCO group where they

can pool their financial resources so that anyone interested in a loan can find such services from their SACCO with affordable interest rates compared to commercial banks. This is because such SACCOs will not restrict access to credit services due to the size or age of firms, as long as they are registered members.

The owners of SMEs should seek the support of professional auditors to audit their books of accounts at least every year. This will help provide a better overview of their financial potential to be awarded loans. Similarly, there is a need for commercial banks, the National Bank of Burundi, Universities, and Business institutions to regularly provide educational services to SMEs owners and their employees in the field of business and financial management skills at subsidized prices. This will help the lowly educated SMEs owners to understand the importance of proper record keeping in their business. This is because such records are required by credit institutions to award credit. Likewise, SME' owners should open and maintain their bank accounts with not more than one financial institution, in that way they can establish a customer-supplier relationship hence making the bank know them as their long-term customers. Thus, when such customers need credit, it becomes much easier to access it.

Implications and Contribution to Knowledge: This study confirms the Pecking Order Theory which posits that SMEs will only seek external financing if alternatives to internal financing are thoroughly exhausted. True to the SMEs in Burundi, they can only seek credit when they feel the necessity for it otherwise, most of their major sources of funding are personal savings, friends, and close relatives. In addition, this study confirms the Life Cycle Theory which states that firms will not be able to access credit at their initial stages due to limited collateral, and audited financial statements, until they reach the maturity stage which is when they can be able to seek larger credits for financing larger projects. Indeed, in this study, young and small-sized, SMEs found difficulty to access credit more than older and larger SMEs. Though several studies such as Sakwa et al. (2019), Dlamini and Mohammed (2018), Etemesi (2017), Hussein (2017), Ssentamu (2016), Ochido (2016), Ndede (2015), and Nyangoma (2012), have been done in the area of credit accessibility and SMEs' growth, there were mixed results to that effect. This study, therefore, adds to the body of knowledge in Burundi by reporting that creditworthiness, business characteristics, and information availability significantly affect the growth of SMEs.

This is because collateral security, education and experience of the owner, age, size of SMEs, audited financial statements, and bookkeeping promoted or hindered credit accessibility which is directly tied to their growth. However, the present study looked at the credit accessibility of SMEs in an urban setting, that is Bujumbura, the Capital City. The finding may be limited due to benefits or constraints such SMEs may be having by their location. A future comparative study should be conducted to assess the credit accessibility and growth of SMEs in rural and urban settings. This will help provide generalizable findings. This is because sometimes the government has specific policies that make SMEs in rural areas to be at a better advantage to access credit than their urban counterparts. In addition, this study used a descriptive survey to get firsthand information from respondents regarding SMEs' growth vis-à-vis credit accessibility. However, a more specific study should be done using panel data expanding up to 10 years to assess the growth (profitability) attributed to credit accessibility among medium enterprises within vital sectors such as agriculture, or manufacturing. This will help substantiate the findings with hard evidence without biases due to differences of opinions or conflicts of interest.

Acknowledgment: This paper is an extract from a Master in Business Administration thesis at Kampala International University, Kampala, Uganda. Prof. Olawumi .D. Awolusi was the supervisor of the study.

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Journal of Economics and Behavioral Studies (JEBS)
Vol. 15, No. 4, December 2023 (ISSN 2220-6140)

Uganda's Debt Sustainability: Testing The Efficacy of Debt Overhang Theory

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Abstract: The primary objective of this paper is to discern the impact of key economic variables, including primary balance, real interest rate, GDP growth rate, real effective exchange rate, and current account balance, on the long-term and short-term sustainability of the country's debt. Drawing on an array of econometric analyses within the Auto Regressive Distributed Lag framework, the study establishes that a fiscal surplus and sound management positively influence debt sustainability in the long run. However, it reveals that higher real interest rates pose challenges, leading to increased debt loads. While GDP growth's impact remains inconclusive, a fluctuating real effective exchange rate and the influence of the current account balance on debt dynamics emerge as crucial determinants. The study recommends a cautious fiscal approach, interest rate management, economic growth stimulation, exchange rate stability, and a focus on achieving and maintaining current account surpluses as pivotal strategies for ensuring Uganda's long-term debt sustainability. Nonetheless, the study acknowledges limitations related to sample size and endogeneity, encouraging further research to enhance generalizability and address potential omitted variables.

Keywords: *Debt sustainability, Debt Overhang Theory, Uganda*

1. Introduction

Public debt emerges as a crucial financing tool for nations facing resource constraints and developmental challenges, a scenario particularly pertinent to developing countries (Debrun et al., 2019). While facilitating economic growth and social welfare, public debt simultaneously poses risks to macroeconomic stability and long-term sustainability if it surpasses a nation's repayment capacity (Wyplosz, 2011). Therefore, comprehending the determinants of debt sustainability is imperative for shaping judicious macroeconomic policies. This study explores the factors that influence Uganda's debt sustainability. Uganda is a developing African country that is currently dealing with a large increase in its public debt. Although Uganda benefited from the Multilateral Debt Relief Initiative (MDRI) during the 1990s and 2000s, there are concerns regarding the country's recent increase in debt from both global and internal sources (Atta-Mensah & Ibrahim, 2020). Understanding the dynamics of debt sustainability in Uganda holds broader implications for navigating the challenges posed by the increasing debt burdens.

The global discourse on debt sustainability has predominantly focused on its multifaceted impacts, yet limited attention has been directed towards Uganda's unique circumstances. Previous research highlights the intricate interplay between debt and economic variables, underscoring the need for tailored investigations into Uganda's evolving debt landscape. Despite existing studies on debt sustainability, a discernible gap exists in comprehending Uganda's specific determinants, particularly in the context of its recent debt escalation. This research aims to bridge this gap by elucidating the factors influencing Uganda's debt sustainability, providing a nuanced perspective crucial for informed policymaking.

Acquiring fresh insights into Uganda's debt sustainability is imperative due to the evolving economic landscape. The paper contends that such insights are essential for crafting effective policies that mitigate risks associated with mounting debt, ensuring the nation's economic resilience. Uganda, having faced resource challenges, turned to public debt for financing key development projects. The nation's debt history, including the MDRI benefit and recent debt surge, provides a contextual backdrop. External borrowing, driven by the quest for foreign direct investment (FDI), adds another layer to Uganda's economic narrative, necessitating a thorough exploration. The research is theoretically influenced by the debt overhang theory, suggesting that elevated debt levels can hinder the progress of economic growth. This theory will serve as the conceptual framework underpinning the analysis, offering a lens through which to interpret the empirical findings on Uganda's debt sustainability. The manuscript aims to elucidate the factors influencing debt sustainability in Uganda, utilizing

both a cointegration approach and a model focused on the dynamics of public debt. By explicitly connecting the research aims with the identified gap, the study aspires to furnish a comprehensive understanding of Uganda's debt sustainability dynamics.

2. Literature review and hypothesis development

Empirical literature review

Debt sustainability: In the context of debt sustainability, a nation's indebtedness is deemed sustainable when its government consistently fulfills both present and future debt service obligations, avoiding the need for debt rescheduling or the accumulation of additional liabilities (Mohammadi and Tsiropoulos, 2020). This perspective on debt sustainability aligns with the fundamental tenets of the debt overhang theory, emphasizing the importance of borrowers consistently fulfilling debt service payments while maintaining a stable trajectory without significant alterations to income or spending patterns. Expanding on this definition, Mohammadi et al. (2007) underscore that debt sustainability is realized when a government not only services its debt commitments but also satisfies the intertemporal budget constraint. This advanced technique stresses the demand for ongoing financial responsibility throughout time by introducing a temporal component. Reputable institutions like the International Monetary Fund (IMF) employ key criteria such as the government debt-to-current fiscal revenue ratio, the debt-to-exports ratio, and the debt-to-GDP ratio to evaluate the sustainability of debt. These metrics are crucial in determining how well a nation complies with these sustainability standards (IMF, 2000).

The first set of indicators from the IMF includes measurements that examine the makeup and arrangement of a nation's debt. In particular, the ratio of short-term debt to total debt and the share of concessional debt to total debt offer valuable insights into the complexity of debt sustainability (IMF, 2000). The following set of indicators, which includes figures like debt service as a percentage of GDP, government debt service as a percentage of current fiscal revenue, and external debt service as a percentage of exports, is given more immediate attention. These measures function as early warning indicators, highlighting the effects of intertemporal trade-offs brought about by previous borrowing decisions and shedding light on possible problems with debt payment.

A forward-looking perspective on debt sustainability is encapsulated in the third set of indicators, exemplified by the average interest rate on outstanding debt as a percentage of nominal GDP growth (Muhanji & Ojah, 2011). This indicator provides a glimpse into the evolving debt burden over time, offering valuable insights into the trajectory of a nation's fiscal health. Aligning with the works of reputable scholars, the debt-to-exports ratio is employed in evaluating Uganda's debt sustainability. This choice aligns with the overarching framework of the debt overhang theory, acknowledging the significance of assessing debt to a country's export capacity to ascertain the sustainability of its financial commitments.

Primary balance and debt sustainability: The primary balance is a crucial component in the sustainability of debt. Studies show that maintaining a non-explosive debt position is consistent with the primary balance's reaction to shocks (Reis, 2022). However, fiscal consolidation as a response to debt management may be detrimental to long-term growth and macroeconomic stability. In line with the existing literature, an increasing debt-to-GDP ratio is expected to necessitate a positive adjustment in the primary surplus to maintain debt sustainability. Primary balances in Latin America and the Caribbean become less responsive as debt levels rise, potentially signaling the onset of fiscal fatigue. Favorable economic conditions and growth may have an impact on how the primary balance responds to growing debt, as it is reliant on institutional dynamics and underlying growth. Overall, the primary balance is an important factor in assessing and ensuring debt sustainability.

The national debt increases because of long-term deficit spending, requiring the government to pay back the borrowed funds with interest to the public (Reis, 2022). The government’s regular borrowing to finance its fiscal deficits increases the deficit, as it has to pay interest on its existing debt. The budget deficit could rise if the government’s borrowing exceeds its expectations, increasing its interest payments (Mwankemwa & Luvanda, 2022). A government that runs persistent fiscal deficits will eventually face the risk of default or insolvency unless it receives special financial assistance (Deheri & Nag, 2022). According to statistics on the

budget balance of Sub-Saharan Africa as a percentage of GDP from 2017 to 2021, with projections until 2027, the region had a budget deficit of about 5.12% of GDP in 2021 (Malla & Pathranarakul, 2022). The external debt of Africa, excluding South Africa, grew by an average of 4.3%, reaching $591 billion in total. The external debt of some countries, such as Senegal and Cote D'Ivoire, is expected to grow by more than 10% in the coming years (Nsonwu, 2022). Many African countries have experienced negative effects of debt burdens on their long-term economic growth, such as lower GDP growth, reduced investment and capital formation, and higher taxes to generate more revenue to repay the debts (Manasseh et al., 2022). Recent studies on debt sustainability by the IMF and the Ministry of Finance indicate that Uganda's debt is sustainable at present, but there is a slight possibility that it will become unsustainable in the medium and long term (Mageto, 2022).

Gross Domestic Product and debt sustainability: The factors influencing the economic growth of countries are diverse and complex, as explored in numerous studies (Batrancea et al., 2022; Alagidede & Ibrahim, 2017). However, a high debt level can impede economic development (Herndon et al., 2014). Various analyses and research focus on debt sustainability and the causes of debt fluctuations. Piscetek (2019) argues that the primary balance is a pivotal factor in changing the debt level, while factors such as the interest-growth difference and currency rate exert a relatively less significant influence. On a micro level, some research also indicates that fiscal pressures have a favorable effect on businesses' financial performance (Batrancea et al., 2021). This contrasts with macro-level analysis, where fiscal pressures lead to increasing debt levels for countries. Moreover, fiscal pressure influences the short- and long-term financial stability of public companies (Batrancea, 2021). The dynamics of debt could also be affected by the output gap and the need for significant stock-flow adjustments to pay for political and social expenditures (Mupunga & Le Roux, 2016). D'Erasmo, Mendoza, and Zhang (2016) conducted a panel study using data from 117 nations and discovered that variations in interest rates, currency rates, inflation, and economic growth rates were in charge of the debt dynamics. Interest rate growth differentials play a major role in debt dynamics in the case of most African countries (Ncube & Brixiová, 2015).

The ratio known as debt to GDP calculates a nation's total debt and divides it by its GDP. Analysts use GDP as a stand-in for economic output to determine a nation's capacity to pay its debts (Thullah, 2023). A high debt-to-GDP ratio raises the likelihood of default, which is detrimental. According to a World Bank analysis (Liu, 2023), a continuous ratio higher than 77% would be detrimental to economic expansion. According to Song and Zhou (2020), a high debt-to-GDP ratio increases the probability and danger of default, which may lead to financial panic in both local and international markets.

Japan faces the highest global debt-to-GDP ratio, a consequence of long-term economic stagnation and demographic challenges. As of the early months of 2023, the debt ratio stood at 221.32% of GDP (Tsigaris et al., 2023). In 2021, Japan's central government exhibited a gross debt equivalent to 263% of GDP. While borrowing may seem affordable as long as the average return is close to zero, this is not sustainable as Japan falls behind the rest of the world in monetary tightening. Among African countries, Eritrea has the highest debt-to-GDP ratio, at 175.1% of GDP (Owusu-Nantwi & Owusu-Nantwi, 2023). The deputy governor of the Bank of Uganda, Michael Atingi-Ego, reported to the parliament's Finance Committee in November 2022 that the national debt had reached 80 trillion shillings by the end of September 2022, equal to about 50% of GDP. This is in the year 2023 (Serumaga).

One long-term concern posed by a high debt percentage to GDP is an increase in deficit spending that causes rapid near-term inflation. These factors make it harder for the country to pay off its debts, as they lead to higher interest rates, slower revenue growth, and a small but increased danger of a fiscal crisis (Liu, 2023). Uganda's public debt is manageable in the medium term, with the expected implementation of fiscal consolidation measures and the phasing out of crisis measures. Uganda faces a moderate risk of an external and overall public debt crisis due to the country's limited capacity to absorb shocks. However, stress testing highlights deviations from the norm for public debt and external debt burden, especially in light of export shocks.

Exchange rate and debt sustainability: The actual effective exchange rate is calculated by deducting the price deflator, also referred to as the cost index, from the nominal effective exchange rate, representing a currency's value about a basket of other currencies (Thuy & Thuy, 2019). An uptick in the real effective exchange rate, which raises export costs and reduces import costs, indicates a decline in trade competitiveness (Boubakri et

al., 2019). For a country to experience a reduction in trade competitiveness due to an increase in its real effective exchange rate, there must be an escalation in export prices and a decrease in import prices (Tran, 2022).

Greenidge et al. (2010) investigated the factors influencing foreign debt within the Caribbean Community using a co-integration test and dynamic OLS. Their findings indicated a negative correlation between exports and the real effective exchange rate (REER). In Kiptoo's (2012) analysis of the determinants of Kenya's external debt sustainability, it was disclosed that there is a positive association between exports and GDP with debt sustainability. The research also demonstrates a substantial inverse link between foreign debt and debt sustainability. Mahmood et al. (2009) used a number of techniques, such as the debt-to-export ratio, to investigate the topic of Pakistan's debt sustainability. Their results show that while the budget deficit is a very important element, the interest rate has a relatively small effect.

External effects were examined in the debt accumulation studies conducted by Ajayi (2000) in Nigeria and Barungi and Atingi (2000) in Uganda. The study's findings demonstrate that these countries' real effective exchange rate (REER) and terms of trade (TOT) significantly affect their foreign debt. The Relative Economic Efficiency Ratio, Total Outstanding Debt, Interest Rate, and Fiscal Deficit are among the metrics that Loser (2004) identified as indicators of how sustainable foreign debt is in low- and middle-income nations. According to Bader and Magableh's 2009 research, Jordan's external debt accumulation was influenced by a number of factors, including the budget deficit, the overall amount of external debt, and the saving gap. Furthermore, it was discovered that REER was the most significant element impacting the total amount of foreign debt.

Awan et al. (2011) examined the effects of terms of trade, currency rates, and the fiscal deficit on Pakistan's external debt and found a strong, long-term correlation between these explanatory factors and foreign debt. Comparably, a more recent study conducted by Awan et al. (2015) found that Pakistan's external debt was significantly predicted by the budget deficit, trade openness, and nominal currency rate. In their investigation of the variables affecting Malaysia's external debt, Pyeman et al. (2014) emphasized the importance of GDP, FDI, and exports. In a study assessing Nigeria's ability to meet foreign debt obligations, Imimole et al. (2014) utilized co-integration analysis and found, while not reaching statistical significance, a negative correlation between the external debt-to-GDP ratio and total external debt. Ajayi (1991), through regression analysis, discovered a negative association between the debt-to-export ratio, Nigeria's government fiscal position, and the deceleration of income growth in developed nations. Additionally, he asserted that the rise in Nigeria's debt-to-export ratio was triggered by a decline in the country's terms of trade.

Trade openness and debt sustainability: Trade openness refers to the facilitation of cross-border trade and economic activity because of greater economic and political ties between nations. The unrestricted flow of capital and labor, as well as international financial and economic transactions, unite these nations (Igudia, 2004). The results demonstrate that freer trade promotes investment and development. Two trade policies that affect economic growth are the real effective exchange rate and the average weighted tariff rate (Chhabra et al., 2023).

Kim (2011) demonstrates that industrialized nations benefit from openness to trade in terms of economic growth and real income whereas underdeveloped countries suffer from it. The amount of financial development and inflation also affects the true impact of trade. Trade liberalization negatively impacts economic growth in countries characterized by weak financial systems, whereas its effect is minimal in countries with robust financial systems. Increased trade openness fosters economic growth in nations with low inflation, but it has minimal impact on those with high inflation. Kim, Lin, and Suen (2012) demonstrate that whereas trade has the opposite effect in countries with these attributes, it promotes economic development in those with high incomes, low rates of inflation, and little to no agricultural exports.

The European Union (EU) is one of the most trade-friendly regions of the globe because of its relatively low import levies. In 2019, over 63% of EU imports were duty-free, according to Eurostat research. As of 2023, the European Union (EU) had signed 29 FTAs with a total of 40 countries and territories (Mtar & Belazreg). The average level of trade openness among African countries in 2018 was 74%, based on data from 49 different nations. Sudan had the lowest percentage, at 1.3%, while Djibouti had the highest at 300.4%. Kelbore (2015),

and Namahoro et al., (2023). From what we can tell, Uganda's trade openness peaked at 41.92% in 2021 (Isaku, 2021). Greater trade openness will increase the nation's GDP and stimulate economic activity, which will lower the debt-to-GDP ratio and make it more manageable. (Biemudo et al., 2022).

Debt sustainability analysis has been the subject of a number of research in addition to the literature on debt dynamics (Ghosh et al., 2013). Most of these studies use a stochastic analysis of debt and the fiscal reaction function. Pakistan's debt is extensively assessed, however most of the research to date has focused on either the causes of debt growth or its long-term viability. Various major components are identified in the available research as causes of debt increase or reduction.

The primary deficit and ER fluctuations were determined to be the main factors of debt accumulation in Pakistan by Bilquees (2003) and Chandia and Javid (2013). Awan et al., (2011), provide additional evidence in support of these results. However, the authors of this study indicate that Pakistan's trade openness has an additional effect on the country's debt load. In contrast, Akram's (2011) studies suggest that economic growth and stability have a favorable impact on lowering debt levels. Pakistan's debt levels are generally considered to be unsustainable or poorly sustainable in the research on debt sustainability that makes use of the fiscal reaction function (Chandia et al., 2019). While these studies don't focus on predicting or forecasting the sustainability of public debt, Naveed and Islam (2022) do, and they find that Pakistan's debt is unsustainable for the 2019–2025 projection period.

Some research has indicated a negative association between trade openness and debt sustainability (Babatunde, 2011; Eris & Ulasan, 2013), even though there is empirical evidence of a favorable relationship between the two. Increased levels of trade openness, say Solomon and Tukur, (2019))), may be detrimental to economic growth due to the uncertainty it introduces into the economy and the accompanying fluctuations in the exchange rate and inflation. Similarly, Malefane and Odhiambo (2019) studied how freer trade affected Lesotho's ability to service its debt. In both the short and long term, the authors cited above find that trade has no appreciable impact on debt sustainability, regardless of the proxy of trade openness employed.

Real effective interest rate and debt sustainability: As measured by the GDP deflator, the real interest rate refers to the lending interest rate adjusted for inflation. Nevertheless, comparing lending rates across countries poses challenges due to the diverse terms and conditions associated with them. The International Monetary Fund (IMF) relies on data from the World Bank to compute the GDP deflator. According to Reis (2022), a real interest rate is an interest rate that provides a more accurate representation of the cost of borrowing and lending money by factoring in the impact of inflation on the value of money.

Since the 2008 financial crisis, many countries have seen a negative divergence between the implicit interest rate on government debt and nominal GDP growth, as stated in an IMF working paper (2020). The findings indicated that it would get harder for less developed countries to meet their debts without simultaneously raising the principal amount owed on such loans, especially in light of the recent sharp hikes in interest rates observed in many countries.

Empirical evidence to date reveals a detrimental impact on debt sustainability as real interest rates on borrowed funds grow in emerging nations. Ahmed and Maarouf (2021) studied how real interest rates affected the sustainability of debt in a sample of 99 developing nations to figure out how debt negatively affects these countries. The direct impact of interest rates on debt sustainability, the pressure of debt service on available cash, and the indirect impact of debt on government expenditure and deficits are the three transmission channels identified by their results via which interest rates eventually affect debt sustainability. The analysis concludes that higher interest rates slow down both economic development and the sustainability of debt. In a comparable study from 2004, A growth accounting model was used by Patillo et al. on a sample of sixty-one developing nations. Their findings demonstrated that these nations' average levels of foreign debt increased, which resulted in a nearly one percentage-point delay in the growth of total factor productivity, lending rates, and physical capital per capita.

3. Methodology

Data, research design and research approach

This study utilized a longitudinal research design. Data used was for a period of 32 years that is a period ranging from 1991 to 2022, this data was corrected from World Bank development indicators and Uganda Revenue Authority.

Specification procedure, data and estimation techniques

Theoretical framework: This study uses Mupunga and Le Roux's (2016) public debt dynamics model as its theoretical foundation for examining Uganda's debt sustainability factors. The model also establishes a relationship between changes in the total public debt as a percentage of GDP and changes in real GDP, real effective interest rate, real GDP, real exchange rate, and economic openness, among other significant macroeconomic variables. The model assumes that these variables include the main factors that influence a country's debt dynamics, such as its exchange rate risk, fiscal condition, borrowing costs, and trade performance.

The model can be expressed as follows:

$DSt = \beta 0 + \beta 1\ PBt + \beta 2\ REERt + \beta 3\ RGDPt + \beta 4\ EXRt + \beta 5\ OPENt + \varepsilon t$ ……. *(1)*

The elements in this instance include: PBt, representing the primary balance; REERt, signifying the real effective interest rate; RGDPt, denoting the real GDP; EXRt, indicating the real exchange rate; OPENt, reflecting the openness of the economy; and εt, symbolizing the white noise process.

Description of the variables and model estimation: The government's financial condition is evaluated through the primary balance, excluding interest payments on outstanding debt. A positive primary balance indicates a fiscal surplus, while a negative primary balance signals a fiscal deficit. A fiscal surplus tends to decrease the debt-to-GDP ratio, whereas a fiscal deficit can elevate it. Hence, the anticipated sign for β1 is negative.

The actual effective interest rate, accounting for inflation and currency fluctuations, reflects the government's cost of borrowing. An increase in real effective interest rates implies higher costs for servicing debt, potentially leading to an increase in the debt-to-GDP ratio. Consequently, the expected sign for β2 is positive.

Real GDP, a metric for measuring a nation's economic growth, influences the debt-to-GDP ratio in two ways. Accelerated economic growth has the potential to reduce the debt-to-GDP ratio by boosting government revenue and reducing the need for borrowing. However, rapid economic development may also result in heightened demand for public goods and services, placing additional pressure on the government to increase spending, potentially raising the debt-to-GDP ratio. Therefore, the expected sign for β3 is unclear or ambiguous. The relative expenses of domestically produced and imported goods are impacted by the actual exchange rate, and this can have dual effects on the debt-to-GDP ratio. A decrease in the actual exchange rate might influence the debt-to-GDP ratio by increasing the value of external debt in terms of the local currency. Simultaneously, a decrease in the real exchange rate can potentially lower the debt-to-GDP ratio, enhance the competitiveness of local exporters, and diminish the trade deficit. Consequently, the anticipated sign of β4 is not definitively clear. The degree of an economy's integration with the global market is measured by its level of openness, and this factor can influence the debt-to-GDP ratio in two distinct ways. Enhanced transparency may contribute to a reduction in the debt-to-GDP ratio by facilitating external funding and access to foreign currency. However, greater openness can also result in more unpredictable capital flows and heightened susceptibility to external shocks, potentially increasing the debt-to-GDP ratio. Hence, the anticipated sign of β5 is ambiguous.

Model estimation

In addition, the model was further extended by additional openness of the economy as suggested by Mohammadi and Tsiropoulos (2020) and now the model is specified as;

$$InDS_t = \beta_0 + \beta_1 InPB_t + \beta_2 InREER_t + \beta_3 InRGDP_t + \beta_4 InEXR_t + \beta_5 InOPEN_t + \varepsilon_t \quad \text{…….. (2)}$$

Whereby;

In represents the natural log

B_0 represents the constant

B_1 to B_5 represent the parameters of the independent variables
OPE is the openness of the economy

Model ii was estimated in ARDL form as

$$\Delta DS_t = \beta_0 + \beta_1 DS_{t-1} + \beta_2 PB_{t-1} + \beta_3 REER_{t-1} + \beta_4 RGDP_{t-1} + \beta_5 EXR_{t-1} + \beta_6 OPEN_{t-1} \sum_{P=0}^{n1} \theta 1\, \Delta DS_{t-p} + \sum_{P=1}^{n2} \theta 2\, \Delta PB_{t-p} + \sum_{P=0}^{n3} \theta 3\, \Delta REER_{t-p} + \sum_{P=0}^{n4} \theta 4\, \Delta RGDP_{t-p} + \sum_{P=0}^{n5} \theta 5\, \Delta EXR_{t-p} + \sum_{P=0}^{n6} \theta 6\, \Delta OPEN_{t-p} + \varepsilon_1 \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Data type and source

Variable	Definition	Source
Debt sustainability	Total public debt as a percentage of GDP	Bank of Uganda
proportion of primary balance to GDP	The primary balance refers to the discrepancy between the government's revenue collection and its outlays for public goods and services.	Bank of Uganda
Real GDP	A macroeconomic metric that accounts for inflation and assesses the worth of the products and services generated by an economy over a given time frame	World Bank
Real effective interest rates	The real interest rate is the lending interest rate that has been adjusted for inflation using the GDP deflator.	Bank of Uganda
Real effective exchange rate	A weighted average of multiple foreign currencies can be used to determine the value of a currency by dividing the actual effective exchange rate by a cost index or price deflator.	IMF
Openness of the economy	The extent to which imports and exports, or nondomestic transactions, occur and impact a country's economy's size and growth	World Bank

4. Empirical Results and Discussion

Descriptive analysis: The data that was used for this study was for the period that did not have missing values. A general description of the data's properties was given through the summarization of descriptive statistics. By doing this, it was possible to guarantee that the data was suitable for estimation and would not yield inaccurate findings. Specifically, a computation was made to summarize the values of the mean, minimum, maximum, and standard deviation.

Table 1: Summary of study variables

Variable	Mean	Standard Deviation	Minimum	Maximum
DEBT	46.4326	27.95301	14.79281	141.1539
Primary Balance	.0976023	3.649355	-5.223994	13.40504
Real Interest Rate	5.112639	21.04402	-53.44	23
GDP growth rate	6.085	2.403918	.39	11.52
Real Effective Exchange Rate	153.7923	108.6067	91.73405	511.0456
Current Account Balance	-885,000,000	997,000,000	-3,550,000,000	49,200,000

Observations for all variables = 32. Source: Researcher's computation using secondary data

The analysis shows the descriptive statistics of six variables that are related to debt sustainability in Uganda: DEBT, PB, REER, GDP, REXR, and CAB. The results indicate that the variables have different means, standard deviations, minimums, and maximums, reflecting different levels of variability and dispersion in the data. The variable DEBT has the highest mean and the largest range, suggesting a high and diverse level of indebtedness in Uganda. The variable PB has the lowest mean and a wide range, implying a low and variable level of fiscal surplus in Uganda. The variable REER has a moderate mean and a relatively narrow range, indicating a moderate and stable level of borrowing cost in Uganda. The variable GDP has a high mean and a reasonable

range, suggesting a high and well-behaved level of economic growth in Uganda. The variable REXR has a high mean and a large range, indicating a high and diverse level of exchange rate risk in Uganda. The variable CAB has a negative mean and a large range, implying a negative and dispersed level of trade balance in Uganda. The results also show that the variables were log-transformed to deal with outliers. A general observation that can be derived from these statistics is that Uganda faces significant challenges and risks for its debt sustainability and stability, as it has a high and increasing debt-to-GDP ratio, a low and variable fiscal surplus, a high and diverse exchange rate risk, and a negative and dispersed trade balance.

Pre estimation diagnostics

Unit Root Tests: The Augmented Dickey-Fuller (ADF) test, one of the stationarity tests most frequently used in academic literature, was employed in the study's subsequent stationarity tests on model variables. By testing the null hypothesis, the ADF test seeks to ascertain if a unit root exists in a given time series sample. If, at the 5% significance level, the test-statistic (t-statistic) within the Augmented Dickey-Fuller (ADF) test is lower than the corresponding critical value, the null hypothesis cannot be rejected. The analysis examined the presence of unit roots both at the levels of the variables and their initial differences.

Table 2: ADF test results

	ADF		
Variables	**Levels**	**First difference**	**Integration**
DEBT	-2.451	-3.089**	I(1)
Primary Balance	-0.212	-6.651***	I(1)
Real Interest Rate	-3.172**	-	I(0)
GDP growth rate	-7.847***	-	I(0)
Real Effective Exchange Rate	-4.471***	-	I(0)
Current Account Balance	-4.873***	-	I(0)

Source: Researcher's computation using secondary data

The results of the unit root test in the table above indicate that debt and primary balance are non-stationary in levels and therefore require transformation in the form of one-time differencing to become stationary. The other variables are hover stationary in levels. The results thus indicate that the variables to be included in the model have mixed levels of stationarity.

Cointegration test: It suggests that some of the study variables may have long-term associations because it was found that some of them were non-stationary at levels and that they only became stationary after being differencing once. Cointegration is the property of variables that exhibit a long-term relationship. Therefore, the presence of cointegration among the study variables needs to be confirmed. To find this long-term association, the study used the limits test for cointegration within the Auto Regressive Distributed Lag framework.

Using the limits test, the null hypothesis—that there is no cointegration among variables—is examined. At all levels of significance, the null hypothesis is rejected if the calculated F and t-statistics are greater than the tabulated critical values at the upper and lower bounds; otherwise, it cannot be rejected. The test's outcomes are displayed in Table 3 below.

Table 3: ARDL bounds test results

Wald statistics: F = 7.814. t = -4.140

	10%		5%		1%		P-values	
	I(0)	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**
F	2.525	3.930	3.094	4.719	4.516	6.671	0.000	**0.004**
t	-2.482	-3.792	-2.866	-4.259	-3.664	-5.230	0.004	**0.060**
Decision	r		.		.			

H0: no level relationship. Source: Researcher's computation using secondary data

The computed Wald statistics, with F = 7.814 and t = -4.140, were tested against critical values at various significance levels (10%, 5%, and 1%), according to the cointegration test results using the Pesaran, Shin, and Smith (2001) limits test in the table. With a computed F-statistic that exceeded all critical values and a corresponding p-value of 0.000, the F-test yielded a significant result, offering compelling evidence to reject the null hypothesis that there is no cointegration (I(0)). On the other hand, the t-test produced inconsistent findings, with the t-statistic surpassing the critical value at the 10% significance level but falling short of the crucial values at the 1% and 5% significance levels. At the 1% significance level, the null hypothesis that there is no cointegration (I(1)) was further refuted by the p-value of 0.004. As a result, the study concluded that there is cointegration, or a long-term relationship, between the variables at the 10% significance level.

The test for multicollinearity

When an independent variable in a multiple regression equation has a substantial correlation with one or more other independent variables, it presents an econometric problem known as multicollinearity. Multicollinearity undermines the statistical significance of the impacted variables in a model. To test multicollinearity, this study first constructed a correlation matrix between the independent variables. Next, it computed the variance inflation factor (VIF) for each independent variable. The outcomes that follow are shown;

Table 4: Test for multicollinearity

	1	2	3	4	5	6
DEBT (1)	1.0000					
Primary Balance (2)	0.2865	1.0000				
Real Interest Rate (3)	-0.2621	0.0119	1.0000			
GDP growth rate (4)	0.0393	-0.2335	0.2987	1.0000		
Real Effective Exchange Rate (5)	0.4275*	0.0019	**-0.8060***	-0.2654	1.0000	
Current Account Balance (6)	0.1271	-0.1024	0.0336	0.0353	0.0013	1.0000

* Indicates significance at 0.05 level. All variables are in log form. Source: Researcher's computation using secondary data

The correlation analysis was conducted as a preliminary step toward testing for multicollinearity among the variables in the dataset. The results show generally weak correlations among most variables, which is reassuring as it suggests that multicollinearity may not be a significant concern in the regression model. Nonetheless, a robust negative and statistically significant correlation of -0.8060 exists between the Real Effective Exchange Rate and Real Interest Rate. This denotes a substantial linear connection between these two variables. This discovery necessitates additional scrutiny, as heightened multicollinearity between the Real Effective Exchange Rate and Real Interest Rate could potentially impact the accuracy of the model and the reliability of coefficient estimates. To thoroughly examine the existence and consequences of multicollinearity, a Variance Inflation Factor (VIF) analysis was employed. This approach aims to offer a more comprehensive insight into the interconnections among the variables and contributes to maintaining the stability and interpretability of the regression model.

Table 5: VIF Results

Variable	VIF	1/VIF
Real Interest Rate	2.94	0.340054
Real Effective Exchange Rate	2.87	0.348715
GDP growth rate	1.17	0.853153
Primary Balance	1.08	0.928673
Current Account Balance	1.01	0.985791
Mean VIF	**1.81**	

All variables are logged. Source: Researcher's computation using secondary data

The Variance Inflation Factor (VIF) results show that all independent variables in the model have VIF values below 5. This indicates that there is no significant multicollinearity among the variables. Generally, VIF values

above 10 are considered indicative of severe multicollinearity, but in this case, all variables have VIF values well below these thresholds. The mean VIF value of 1.81 further supports the observation of minimal multicollinearity. As a result, the regression model is not adversely affected by multicollinearity, and the coefficient estimates for the independent variables can be reliably interpreted. The relatively low VIF values imply that the independent variables contribute independently to explaining the variance in the dependent variable, and the model can be considered stable for further analysis and inference.

Model estimation

The ARDL model was determined to be the optimum estimating technique due to the mixed nature of stationarity of the model variables and the short time series employed in this study. This is because the ARDL model is well-known in situations involving small samples and data that exhibit mixed orders of integration. Enkoro (2016) claims that the main benefit of the ARDL approach is that, with the right augmentation, it can overcome endogeneity and serial correlation issues. For the model variables, two lags were the ideal lag duration. Before creating the final ARDL model's error correction form, this was established using the ARDL framework. The table below displays the ARDL model's results in error correction form.

Table 6: Results of the estimated ARDL model

Dependent Variable: **D.(Debt to GDP)**			
Independent Variables	**Coefficient.**	**Std. Error**	**P>|t|**
ADJ Debt $_{L1}$	-0.2046304***	.0494267	0.000
	Long Run		
Primary Balance	0.1554868*	0.0787306	0.062
Real Interest Rate	0.2919845***	0.1007568	0.009
GDP growth	0.2519068	0.2977203	0.407
Real Effective Exchange Rate	1.949161***	0.4930953	0.001
Current Account Balance	-0.0772669**	0.034031	0.034
	Short run		
Debt$_{t-1}$	0.3946573***	0.1084379	0.002
D(Real interest rate)	-0.0162872	0.0152704	0.298
Real interest rate$_{t-1}$	-0.0317295**	0.0115002	0.012
D(Real Effective Exchange Rate)	-0.5245274**	0.2256006	0.030
D(Current Account Balance)	0.0169105***	0.0038951	0.000
Current Account Balance$_{t-1}$	0.0099788***	0.0028474	0.002
Constant	-1.679549***	0.4635137	0.002
R-squared = 0.8677			
Adj R-squared = 0.7920			
Root MSE = 0.0958			
Number of obs. = 34			
Log-likelihood = 39.695046			
Sample: 1988 - 2021			
ARDL(2,0,2,0,1,2) regression			

Notes: D = First difference in variable. ***, **, * Indicate significance at 1%, 5% and 10% levels respectively.
Source: Researcher's ARDL computation using secondary data

The above table's ARDL results show that, in the near term, the ratio of debt to GDP from the prior year has a beneficial impact on the amount of debt that exists now. To be more precise, if all other variables remain the same, a percentage rise in debt from the prior year causes a 0.39 percentage increase in debt from the current year. The fact that this effect is significant at the 1% level indicates that the debt-to-GDP ratio is persistent.

On the other hand, debt is negatively impacted by real interest rates in the near term, albeit this impact only becomes noticeable after a year. In particular, a percentage increase in the real interest rate after a year results in a 0.03 percentage reduction in the amount of debt. However, with time, the effect grows and becomes positive, with a percentage increase in the real interest rate translating into a 0.29 percentage increase in the amount of debt.

The results also show that a percentage increase in the real effective exchange rate usually results in a 0.52 percentage reduction in debt when all other variables are held constant. This implies that debt is negatively impacted by exchange rates in the near term. Over time, the impact increases and becomes positive; a one percent increase in the exchange rate corresponds to a 1.95 percent increase in debt.

It has been shown that there is a short-term positive correlation between the amount of debt and the current account balance. For instance, the debt increases by 0.169 percentage points in the current period and by 0.0099788 percentage points in the subsequent year when the current account balance's percentage terms grow. This beneficial effect gradually becomes negative and lowers the debt level by 0.77 with each percentage rise in the current amount.

The findings also show that primary balance has a long-term, positive impact on debt level, with an increase in primary balance of 1% translating into a 0.155 percentage increase in debt. At the 10% level, this effect is present, albeit marginally so. In contrast, it has been found that GDP growth very slightly reduces debt over the long term.

The model's constant term (-1.679549) is significant and negative, indicating that if the designated independent variables were absent, Uganda's debt level would also be negative.

Post-estimation diagnostic tests

After estimating the model, the study proceeded to carry out further diagnostic tests to determine that there were no common econometric problems.

Serial correlation test: The Breusch-Godfrey LM test for serial correlation was used in the investigation. There is *no serial association*, which is the null hypothesis for this test. The null hypothesis is rejected if the corresponding chi-square value is not significant at the 5% threshold of significance. The B-Godfrey test's chi-square value (0.462), according to the study, was not significant at the 5% level. It was therefore impossible to reject the null hypothesis. Thus, the investigation concluded that serial correlation was not an issue for the model. The results are presented in 7 below

Heteroscedasticity test: The study carried out The Breusch-Pagan test to check for the presence of Heteroscedasticity. The null hypothesis under this test is *no Heteroscedasticity*. If the chi-square value associated with this test is not significant at a 5% level of significance, then the null cannot be rejected, else it is rejected. This study observed that the chi-square value (0.30) was not significant at the 5% level. Thus the null hypothesis of the test could not be rejected. The study thus concluded that the estimated model did not suffer from heteroscedasticity. The results are presented in table 7 below

Table 7: Serial correlation and Heteroscedasticity test results

Test	lags(p)	Chi(2)	df	Prob.
B-Godfrey test	1	0.462	1	0.4966
Breusch-Pagan		0.30		0.5835

Source: Researcher's computation using secondary data

Test for Normality of residuals: The Skewness & Kurtosis test for Normality was utilized in the study to verify if the residuals in the model had a normal distribution. Normalcy is the test's null hypothesis. The null hypothesis cannot be rejected if the chi-square value, skewness, and kurtosis values are not significant at the 5% significance level. If not, it is rejected. The results are presented in table 8 below

Table 8: Skewness & Kurtosis tests for Normality results

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
r	36	0.0694	0.6840	3.74	0.1539

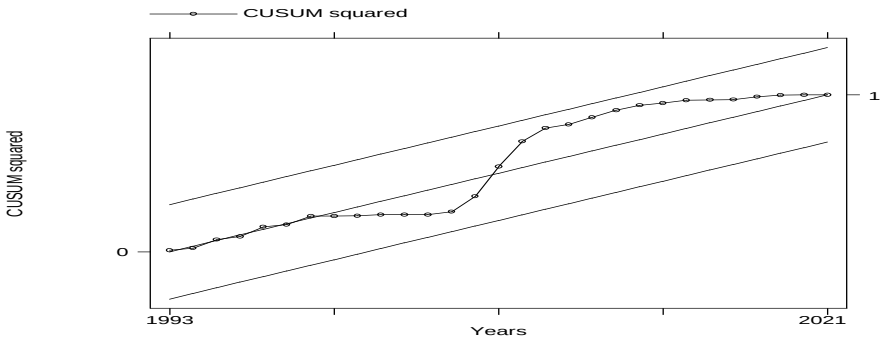
Ho: Normality. Source: Researcher's computation using secondary data

The findings show that the residuals' skewness and kurtosis tests both point to a roughly regularly distributed set of data. The non-significant p-values obtained from both tests suggest that there is no significant difference between the skewness and kurtosis of the data and those expected from a normal distribution. As a result, these tests do not provide compelling evidence to refute the model's residuals' assumption of normalcy.

Test for Model Stability

The study tested whether the estimated model was stable. The Cumulative Sum (CUSUM) test was used. This test is based on recursive regression residuals plotted against possible break points in the model within critical bounds of 5% significance. The model is stable if the CUSUM of residuals falls within the 5% critical bounds. The test results are represented in the form of a graph in the figure below.

Figure 1: The CUSUM graph



The CUSUM graph indicates that the dotted line (the cumulative sum of residuals) entirely falls within the upper and lower critical bounds over the tested study period (1993-2021). The study thus concluded that the estimated model is stable.

Discussion

Effect of primary balance on debt in Uganda

The hypothesis posits a positive relationship, and the ARDL model results support this, revealing a positive coefficient of 0.1554868 in the long run. This indicates that an increase in "Primary Balance" leads to a proportional rise in "Debt to GDP," and vice versa, assuming other variables remain constant. The results imply that a greater debt-to-GDP ratio is linked to a larger primary balance, which indicates government revenue exceeding expenditures. On the other hand, a negative primary balance (deficit) indicates that government expenditure is out of proportion to receipts, which leads to increased borrowing and an increased debt-to-GDP ratio.

In the Ugandan context, the positive relationship is attributed to persistent budget deficits, reliance on a few sectors vulnerable to global shocks, and the need for substantial funding for economic growth and development initiatives. Additionally, inefficiencies in public financial management and weak revenue mobilization further contribute to challenges in maintaining fiscal sustainability and managing public debt dynamics effectively.

Effect of real interest rate on debt in Uganda

The second aim of this study is to assess the influence of the real interest rate on debt sustainability in Uganda, hypothesizing a negative correlation. However, the ARDL model outcomes reveal a long-term positive coefficient of 0.2919845, indicating a positive connection between the "Real Interest Rate" and "Debt to GDP." Specifically, for every one-unit rise in the "Real Interest Rate," the "Debt-to-GDP ratio increases by about 0.292 units, and conversely, assuming other variables remain steady. The observed positive correlation is elucidated by the dynamics of debt financing in Uganda. A heightened "Real Interest Rate" implies increased government costs for servicing its debt. With escalating borrowing costs, the government's interest payments on outstanding debt also rise, leading to a higher proportion of the country's GDP being allocated to servicing debt obligations. Consequently, an elevated "Debt to GDP" ratio is noted with an increase in the "Real Interest Rate."

The association between the "Real Interest Rate" and "Debt to GDP" is further nuanced by macroeconomic factors and monetary policy. Central bank decisions to elevate interest rates, whether in response to inflation or to attract foreign capital, can influence government borrowing costs and contribute to alterations in the "Debt to GDP" ratio. The analysis suggests that, both in the long run and short run, a higher "Real Interest Rate" is linked to a larger "Debt-to-GDP ratio, indicating increased debt servicing costs in the long term and an immediate response to changes in interest rates in the short term.

Effect of GDP growth rate on debt in Uganda

The third objective of the research was to determine how Uganda's GDP growth affected its debt, with the corresponding hypothesis being that GDP growth improves Uganda's ability to sustain its debt. As per the findings of the ARDL model, the non-significant coefficient implies that there is no statistically significant correlation between "Debt to GDP" and "GDP Growth Rate" over an extended period. In particular, the coefficient value of 0.2519068 indicates that, under the assumption that all other independent variables remain constant, an increase of one unit in the "GDP Growth Rate" is linked to an increase of roughly 0.252 units in the "Debt-to-GDP ratio. Similarly, a drop of one unit in the "GDP Growth Rate" is equivalent to a drop of 0.252 units in the "Debt to GDP" ratio.

The absence of statistical significance implies that, in the long run, in the Ugandan context, "GDP Growth Rate" might not be a significant determinant of changes in the "Debt to GDP" ratio. The non-significant coefficient suggests that other factors, such as borrowing choices, fiscal policy, and external economic shocks, may have a greater influence on Uganda's debt levels than the "GDP Growth Rate" in explaining changes in the debt dynamics of the country.

Effect of real effective exchange rate on debt in Uganda

The study's fourth objective was to determine how GDP growth affected Uganda's debt, with the corresponding premise being that *GDP growth has a positive effect on debt sustainability in Uganda*. According to the ARDL model findings, there is a positive long-term association between "Debt to GDP" and the "Real Effective Exchange Rate." An increase in the "Real Effective Exchange Rate" is correlated with a notable upswing in the "Debt-to-GDP ratio, while a decrease in the exchange rate is linked to a significant reduction in the debt ratio, as indicated by the statistically significant coefficient of 1.949161 at the 1% level (p-value = 0.001). The emphasis on the long-term effect underscores how the real effective exchange rate continues to influence the country's debt dynamics.

While keeping other variables constant, a negative coefficient indicates that short-term variations in the real effective exchange rate adversely impact the "Debt to GDP" ratio in the current period. Put simply, for each unit increase in the short-run change of the real effective exchange rate, the "Debt to GDP" ratio decreases by approximately 0.525 units, and vice versa.

The results imply that the dynamics of the nation's debt exert both short- and long-term effects on fluctuations in the real effective exchange rate. Over time, a higher real effective exchange rate is linked to an increased debt-to-GDP ratio. This association may be attributed to various factors, such as diminished export competitiveness or currency appreciation leading to higher debt obligations denominated in foreign currencies. Short-term fluctuations in the exchange rate may swiftly and negatively impact the debt ratio, influencing debt payments and financial stability.

Effect of openness on debt in Uganda

The study's fifth objective was to determine how GDP growth affected Uganda's debt, and its related hypothesis was that *openness would help Uganda's debt sustainability*. The economic openness of a nation is measured through the current account balance. According to the ARDL model results, there exists an inverse correlation between the "Current Account Balance" and the "Debt to GDP" ratio, as indicated by the negative coefficient. Specifically, the "Debt to GDP" ratio decreases by approximately 0.077 for every unit increase in the current account balance, while keeping all other variables constant. Conversely, a one-unit decrease in the current account balance leads to about a 0.077 increase in the debt ratio.

This inverse relationship implies that a current account surplus, where a country's exports surpass its imports, is associated with a lower debt-to-GDP ratio. Conversely, a current account deficit, indicating that imports exceed exports, is correlated with a higher debt-to-GDP ratio. This pattern is attributed to how the current account balance reflects a country's net trade position and its ability to finance expenditures and investments.

A current account surplus provides additional financial resources to the country, which can be utilized to repay existing debt, invest in productive activities, or build reserves. Consequently, this contributes to a diminished debt-to-GDP ratio. Conversely, a current account deficit implies a need for external financing to cover the shortfall, potentially leading to increased borrowing and higher debt levels relative to the size of the economy, resulting in a higher debt-to-GDP ratio.

The relationship between the debt-to-GDP ratio and the current account balance changes direction when comparing the long- and short-term effects. In the short term, higher debt relative to GDP is associated with a higher current account balance, whether from the prior or present period. However, sustained current account surpluses are linked to lower levels of debt relative to GDP over the long term.
This change in effect from the short run to the long run suggests that short-term fluctuations in the current account balance may have transient implications for the debt dynamics, while sustained improvements in the trade balance over time can contribute to a more substantial reduction in the debt burden

5. Conclusions from the Study

Primary Balance demonstrates a statistically significant and positive coefficient in the long run. This finding suggests that maintaining a fiscal surplus and sound fiscal management can contribute to reducing the "Debt to GDP" ratio, indicating the crucial role of prudent fiscal policies in managing debt levels over time. Higher real interest rates are linked to greater levels of debt in relation to GDP, as the "Real Interest Rate" long-term coefficient shows a highly significant and positive coefficient. The effect of growing interest rates on public debt should be considered by policymakers, since it has the potential to increase debt loads and jeopardize long-term debt sustainability. The "Real Effective Exchange Rate" exhibits a highly significant positive coefficient over the long term, indicating a possible relationship between rising debt levels relative to GDP and falling real effective exchange rates. Policymakers should consider the influence that exchange rate fluctuations have on the costs associated with repaying debt as well as the overall sustainability of debt. Finally, in the long run, the "Current Account Balance" shows a statistically significant and negative coefficient that emphasizes the role that trade balances play in determining the dynamics of debt. Long-term current account deficits may result in greater debt, although sustained surpluses might help lower the "Debt to GDP" ratio.

Policy Recommendations

Given the significant impact of the "Primary Balance" on the "Debt-to-GDP ratio in the long run, policymakers should prioritize maintaining a fiscal surplus and prudent fiscal management. Implementing measures to enhance revenue generation, control government expenditures, and reduce budget deficits can contribute to reducing the debt burden and ensuring long-term debt sustainability. Long-term fiscal discipline and responsible fiscal policies are essential for maintaining a healthy debt-to-GDP ratio.

The substantial effect of the "Real Interest Rate" on the debt dynamics highlights the importance of interest rate management in debt sustainability. Policymakers should carefully monitor and manage interest rates to avoid significant increases in borrowing costs. Implementing measures to stabilize interest rates and promote monetary policies that strike a balance between economic growth and inflation control can help mitigate the negative impact of high-interest rates on government debt.

Although "GDP growth" does not show a statistically significant effect on the "Debt to GDP" ratio, it remains a critical factor for overall economic development. Policymakers should continue to prioritize policies that stimulate economic growth and productivity. Sustained efforts to improve the business environment, enhance infrastructure, and invest in human capital can foster economic expansion, which indirectly contributes to debt sustainability by increasing the capacity to service debt.

Policymakers should take note of the finding that a decline in the "Real Effective Exchange Rate" is linked to higher debt levels relative to GDP. It is advisable to pursue cautious foreign exchange management and exchange rate stability to lessen the impact of exchange rate volatility on debt levels. Reducing dependence on debt denominated in foreign currencies and diversifying sources of income might help mitigate the risks associated with exchange rate volatility.

The significant influence of the "Current Account Balance" on debt dynamics underscores the importance of trade balances in debt sustainability. Policymakers should strive to achieve and maintain current account surpluses, as they contribute to reducing the "Debt to GDP" ratio over time. Encouraging export-led growth strategies, promoting domestic industries, and implementing policies that enhance competitiveness in international markets can all support efforts to achieve sustainable trade balances.

Limitations and areas recommended for further research

Sample Size and Period: The study's reliance on a relatively small sample size of 34 observations covering the period from 1988 to 2021 may limit the generalizability of the findings A more extensive dataset and a lengthier time frame have the potential to offer a comprehensive understanding of the connections between variables and the dynamics of debt. Additionally, the inclusion of more recent data may capture the effects of recent economic events and policy changes.

Endogeneity and Omitted Variables: The ARDL regression approach assumes that the independent variables are exogenous, but there may be endogeneity issues where the variables affect each other. Omitted variables that are not accounted for in the model could also bias the results. Future studies could address endogeneity issues and find potential missing variables that could affect debt dynamics by utilizing sophisticated econometric techniques like panel data models or instrumental variable estimates.

Country-Specific Context: The study's analysis is based on data from a specific country (not mentioned in the provided table). As a result, the findings may be influenced by the unique economic, political, and institutional characteristics of that country. Therefore, caution should be exercised when applying the results to other countries or regions. Comparative studies across multiple countries could provide valuable insights into the generalizability of the observed relationships.

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Journal of Economics and Behavioral Studies (JEBS)
Vol. 15, No. 4, December 2023 (ISSN 2220-6140)

Female Labor Force Participation and Uganda's Economic Growth

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Abstract: This comprehensive study explores the impact of various female labor force participation indicators on Uganda's economic growth, encompassing participation rate, educational levels, and fertility rate while considering confounding factors like capital formation and inflation. Utilizing a quantitative approach and a causal relationship research design, the study employs the ARDL (3, 3, 1, 1, 1, 2) model on quarterly data from 1990 to 2021. Results reveal a significant adverse short-term causal impact of the female labor force participation rate on economic growth, with no such effect in the long term. The educational levels and fertility rate exhibit statistically insignificant impacts in both short and long terms. The findings suggest a prevailing trend of female labor contributing predominantly to labor-intensive agriculture and the informal economy, without a noticeable shift to more lucrative sectors over the long run. Additionally, the study underscores the potential for short-term economic growth through birth control measures and policies enhancing physical capital stocks, contributing to our understanding of Uganda's economic progress within the neoclassical and U-shape development frameworks.

Keywords: *Female labor force, neoclassical growth theory, U-Shape development theory, economic growth, ARDL, Uganda.*

1. Introduction

Economic theories and empirical research have argued over the necessary conditions for the economic growth of a nation (Doré & Teixeira, 2023; Fankhauser & Jotzo, 2017). None of the theories and empirical studies in growth literature have denied the role of factor inputs in influencing variations in total output. Though growth literature lays down the growth theories that can provide a framework for modeling sources of cross-country variations in growth in GDP, the existing growth theories are not explicit on analysis of the influence of gender dimensions in the labor input variable in explaining variations in the growth of output. The growth accounting, as elucidated by Romer (1986), primarily seeks to decompose overall real-output growth into factors attributed to the expansion of capital input, the growth in labor input, and the advancement in total factor productivity, commonly known as the Solow residual. This residual gauges the rise in output that cannot be accounted for by the growth in inputs.

The growth accounting approach has limitations in disaggregating labor input by gender and discerning its contribution to output growth rates. Recent growth literature has incorporated the gender element in the labor variable, considering it a driving factor for output growth. Verick (2018), for example, contends that variations in economic growth, social standards, education levels, fertility rates, and availability of childcare and other services account for the large variation in female labor market participation among nations. Scholars express concern that understanding the impact of female labor force participation on economic growth is complex and reflects changes in the economic growth trajectory (Thaddeus et al., 2022). The limited available empirical data shows mixed results regarding the causal relationship between female labor force participation (FLF) and economic growth. One group of scholars reports a U-shaped association between female labor force participation and economic growth (e.g., Tam, 2011; Lechman & Okonowicz, 2013; Olivetti, 2013; Tsani et al., 2013; Lechman & Kaur, 2015, among others), while another group suggests a positive relationship (e.g., Na-Chiengmai, 2018; Dogan and Aky€uz, 2017; Lahoti & Swaminathan, 2013; Seguino, 2009, among others). Uganda has not received much attention in this area of study.

This research aims to contribute to this subject by incorporating the U-shaped development theory and adopting and modifying the Solow-style neoclassical model and its extensions to further investigate the impact of women's labor force participation on Uganda's economic growth, utilizing quarterly data for the period 1990-2021.

2. Empirical Evidence

Effect of Female Labor Force Participation Rate on Economic Growth

Thaddeus et al. (2022) examined a sample of 42 sub-Saharan African nations using yearly data from the World Bank development indicators. The study's goal was to look into how, between 1991 and 2019, the percentage of women in the workforce affected economic development. Cointegration analytical techniques were used in the study to examine the underlying link. In the investigation, the authors used Granger causality and the Autoregressive Distributed Lag model. The results pointed to a long-term, unidirectional causal relationship between economic growth and the female labor force in Sub-Saharan Africa. The causal relationship flowed from economic growth to the female labor force.

Khaliq et al. (2017) investigated the relationship between Pakistan's female labor force participation rate and economic growth using Error Correction Modeling and Johansen cointegration tests. Time series data covering the years 1990 to 2014 were used in the study. The study's findings supported the U-shaped link theory by showing that the variables had an inverse long-run relationship.

Using a modified version of Mankiw, Romer and Weil's (1992), Mankiw, Chiengmai (2018) and the traditional Solow's growth model, Na-Chiengmai (2018) examined the hypothesis that the female labor force participation rate—a measure of the proportion of women in the labor force—has a positive impact on economic growth. The study applied the OLS approach to a cross-section of 122 countries worldwide and the Autoregressive Distributed Lag (ARDL) methodology on a set of pooled time series data for five groups of countries between 1998 and 2016. The results validated the hypothesis about the positive contribution of the female labor force to growth, showing that the coefficients of the female labor force had a positive sign and were statistically significant in nearly all cases.

Lechman & Kaur (2015) investigated, in 162 different countries, the relationship between economic growth and the proportion of women in the labor force between 1990 and 2012. The source of the data was WDI 2013. The study estimated empirical models using panel estimation techniques and looked at two different sub-samples: one with 162 nations and the other with four income classes (low-income, lower-middle-income, upper-middle-income, and high-income). In all sub-samples, the study's results supported the hypothesis of a U-shaped relationship between female labor force participation and economic growth, despite large cross-country variable effects.

According to a study by Tandrayen-Ragoobur (2011), Mauritius's rate of economic growth and the labor force participation rate of women are positively correlated. The research indicated that married females had lower labor market participation rates, negatively impacting economic growth—a reflection of the positive relationship.

Level of education of female in employment and economic growth

A study by Verena et al. (2011) on Mauritius showed a positive correlation between female education and economic growth. The study looked into the things that motivate and dissuade female to work. Utilizing data from the 2006–2008 household census and employing the logistic regression modeling for Mauritius, Verena et al. (2011) found that their findings were consistent with earlier research for developing nations, which showed that female with higher levels of education are better able to contribute their skills for useful services. The study further showed that older female participates more actively, though this effect grows at a slower rate as female get older.

Syomwene and Kindiki (2015) employed a systematic literature review approach to study and discuss the relationship between female education and sustainable economic development in Kenya to find practical solutions to Kenya's development problems. The study's two main conclusions were that: (i) female education

was one of the initiatives that could help Kenya achieve the MDGs; and (ii) female education could help Kenya achieve Kenya Vision 2030, which aims to make Kenya a newly industrializing, middle-income nation by 2030 that offers a high standard of living to all its citizens.

Oztunc et al. (2015) used panel regression analysis to examine the connection between female education and long-term economic growth in the Asia Pacific area. The study examined secondary data from Bangladesh, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, and Vietnam, spanning the years 1990 to 2010. GDP was used to evaluate economic growth, while female enrollment in primary schools served as a proxy for education. The study found that the annual growth in per capita income was significantly influenced by the number of females enrolled in primary school.

Alaoui (2016) initiated a panel study focusing on Morocco, Algeria, Tunisia, and Egypt to examine the impact of female education on economic growth. Female education was assessed based on primary, secondary, and tertiary enrollments. The study's conclusions about the impact's direction on economic growth were not entirely consistent. Notably, the study indicated that whereas enrollment in primary and secondary schools was negatively correlated with economic growth, female tertiary education had a considerably favorable impact on the expansion of the economy. The study found that subject to the abolition of all forms of gender discrimination and a strong and high-quality institutional framework, female tertiary education was a major engine of economic growth and development.

Tansel and Güngör (2012) in their study examined the gender effects of education on economic development in Turkey. The study utilized province-level data collected over four time periods (i.e. 1975-1980, 1980-1985, 1985-1990 and 1990-2000) for the 67 provinces of Turkey. Estimation was done by Pooled Robust Regression and sensitivity analysis was accomplished by running OLS and 2SLS estimators. The study's primary conclusion was that, whereas male education generally had a positive or negligible impact, female education positively and considerably affected the steady-state level of labor productivity and, consequently, an increase in production.

Fertility rate and economic growth

Fertility is known to have an impact on the relationship between female labor force participation and overall economic growth. Diverse theories have been proposed by academics to explain the demographic shift and how it relates to economic growth, and there are conflicting opinions in the literature regarding how fertility affects growth. A panel dataset of 107 nations spanning the years 1960–1985 was used by Brander and Dowrick (1994) to investigate the impact of population increase and fertility on economic growth. According to the study, although traditional resource dilution was not apparent in the data, high birth rates seemed to hinder economic growth through investment effects and maybe "capital dilution." A noteworthy finding of the study was that a decrease in birth rates had a significant positive medium-term effect on per capita income growth through labor supply or "dependency" effects.

Er (2012) conducted a study using panel data estimation with fixed effects on 187 countries worldwide, representing different income levels during the study period 1998-2008. The aim was to determine which female indicators of education, employment, health, and political factors, measured through various sub-indicators, significantly affected economic growth. The study results revealed that different measurements, such as lower fertility, increased female employment, and greater female participation in parliament, were significant factors influencing the economic growth of a country.

Using panel data from the World Development Indicators (WDI) for more than 200 countries over a 50-year period, Ranganathan et al. (2015) treated economic growth and fertility decline as endogenous factors using a simultaneous system of equations in the change variables. They achieved this by combining cross-country data with a non-linear dynamic model. The purpose of the study was to investigate how demographic shifts affect economic growth. The findings showed that, although it had an indirect effect on child mortality, the fertility rate might affect economic growth. In particular, the results showed that the fertility rate was moderately GDP-dependent and fell in low-child mortality scenarios. GDP grew when fertility rates fell, and child mortality fell as GDP increased. The results further demonstrated that, in a concurrent system arrangement, economic

growth affected the fertility rate through the intermediate variable of child mortality rather than having a direct effect on it.

Gaps identified in the reviewed literature

As a result, there is disarray in the literature review about the connection between economic growth and the rate of female labor force participation. Numerous indicators suggest that there are several connections between the rates and patterns of economic growth and women's labor force participation. The U-shaped theory is supported by some authors who find a negative association between the rate of female labor force participation and economic growth. Some scholars, however, claim that there is a positive correlation between these two characteristics. Furthermore, there is notably little data about the link under investigation, particularly in the context of Uganda. This study aims to contribute to the ongoing debate by exploring the connection between indicators of female labor force participation and Uganda's economic growth.

Theoretical Framework

The Solow-style neoclassical growth theory, which was first developed by Solow (1956) and later extended by Mankiw et al. (1992), and the U-shaped economic development theory, which was first demonstrated by Durand (1975) and popularized by Psacharopoulos & Tzannatos (1989), serve as the foundation for this study. The neoclassical growth model in the Solow school emphasizes how important capital accumulation is in determining the long-term pace of economic growth. On the other hand, as Verick (2018) points out, the U-shaped relationship theory suggests a U-shaped association between economic growth and female labor force participation.

The main idea in the neoclassical growth model is that technical progress is entirely exogenous to these models so that in reality economic growth is left unexplained (Solow and Swan, 1956), but can be accounted for in the Solow residual. The neoclassical growth model takes the following form:

$$Y(t) = A(t)K(t)^{\alpha}L(t)^{1-\alpha} \quad (1)$$

Where: Y is Income or the economy's Gross Domestic Product (GDP), A is a scaling factor or productivity parameter which reflects the state of technology, K is physical capital stock and L is the amount of labor stock in the economy.

Because of the dynamic relationship between labor and technology, the neoclassical production function is often re-stated as:

$$Y(t) = K(t)^{\alpha}[A(t)L(t)]^{1-\alpha} \quad (2)$$

In equation (2), the model now states that technology is labor augmenting and that workers' productivity depends on the level of technology.

The study aligns with the principles of neoclassical growth theory while incorporating elements from U-shaped development theory. The U-shaped theory posits that as countries undergo economic development, there is an initial decline in female labor force participation, followed by a subsequent increase. In the early stages of development, characterized by lower GDP per capita, females actively participate in economic activities, often in unpaid roles within family farms and businesses. At this initial phase, a low GDP per capita is positively correlated with a higher female labor force participation rate.

Our model incorporates the education level of female labor force participants as an extra characteristic, modeled after the neoclassical growth model extended by Mankiw, Romer, and Weil (1992), which acknowledged the importance of human capital in driving output growth. This effectively conveys the impact of female education on the increase in output. The modified version of equation (2) is then expressed as follows:

$$Y(t) = K(t)^{\alpha}\left[A(t)L_f(t)L_m(t)\right]^{\beta}H^{1-\alpha-\beta} \quad (3).$$

Where in equation (3), L_f represents female labor stock, L_m represents male labor stock, and H represents human capital, commonly measured by education level.

3. Method

Design: This study adopts a causal relationship research design. A time series multivariable regression model has been used as a tool to investigate the underlying relationships.
Data and sources: The World Bank Development Indicators Data Bank provided secondary time series data for the years 1990–2021, and the Uganda Bureau of Statistics (UBOS) provided supplementary data for this study. This study used the quadratic mean average method of converting low-frequency time series to high-frequency time series using Eviews9 to meet the recommended minimum number of time series observations of at least 50 observations for time series regressions (McCleary et al., 1980; Warner, 1998; Jebb et al., 2015). This conversion enabled the increase of time series observations from n = 32 with annual data to n = 128 with quarterly data.

Model Specification: The neoclassical growth theory, which was first developed by Solow (1956) and expanded upon by Mankiw, Romer, and Weil (1992), and the U-Shaped development theory, which was first demonstrated by Durand (1975) and made popular by Psacharopoulos & Tzannatos (1989), serve as the foundation for the empirical model for analysis in this research study.

Re-writing equation (3) in a general non-linear form, we have:

$$Y(t) = K(t)^{\alpha}\left[A(t)L_f(t)L_m(t)\right]^{\beta}H^{1-\alpha-\beta}\mu e^{u} \qquad (4).$$

In equation (4), μ represents observable factors that influence Y that are not explicitly indicated in the extended neoclassical growth model and e is the Euler's constant. The rest of the variables are defined in equation (3).

In the empirical analysis, Y is measured by GDP (*GDP*); K is measured by gross capital formation (*gkf*); L_f is measured by total female labor force participation designated by (*tflfp*), L_m is measured by total male labor force participation designated by (*tmlfp*) and H is measured by total female labor force with basic education (*feduc*).

Introducing the variable notations in the empirical model, equation (4) becomes:

$$gdp(t) = gkf(t)^{\alpha}[tflfp(t)tmlf]^{\beta}feduc^{1-\alpha-\beta}\mu e^{u} \qquad (5).$$

Letting $(1-\alpha-\beta) = \beta_3$ and taking natural logarithms in equation (5) while indicating a time indicator conventionally, we get a multivariate linear regression as follows:

$$lngdp_t = \alpha\, lngkf_t + \beta_1\, lntflfp_t + \beta_2\, lntmlfp_t + \beta_3\, lnfeduc_t + ln\mu + u_t lne \qquad (6)$$

To avoid possible omitted variable bias, the study is based on empirical literature to further introduce additional variables in the empirical model such as total fertility rate (*fert)* and inflation, which are not explicitly indicated in the neoclassical growth model and its extensions and are not explicitly represented in the U-shaped development theory, but which have been linked as important factors that influence economic growth as provided by empirical evidence. These additional factors, together with a constant, are captured by μ in equations (5) and (6).

Incorporating the additional growth factors in our analysis, the empirical multiple linear regression for analysis is then expressed as:

$$lngdp_t = \delta + \alpha\, lngkf_t + \beta_1\, lntflfp_t + \beta_2\, lntmlfp_t + \beta_3\, lntflfeduc_t + \beta_4\, fert_t + \beta_5\, \mathrm{inf}_t + u_t \qquad (7).$$

Where:
$lngdp_t$ is the natural logarithm of GDP at time t; $lngkf_t$ is the natural logarithm of gross capital formation at time t,$lntflfp_t$ is the natural logarithm of total female labor force participation at time t; $lntmlfp_t$ is the natural logarithm of total male labour force participation at time t; $lntflfeduc_t$ is the natural logarithm of the total female labor force with basic education at time t; $fert_t$ is the average total fertility at time t; inf_t is the rate of inflation at time t; u_t is the error component in the time series empirical model; and δ is a constant.

Due to concerns about the high multicollinearity of the male labour force participation with female labour force participation and gross capital formation (Refer to Table 4), the variable male labour force was excluded from the model and the final empirical model became:

$$lngdp_t = \delta + \alpha\ lngkf_t + \beta_1\ lntflfp_t + \beta_2\ lntflfeduc_t + \beta_3\ fert_t + \beta_4\ \inf_t + u_t \quad (8)$$

Data Analysis

The study employs varied data analytical techniques, some of which explore the key descriptive statistics on model variables, others explore the time series data behavior for instance the unit roots tests, multicollinearity test and cointegration tests, and the other techniques are robustness tests after regression analysis such as the serial correlation test and normality of residuals test.

***Model estimation techniques*:** Based on the unit root test results and the cointegration test results, this study employed the autoregressive distributed lags (ARDL) model to estimate the regression coefficients of the empirical model. The ARDL has been deemed appropriate because it accommodates series with mixed orders of integration, I (1) and I (0) variables under the conditions of the presence of cointegration. In addition, the ARDL model allows estimation with the presence of both the endogenous and exogenous variables in the model, thus the model controls for endogeneity concerns as the assumption of no autocorrelation in the error component is maintained (Pesaran et al., 2021). In fitting the ARDL model, the "logarithm of GDP" and the logarithm of gross fixed capital formation are treated as endogenous variables while the rest of the variables, namely: the "logarithm of female labour force participation", "logarithm of the female labor force with basic education", fertility" and "inflation" are treated as exogenous variables.

4. Results

The descriptive statistics on all model variables

The study generates the key descriptive statistics on all the model variables in their original units of measurement. Given that the model variables in this study are quantitative and continuous, the key descriptive statistics of interest are the mean, minimum, maximum values as well as the standard deviation and number of observations for each of the model variables. The estimates of the descriptive statistics are displayed in Table 1 as indicated below.

Table 1: Descriptive statistics on all model variables (1990q1-2021q4)

Variable name	Obs	Mean	Minimum	Maximum	Std. Dev.
Gross Domestic Product (current US$, billion)	128	16.68	2.83	41.74	12.69
Gross capital formation (current US$, billion)	128	4.05	0.45	10.13	3.46
Female labour force participation (count)	128	4,938,541	2,804,985	8,640,011	1,633,561
Male labour force participation (count)	128	5,303,764	3,154,765	8,780,223	1,583,231
Female labour force with basic education	128	3,288,992	1,039,669	4,496,817	1,205,264
Fertility, total(births per woman)	128	6.19919	4.54625	7.06403	0.79271
Inflation, GDP deflator (annual %)	128	11.51991	-5.99676	90.35822	17.8866

Source: Author's compilation

The descriptive statistic in Table 1 indicates over the study period, the mean gross domestic product was approximately $.16.7 billion with a standard deviation of approximately $12.7 billion. The maximum gross domestic product recorded over the study period was approximately $ 41.7 billion while the minimum Gross Domestic Product recorded over the study period was approximately $ 2.83 billion. It is observed that Uganda's Gross Domestic Product recorded standard deviation, which was not far from the mean value, giving a coefficient of variation of approximately 76 percent which is higher than the acceptable level of 10 percent.

This result suggests high variability in the gross domestic product over the study period. The high variability in Uganda's GDP could be explained by various growth episodes Uganda has registered over the study period.

The descriptive statistics indicate that the mean gross capital formation over the study period was approximately $ 4.05 billion with a standard deviation of approximately $ 3.46 billion, the maximum gross capital formation was approximately $ 10.1 billion and its minimum was approximately $ 0.45 billion.

The mean female labor force participation stock was approximately 4.93 million people (which was less than the mean male labor force participation stock of 5.30 million people), the maximum female labor force participation stock was approximately 8.64 million people (less than the maximum male labor force participation stock of 8.78 million people) while the minimum female labor participation stock was approximately 2.80 million people.

The descriptive statistics in Table 1 further indicate that the mean female labor force with basic education was approximately 3.29 million people, the maximum female labor force with basic education was approximately 4.50 million people while the minimum female labor force with basic education was approximately 1.04 million people.

The average fertility per woman was 6 live births, the maximum fertility was 7 live births while the minimum fertility was 4 live births. Inflation (annual change in GDP deflator) averaged 11.52 percent over the study period, the maximum inflation rate was 90.36 percent while the minimum inflation rate was -5.99 percent.

Unit root test results on all model variables

The study employed the Augmented Dickey-Fuller (ADF) test to assess the stationarity status of the time series variables and determine the order of integration in the empirical model. In the ADF unit root test, the selection of lag order was guided by Schwarz's Bayesian Information criteria (SBIC). Table 2 provides a summary of the unit test results.

Table 2: Unit root test results

	Variable in Levels			Variable in first Difference			Order of Integration
Variable	**Lags**	**ADF Z(t) statistic**	**Prob. for Z(t)**	**Lags**	**ADF Z(t) statistic**	**Prob. for Z(t)**	
Logarithm of GDP	2	-0.84	0.8066	4	-3.46***	0.009	I(1)
Logarithm of gross capital formation	2	-0.89	0.7922	4	-3.55***	0.0067	I(1)
Logarithm of female LF participation	2	2.67	0.9991	1	-2.26**	0.0129	I(1)
Logarithm of male LF participation	2	-0.80	0.9661	1	-3.62**	0.0285	I(1)
Log. of female LF with basic education	2	-1.85	0.3563	4	-3.94***	0.0018	I(1)
Fertility	3	1.07	0.9950	3	-3.75**	0.0194	I(1)
Inflation	2	-5.13***	0.0000	-	-	-	I(0)

Source: Author's compilation. **p<0.05; *** p<0.01

According to Table 2's ADF unit root results, the estimated Z(t) statistics do not reject the null hypothesis that these variables are non-stationary at the 5 percent significance level for all variables except inflation. However, when these variables are first differences and the ADF unit root test is applied to them, the estimated Z(t) statistics reject the null hypothesis that these variables become stationary at the 5 percent significance level. For the variable "inflation", the estimated Z (t) statistic rejects the null hypothesis of having a unit root in levels at a 5 percent level of significance. These unit root test results suggest that the variable inflation is integrated of order zero, I (0) while the rest of the variables are integrated of order one, I (1). The mixed orders of integration of the time series variables imply the choice of model estimation procedure. For instance, under

conditions of cointegrating relationship, mixed orders of integration of the time series variables suggest that the ARDL could be the most appropriate estimation procedure to adopt.

Cointegration test results

The study utilizes the Johansen and Juselius cointegration test (Johansen & Juselius, 1990). This study's methodology makes it possible to estimate and provide the statistics needed to determine how many cointegrating equations there are in a vector error correction model (VECM) for the given relationship in the cointegration test. Schwarz's Bayesian information criteria (SBIC) serve as a reference for lag selection in the cointegration test. The analysis counts the number of cointegrating equations, 'r,' in a VECM that represents the underlying relationship using the "trace" statistic. There are only 'r' cointegrating relations, according to the null hypothesis of the trace statistic. Table 3 presents a summary of the Johansen cointegration test results, as follows:

Table 3: The cointegration test results

Maximum rank	Eigen Value	Trace statistic	Critical value (5%)
0	-	128.5752	94.15
1	0.29440	84.6389	68.52
2	0.21995	53.3411	47.21
3	0.18456	27.6338*	29.68
4	0.12452	10.8774	15.41
5	0.05616	3.5954	3.76
6	0.02813	-	-

Source: Author's compilation.

Table 3 displays the results of the cointegration test. The trace statistic indicates that there are more cointegrating relations in the empirical model than r = 3, which refutes the null hypothesis. This means that the model has four cointegrating relations, which the cointegration test discovers. The conclusion from the cointegration test conducted is that the Johansen test detects the presence of cointegration in the model being estimated.

The empirical existence of cointegrating linkages has implications for estimation. The cointegration-based estimate method explicitly used in this work is the autoregressive distributed lag (ARDL) model, which considered model variables with mixed orders of integration.

Multicollinearity checks among the independent variables in the model

The study checks for multicollinearity among the explanatory variables in the empirical model which is to be estimated using regression analysis. Thus, the multicollinearity check is conducted on the log-transformed variables (except inflation). A correlation coefficient of 0.8 in absolute terms would be indicative of highly collinear regressors (Gujarati, 2009). Table 4 shows the correlation matrix which indicates the estimated simple correlation coefficients, alongside their respective probability values, between the explanatory variables in the empirical model.

Table 4: Correlation matrix among the independent variables in the empirical model (P-values in parentheses)

Variable	1	2	3	4	5	6
Logarithm of gross capital formation	1.000000 -----					
Logarithm of female labour force participation	0.7536*** (0.0000)	1.000000 -----				
Logarithm of male	0.8560***	0.8999***	1.000000			

labour force participation	(0.0000)	(0.0000)	-----			
Logarithm of female with basic education	0.7428***	0.7334***	0.8351***	1.000000		
	(0.0000)	(0.0000)	(0.0000)	-----		
Fertility	-0.9022***	-0.9684***	-0.7669***	-0.681541	1.000000	
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	-----	
Inflation	-0.2215**	-0.304101	-0.302455	-0.368648	0.249413	1.000000
	(0.0120)	(0.0005)	(0.0005)	(0.0000)	(0.0045)	-----

Source: Author's compilation. ***p<0.01; **p<0.05; * p<0.1
1=Logarithm of gross capital formation; 2= Logarithm of female labor force participation; 3 = Logarithm of male labor force participation; 4= Logarithm of female labor force with basic education; 5= Fertility; 6 = Inflation.

The estimated pairwise correlation coefficients between the independent variables, as summarized in Table 4, indicate that the variable "logarithm of male labour force participation" is highly linearly correlated with variables; logarithm of gross fixed capital formation (r = 0.8560, p = 0.0000), logarithm of female labour force participation (r = 0.8999, p = 0.0000) and logarithm of a female with basic education (r = 0.8351, p = 0.000). This high correlation implies that the inclusion of the variable "logarithm of male labour force participation" together with the logarithm of gross fixed capital formation, the logarithm of the female labour force and the logarithm of a female with basic education in the same linear regression model would cause high multicollinearity in the model and this may jeopardize the efficiency of model estimates.

By estimating the VIFs of the independent variables, the study conducted additional analysis regarding the degree of linear relationships among the independent variables. Following the OLS estimation, the VIFs were estimated. Table 5 shows a summary of VIFs when all the model-independent variables are included and Table 6 shows a summary of VIFs when one of the model-independent variables (i.e. Logarithm of the male labor force) is excluded.

Table 5: Variance Inflation Factors of the model-independent variables (all the independent variables included)

Variable Name	VIF	1/VIF
Logarithm of male labour force participation	140.30	0.007128
Logarithm of female labour force participation	123.76	0.008080
Logarithm of gross capital formation	14.08	0.071023
Logarithm of female with basic education	12.46	0.080257
Fertility	2.28	0.438596
Inflation	1.29	0.775194
Mean VIF	**40.03**	

Source: Compiled by the author

It can be observed that the VIFs in Table 5 are exceedingly high for variables: Logarithm of male labor force participation, the Logarithm of female labour force participation, the Logarithm of gross capital formation and the logarithm of a female with basic education. For each of these independent variables, the estimated VIF well exceeds the maximum acceptable level of the VIF of 10. Additionally, the mean VIF (Mean VIF = 40.03) is more than 10. The VIF summary estimated in Table 6 indicates that the "Logarithm of male labor force participation" has the highest VIF (VIF = 140.30), which is exceedingly above the unacceptable level of VIF. When the "logarithm of male labor force participation" is excluded among the independent variables and VIF is re-estimated, the following results show up:

Table 6: Variance Inflation Factors of the model-independent variables (Logarithm of male labour force participation excluded)

Variable Name	VIF	1/VIF
Logarithm of female labour force participation	9.74	0.102669
Logarithm of gross capital formation	8.57	0.116686
Logarithm of female with basic education	4.62	0.21645

Fertility	1.25	0.8
Inflation	1.05	0.952381
Mean VIF	**5.05**	

Source: Author's compilation

In Table 6, the estimates of the VIFs of the individual independent variables are less than 10. The mean VIF (Mean VIF=5.05) is now in acceptable range. In consideration of the high linear correlation caused by the "logarithm of male labor force participation" with other independent variables in the model and its very high VIF, this study excluded it (i.e. the study excluded, the variable "logarithm of male labor force participation") from the final model (equation 8) for estimation on concerns of causing multicollinearity problem in the empirical model.

Regression estimates

The variables in the empirical model have varied orders of integration, and the relationship being modeled has cointegration; these findings lead the study to employ the autoregressive distributed lag (ARDL) model for model estimation. I allowed SBIC to choose the lags in the ARDL model for both the autoregressive terms in the dependent variable and the lagged terms in the independent variables. The ARDL model may show the adjustment parameter/equilibrium error as well as the short- and long-term regression coefficients. Table 7 displays the summary of ARDL estimates, which includes estimates of equilibrium error, short-run and long-run coefficients, their respective standard errors and probability values as well as relevant post-estimation diagnostic test results.

Table 7: ARDL (3, 3, 1, 1, 1, 2) regression estimates

	Coef.	Std. Err.	probability
Adj. parameter (ECT_{t-1})	-0.16407***	0.037424	0.000
Long-run Coefficients			
(Logarithm of gross capital formation)$_t$	0.76281**	0.438594	0.028
(Logarithm of female LF participation)$_t$	0.55721	0.707672	0.433
(Logarithm of female LF with basic education) $_t$	0.17997	0.151356	0.237
(Fertility) $_t$	0.01879	0.228436	0.935
(Inflation) $_t$	-0.00004	0.001022	0.966
Short-run Coefficients			
Δ(Logarithm of GDP) $_{t-1}$	0.59104***	0.083464	0.000
Δ(Logarithm of GDP) $_{t-2}$	0.23611***	0.085301	0.007
Δ(Logarithm of gross capital formation)$_t$	0.10474**	0.047994	0.031
Δ(Logarithm of gross capital formation)$_{t-1}$	-0.0993*	0.053725	0.068
Δ(Logarithm of gross capital formation)$_{t-2}$	-0.10826**	0.053493	0.046
Δ(Logarithm of female LF participation) $_t$	-5.98783**	2.390460	0.014
Δ(Logarithm of female LF with basic education) $_t$	0.09918	0.094218	0.295
Δ(Fertility)$_t$	-1.09043**	0.444616	0.016
Δ(Inflation)$_t$	0.00176***	0.000289	0.000
Δ(Inflation)$_{t-1}$	-0.00124***	0.000333	0.000
Constant	-0.28616	2.215683	0.897
Diagnostics			
Adj. R-squared = 0.7617			
Ramsey RESET test for omitted variables			
Ho: The Model has no omitted variables			
Prob > F = 0.3344			
Pesaran, Shin and Smith (2001) bounds test			
Ho: No level of relationship			
prob > t for I(0) variables = 0.006			
prob > t for I(1) variables = 0.030			
Breusch–Godfrey LM test for autocorrelation			

Ho: No autocorrelation in the fitted residuals
Prob > chi2 = 0.112
Jarque-Bera normality test
Ho: The fitted residuals are normally distributed
Prob > chi2 = 0.227

Source: Compiled by the author after ARDL estimation. **p<0.05; *** p<0.01

***Explanatory Power of the estimated model*:** The ARDL (3, 3, 1, 1, 1, 2) in Table 7 regression estimates indicate an explanatory power of the fitted regression, as measured by the adjusted R-Square, of approximately 0.76, implying that the fitted ARDL (3, 3, 1, 1, 1, 2) provided approximately 76 percent explanatory ability. This study considers this as a commendable explanatory power of the estimated egression where the included explanatory variables jointly explain up to 76 percent of what accounts for variations in the logarithm of gross domestic product for Uganda.

***Omitted variables test*:** Under the null hypothesis that the estimated model has no omitted variables bias, the F-statistic from the RAMSET Reset omitted variables test does not reject the null hypothesis because its corresponding probability value is greater than the 0.05 significance level (Prob > F = 0.3344). The implication is that the estimated ARDL (3, 3, 1, 1, 1, 2) model does not suffer from the omitted variable bias.

***No level relationship test*:** After model estimation, the study conducted the Pesaran, Shin, and Smith (2001) bounds test under the null hypothesis that there is no level relationship model for I (0) and I (1) variables respectively. Results in Table 4.5 indicate that the estimated t-statistics reject the null hypothesis at a 5 percent level for both I (0) and I (1) variables respectively [prob > t =0.006 for I(0) variables and prob > t = 0.030 for I (1) variables] , confirming the presence of cointegration between the logarithm of gross national product and I (0) and I (1) variables.

Autocorrelation test: The Chi-square statistic from the Breusch–Godfrey LM test for autocorrelation does not reject the null hypothesis of no autocorrelation in the residuals produced from the estimated ARDL (3, 3, 1, 1, 1, 2) model. This is because the Chi-square probability (p = 0.112) exceeds the 0.05 significance level. This result suggests that the residuals from the estimates regression are not autocorrelated which renders the estimates consistent.

Normality of the residuals test: Under the null hypothesis that the estimated residuals are normally distributed, the Chi-square statistic produced from the Jarque-Bera normality test does not reject the null hypothesis at a 5 percent level of significance (p> Ch2 = 0.227). This result suggests that the ARDL (3, 3, 1, 1, 1, 2) estimates are valid for statistical inference.

The estimated coefficient of the error correction

The ARDL (3, 3, 1, 1, 1, 2) in Table 4.7 regression estimates indicate that the estimate of the error correction term or the adjustment parameter is negative and statistically significant at 5 percent testing level (Coef. of ECT_{t-1} is -0.16407, p=0.000). The negative sign is consistent with a priori expectations. The statistical significance shows that the model converges to its long-run equilibrium value, which is further evidence of the presence of cointegration in the model. This result thus suggests that there is the presence of a long-run causal relationship in the model.

The effect of the female labor force on Uganda's economic growth

The variable "female labor force participation in employment" has been used as a proxy for the Female labor force participation rate. The short-run regression estimates indicated a negative and statistically significant coefficient on the logarithm of female labor force participation while the long-run regression estimates indicated a positive and statistically insignificant coefficient on the logarithm of female labor force participation. This result suggested that the rate of female labor force participation in employment has a significant causal effect on Uganda's economic growth in the short run but does not have a long-run causal effect.

We urge that the negative and statistically short-run regression coefficient on the female labor force participation could be explained by a number of factors: firstly, the disaggregation of the labor stock input into the components of the female and male labor force could have made the disaggregated variables to have a negative relationship with total output, arising from the possibility of "poorly measured" labor input variable due to disaggregation; secondly, borrowing from the rudiments of the U-shape theory of development, the negative coefficient on female labor force participation could be consistent with the stylized argument that at the initial stages when a country is struggling to grow (say in the short run), female mainly work in subsistence agriculture or home-based production whose output is not captured in national accounting. As a country develops, economic activity shifts from subsistence agriculture to industry. But in Uganda's context, possibly more male labor force as opposed to female labour force get employed in the industrial sector, as more female remain and are more engaged in home-based subsistence activities (Verick, 2014). In the medium term, as the country exhibits some structural transformation and as more female are engaged in subsistence, growth emerges from other factors other than increased female labor force participation in employment. The negative causal effect of female labor force participation on growth in GDP has been reported in other related studies (e.g. Olivetti, 2013; Tsani et al., 2013; Lechman & Kaur, 2015; Khaliq et al., 2017) whose study results showed that the coefficients of the female labor force had a negative sign and was statistically significant in almost every case, confirming the hypothesis of the negative effect of the female labor force on growth.

The effect of the level of education of female in employment on Uganda's economic growth

Due to a lack of comprehensive education statistics on the Ugandan labor force, this study employed the stock of females in the labor force with basic education (female working-age population with basic education) as a proxy for female education. According to the "Education and Mismatch Indicators Database" (EMI) (2023), basic education includes primary education or lower secondary education by the International Standard Classification of Education. The study's findings showed that the variable "logarithm of female labor force with basic education" had an estimated coefficient that was positive in the short and long terms, and statistically insignificant at the 5 percent significance level. This outcome is consistent with the null hypothesis that was put to the test. The results show that there is no long-term or short-term impact of the proportion of low-educated female labor force participants on Uganda's economic growth. Based on these findings, the study concludes that Uganda's economic growth is unaffected by the proportion of female labor force participants with only a primary or lower secondary education. The study applies the positive sign on the coefficient and attributes the "statistical insignificance" to data problems: first, it was only data on a female in the labor force with basic education that was available for the period under study- there were quite many missing observations on other education levels in the data banks. Thus "female education in the labor force with basic education" could have been a poor proxy for the female level of education that made the coefficient statistically insignificant. Additionally, Uganda is still struggling to meet sustainable development goal number four of "ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all". There are still gender disparities in terms of access to education as well as employment in Uganda. Female/Girl children are a more vulnerable gender. Though, Uganda recognizes that education is crucial for both building human empowerment and delivering economic progress, there are still challenges that inhibit human capital development, particularly female which may have a detrimental effect on the overall growth and development of Uganda. The Office of the Prime Minister (2020) outlines poor quality and efficiency of primary education and limited systemic capacity in the education sector as some of the challenges. Consequently, labor force attainment of basic education perhaps by both genders may still have no or limited effect on Uganda's economic growth.

The findings from this study do not tally with the findings of related studies, for instance results from this study conflict with the findings of Oztunc et al. (2015) who found that female education as measured by female primary school enrollment was a significant factor for annual per capita income growth in the Asia Pacific region. Nevertheless, a study by Alaoui (2016) in Morocco, Algeria, Tunisia and Egypt found that female education as measured by primary and secondary female school enrolments was negatively linked to economic growth.

The effect of fertility on Uganda's economic growth on Uganda's economic growth

The study's estimates showed that, in the short term, there was a negative and statistically significant coefficient on the fertility variable, and, in the long term, there was a positive and statistically insignificant

coefficient. According to these estimations, the fertility rate has no long-term impact on Uganda's economic growth but has a short-term, negative, and large causal influence. Theoretical literature demonstrates how fertility affects female labor force participation, which in turn influences economic growth. Consistent with the theoretical argument, it's noticed that the signs on the short-run and long-run coefficients on the female labor force participation and fertility variables respectively match. The negative short-run causal effect of fertility on Uganda's economic growth could be explained by the fact that many of the employed young female who have given birth tend to be given short-term maternity leave from employment which temporarily reduces the total labor supply. The same effect is observed even in informal employment where the female who is due to give birth withdraws labor temporarily. The temporal/short-run reduction in labor supply, as more working female temporarily get out of active labor on maternity leave, could have a negative effect on the output of goods and services, and this could bring about a negative effect on aggregate output. As maternity leave is over, breastfeeding mothers return to employment, but as it was with the female labor force in employment, they will have an insignificant effect on overall output. This renders the high fertility to have a negative short-run effect on aggregate supply and an insignificant influence on GDP growth in the long run.

In terms of short-run effects, findings from this study are consistent with the findings of Brander and Dowrick (1994) who found that high birth rates appeared to reduce economic growth, attributing it to investment effects and "capital dilution". This study's findings also concur with the findings of Er (2012) who concluded from his study findings that less fertility was significant in influencing economic growth.

5. Conclusion

Based on the statistically significant coefficients, and the study objectives, estimates from the ARDL (3, 3, 1, 1, 1, 2) regression model indicate that female labor force participation rate in the employed female labor force has a significant negative short-run causal effect but does not show any long run effect on Uganda's economic growth; the level of female education in the employed female labor force has no short run and long run causal effect on Uganda's economic growth while the female fertility rate has negative short-run causal influence but shows no long-run causal effect on Uganda's economic growth.

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Journal of Economics and Behavioral Studies (JEBS)
Vol. 15, No. 4, December 2023 (ISSN 2220-6140)

The Impact of Strategy Implementation on the Performance of Ugandan State Agencies: A Quantitative Study

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Abstract: This study examines how strategy implementation affects the performance of Ugandan state agencies. It conceptualizes strategy implementation as operationalization and institutionalization and measures performance by efficiency and effectiveness. This study used a cross-sectional design with a standardized questionnaire to interview 160 state agencies. Respondents included the CEO/Managing Director, Deputy/Assistant CEO, Corporation Secretary, and Heads of Department from each agency's top management team (TMT). Each agency had at least three TMT members participate in the online survey, which was chosen because of COVID-19 restrictions. The data analysis methods were factor, descriptive, and multilinear regression analyses. This study adhered to the ethical principles of informed consent, confidentiality, and anonymity. Ugandan state agencies perform better when implementing their strategies effectively. Statistical analysis reveals that institutionalization is a key driver of performance outcomes, with a positive and highly significant coefficient ($p = 0.000$). Conversely, operationalization exhibits a limited correlation with performance, with a positive but negligible coefficient ($p = 0.140$). These results emphasize the importance of matching the strategy to the internal climate of a company. This study makes a significant contribution to the field of strategic management, especially in the public sector, with a primary focus on the operations of Ugandan state agencies. This groundbreaking research explores this relationship in a developing country. It methodically examines the profound effects of executing various strategies on these entities. This study contributes to the literature on strategic management in the public domain. The insights and recommendations derived from this study are valuable for professionals and policymakers involved in creating and implementing strategic plans in the public sector. This study offers practical and theoretical contributions to strategy implementation and performance in the public sector context. This finding suggests that state agency managers and policymakers should foster a supportive culture, enhance leadership skills, facilitate communication channels, allocate adequate resources, and adapt to environmental changes to improve strategy execution and outcomes. It also adds to the literature on strategic management in the public sector context, especially in developing countries.

Keywords: *Strategy Implementation, Organisational Performance, Ugandan State Agencies, Public Sector Organisations*

1. Introduction

Strategy implementation translates strategic plans into actions and results, affecting how well a strategy achieves organizational goals and performance. This crucial stage of strategic management is complex and challenging, especially for public sector organizations facing dynamic challenges and various obstacles and barriers (O'Regan & Ghobadian, 2004; Bryson et al., 2014; Njoroge, 2015; Genc, 2017; Mbogo, 2022). Public sector organizations often fail to execute their strategies effectively, leading to poor outcomes (Azhar et al., 2013; Seotlela & Miruka, 2014). Previous research on this topic has mainly focused on private sector organizations in developed countries using qualitative or case study methods that limit generalisability and comparability (Alshaher, 2013; Elbanna et al., 2015). There are few empirical and thorough studies on the performance of public sector organizations in developing countries with uncertain and volatile environments regarding strategy implementation (Mintzberg et al., 2000; Bryson et al., 2014; Černiauskienė, 2014; Pollanen et al., 2016; Elif, 2022).

An act of parliament or a statutory instrument establishes state agencies in Uganda as public sector organizations to perform specific functions or services for the public good (Mouzas, 2006; the Republic of Uganda, 2019). These include corporations, authorities, commissions, boards, councils, institutes, and funds. State agencies must align their strategic plans with Uganda's National Development Plan and Vision 2040 (Republic of Uganda 2019). According to Tumusiime (2015), state agencies in Uganda have not achieved the necessary level of performance because they have consistently fallen short of the performance targets. Although state agencies receive funding from consolidated funds to conduct their primary function of providing services, there are no known studies conducted in Uganda that have examined the overall performance of these agencies. According to Basheka et al. (2017), the transition from planning to strategy execution and assessment presents external obstacles to Ugandan state institutions. The objective of this study is to ascertain how the execution of strategies affects the performance of Ugandan state agencies. The main study question is how strategy implementation affects state agency performance in Uganda.

The theory, strategy execution, and performance literature are reviewed in the following section, along with recommendations for the conceptual framework and hypotheses. This methodology is discussed in the following section. The data analysis results are presented and interpreted in the fourth section. The findings, their implications for theory and practice, recommendations, limitations, and potential directions for future research are discussed in the next section.

2. Literature Review

Theoretical Review

This study applies the Dynamic Capabilities Theory (DCT) by Teece et al. (1997), which argues that management trends affect the development and execution of strategies. The DCT posits that top management teams (TMTs) need high skills and experience to define, formulate, and implement strategies that create value. Dynamic capabilities are organizational routines that enable TMTs to modify, integrate, and recombine their assets in response to changing environments (Eisenhardt & Martin, 2000). They also allow firms to coordinate, shape, and reconfigure their internal and external resources to adapt to environmental changes (Teece et al., 1997). These capabilities help firms gain and sustain a competitive advantage by being agile, responsive, and proactive in changing markets (Eisenhardt & Martin, 2000; Clulow et al., 2003). Dynamic capabilities, along with the available resources, support firms in achieving their strategic objectives through effective planning and implementation.

Opponents argue that while this theory highlights the dynamism of resources and capabilities, it ignores situations such as the idea of changeable co-arrangements, which could improve the execution of strategies (Chathoth, 2002). Successful strategy implementation depends on TMT capabilities and resource efficiency, including processes, systems, and demand impacts. Understanding market dynamics and establishing efficient processes is essential for swift strategy execution (Barreto, 2010). Consequently, this leads to improved strategy-implementation processes.

Hansen et al. (2004) argue that how a company utilizes its assets is as important as the assets themselves. They contend that simply possessing capabilities does not guarantee superior Organisational performance, but rather how TMTs utilize these capabilities to achieve set targets and objectives. The framework explores the sources and strategies of value creation by small businesses operating in rapidly evolving technological environments (Teece et al., 2008). To improve performance, companies are said to continuously create and reconfigure their dynamic capabilities in response to shifting external conditions, as per DCT (Wang & Wang, 2017). This study investigated the effect of strategy execution on the performance of Ugandan state agencies using theoretical predictions of the DCT.

Definition of Strategy Implementation

The execution of strategy has preferably become very troublesome over its definition, and thus there is a requirement for top administration to consider the firm's essential planning, strategy content, and execution process (Håkonsson et al., 2012). Slater et al. (2010) define strategy implementation as the process of effectively conducting and materializing planned courses of action and strategic initiatives to attain a specific objective. It involves aligning the organization's resources, structures, processes, culture, and people with the chosen

strategy. Strategy implementation is the process of executing strategies within resource and time constraints to achieve objectives (Shah, 2005). According to Pride and Ferrell (2003), this is the main method of implementing strategies.

Strategy implementation has various explanations from diverse researchers from different perspectives. Strategy implementation is understood by researchers who specialize in the discipline of strategic management as the execution of plans and procedures to fulfill the expectations and plans of organizations (Njoroge, 2015; Genc, 2017). Strategy implementation involves breaking down the organizational strategic plan into actionable plans, communicating the strategies within the processes, and establishing strategic oversight of the organization (Njoroge, 2015). It is also explained as the process of putting strategies and policies into action (Sorooshian et al., 2010).

Strategy implementation encompasses both the institutionalization and operationalization of the strategic plan, requiring the effective utilization of methods to integrate and assimilate the plan. McKinsey's 7 model is the most widely implemented model for strategy institutionalization because it assesses the success and efficiency of implementation activities (Kirui, 2016). However, strategy operationalization involves adopting a realistic approach to guarantee that the blueprint is accomplished (Machuki et al., 2012). Operationalization requires establishing deadlines, specifying the tasks, and methods to perform them. Strategy implementation involves the application of organizational frameworks, monitoring mechanisms, and guiding principles to effectively execute strategies, thereby enhancing overall performance (Nyamwanza & Mavhiki, 2014).

Strategy implementation is a dynamic and holistic procedure that converts schemes and tactics into execution to achieve specified organizational objectives (Jalali, 2012). The effective implementation of strategies necessitates the understanding and collaboration of each member of the organization (Obiero & Genga, 2018). According to this study, implementing a strategy is an integrated, initiative-taking process that involves systematization, operationalization, and strategic planning.

Definition of Organisational Performance

According to Oketch et al. (2020), all organizations strive for optimal organizational performance. However, defining what exactly constitutes organizational performance remains a contentious issue among key strategic circles and researchers, as Kasomi (2015) highlighted. Organizational performance is a crucial concept in strategic management research that has attracted a lot of attention from academic academics and practicing managers, claim Mkalama and Machuki (2019). Richard et al. (2009) point out that most people do not accept a clear-cut definition of organizational performance. Organizational performance, according to Ricardo and Wade (2001), is the capacity of an organization to meet its goals and objectives by taking advantage of opportunities, overcoming obstacles, and leveraging its strengths. Organizational performance was defined by Javier (2002) as the capacity of an organization to deliver results in areas chosen in connection to a goal. The ability of an organization to achieve and meet its objectives while efficiently employing its limited resources is referred to as its performance (Griffins, 2006). Researchers continue to characterize performance differently, while hierarchical specialists continue to view it as a hostile topic.

Scholars have adopted different approaches to conceptualizing and operationalizing organizational performance. Performance has been measured using a variety of criteria, particularly in organizations with diverse operations (Kennerley & Neely, 2002). Organizational performance has been conceptualized using either money-related or non-monetary concepts for objective evaluations (Richard et al., 2009). Financial, marketing, operational efficiency, and human resources are among the most frequently employed performance metrics (Lebans & Euske, 2006). The triple bottom line (Elkington, 1997), sustainable balanced scorecard (Hubbard, 2009), and balanced scorecard (Kaplan & Norton, 1992) are currently in use because of the increased focus on how organizations carry out their operations. (Muraga, 2015) proposed that OP refers to the organization's competence, significance, efficacy, and financial stability. According to Kennerley and Neely (2002), performance evaluations should take action proficiency and effectiveness into account. Mouzas (2006) used the terms effectiveness and efficiency to conceptualize the performance of state agencies in Uganda. According to Lusthaus et al. (2002), academics have looked at performance as being related to efficacy and efficiency. Effectiveness, according to Heilman and Kennedy-Phillips (2011), is useful in assessing the progress made toward achieving goals and fulfilling missions. According to (Nalwoga & Dijk, 2016), effectiveness

encompasses a number of unique desired qualities of administration related to program goals, such as appropriateness (coordinating with the administration to meet customer wants), openness (reasonableness), quality (fulfilling necessary guidelines), and results. Efficiency, in the words of Low (2000), is concerned with the relationship between inputs and yields. According to Kumar and Gulati (2010), transversal resource allocation to several goals is what efficiency is all about. Moreover, efficiency does not always translate into a company's success in the marketplace, even while it does disclose an organization's operational competence. Organizational efficiency is the number of resources required to accomplish an aim, whereas organizational effectiveness is the extent to which the corporation meets a declared goal (Bartuševičienė & Šakalytė, 2013). Performance assesses how successfully a company achieves its aims and objectives (Randeree, 2020). This highlights the areas for improvement in the organization's operations. Since these organizations place greater emphasis on providing services than on turning a profit, effectiveness and efficiency are employed as performance indicators.

The public perceives organizations as institutions that support a range of partners, both inside and outside the organization. This aligns with the theory put forward by Kasomi (2015), who states that an organization's performance is measured by how well it serves the interests of the stakeholders it was founded to serve. According to Njoroge (2015), efficiency serves as a proxy for public-sector performance According to the arguments, the agreed-upon responsibilities among TMTs include transforming governing body agreements into goals, targets, procedures, and extensions, and being accountable for their achievements. Additionally, a key outcome of the TMT craft is strategy implementation. Strategic management stands out from other disciplines due to its strong emphasis on organizational performance, which is associated with the implementation of effective strategies. Thus, it can be assumed that TMTs are accountable for organizational performance (Mkalama, 2014). To be able to take the right action to start them, managers have had to search for elements that affect an organization's performance. According to Machuki and Aosa (2011), organizational performance is correlated with the skills and efficacy of an organization.

Strategy Implementation and Performance

Several studies have examined the relationship between strategy implementation and organizational performance using different methods, contexts, and concepts. For instance, Onyegbula et al. (2023) found a positive effect of strategy implementation on the performance of financial regulators in Nigeria using structural equation modeling and data from four agencies. This study differs from Onyegbula et al. (2023) in that it focuses on Ugandan state agencies, and in concept, uses institutionalization and operationalization as indicators of strategy implementation, instead of technology adaptation, strategic leadership, strategic communication, resource availability, and Organisational structure.

Mbogo (2022) studied the performance of local NGOs in Tharaka Nithi County, Kenya, focusing on the impact of plan execution. The survey results indicated that most organizations funded new strategies, involved, and trained staff, and provided adequate resources. The study found that all employees were informed of new strategies, and the organization's goals were communicated. The effectiveness of NGOs was found to be enhanced by the implementation and integration of strategies at both operational and institutional levels. This study explored these aspects of strategy implementation in public institutions, such as Uganda's state agencies. Ndegwa (2022) evaluated the complex interactions among strategy execution, organizational resources, and the operating environment regarding government-owned state corporation performance in Kenya. Regression analysis was employed in this study, which was based on Institutional, Dynamic Capabilities, and New Public Management theories. The results show a strong and favorable relationship between strategy execution and organizational performance. Amobi (2022)concentrated on the performance and implementation of the strategy among Abia State commercial banks. According to Amobi (2022), organizational performance is positively and significantly correlated with strategy execution. Elif (2022) took a novel approach in a ground-breaking study examining the individual and combined effects of putting various tactics into practice and developing an organizational culture on the operation of local government organizations in Turkey. The findings affirmed a notable and optimistic correlation between the execution of strategies and the overall effectiveness of the organization.

Kianda and Kitur (2021) studied the strategy implementation and performance of Micro Finance Institutions (MFIs) in Nairobi Kenya. Kianda and Kitur (2021) conceptualized implementation in terms of Organisational

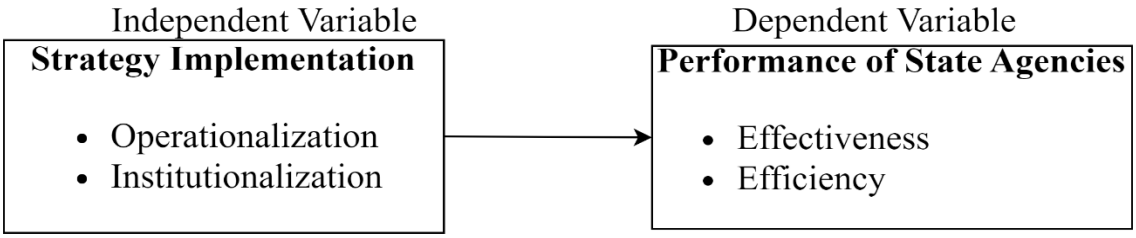
structure, Organisational culture, leadership styles, and resource allocation, whereas this study conceptualized strategy implementation in terms of operationalization and institutionalization. A study conducted by Kianda and Kitur (2021) discovered a notable correlation between Organisational structure and performance, displaying a positive and moderately significant association.

This study explores how the institutionalization and operationalization of strategies affect the performance of Ugandan state institutions. This differs from previous studies that have focused on other aspects of strategy implementation, such as organizational structure, culture, resources, and communication. For example, Kiragu et al. (2020) studied how innovation in strategy implementation improved the performance of a food processing company in Kenya. Hantiro and Maina (2020) examined how strategic initiatives enhanced the achievements of the administrative body of Tana River County in Kenya. Muendo and Ogutu (2020) investigated how the implementation of a strategic plan influenced the performance indicators of the Kenya Medical Training College. Ogalo (2019) focused on exploring the relationship between implementing strategies and the performance of faith-based organizations (FBOs) in Kenya. The focus of Luhangala and Anyieni (2019) study was public secondary schools located in Nyamira County, Kenya. Espirah and Murigi (2019) investigated the effects of successfully implementing strategies on the Parliamentary Service Commission of Kenya's performance.

In their 2019 study, Mohamed et al. investigated how organizational performance in the Abu-Dhabi police department in the United Arab Emirates was impacted by strategy, structure, and human resources. However, this study considers the more thorough and subtle aspects of operationalization and institutionalization when discussing the implementation of strategies. According to Mohamed et al. (2019), strategy, structure, and people resources positively impact organizational performance. The impact of strategy implementation on the efficacy of HIV and AIDS interventions overseen by non-governmental organizations in the Nyanza Region was investigated by Awiti et al. (2019). The six main facets of strategy implementation that Awiti et al. (2019) examined were translation, communication, resource allocation, coordination, execution, and adaptability. According to Awiti et al. (2019), there is a direct link between better performance outcomes for HIV interventions and the effective implementation of strategies.

According to this study's conceptual model, Ugandan state agencies' performance is impacted by the execution of their strategies. The study hypothesizes that the performance of Ugandan state agencies and the execution of strategies have a positive and substantial link. Strategy implementation is operationalized as a process of operationalization and institutionalization of a strategic plan, while performance is measured by efficiency and effectiveness indicators.

Figure 1: Conceptual Framework



Source: Mouzas (2006); Kirui (2016)

3. Methodology

Research Design

The present research employed a positivist methodology, constructing its basis by exploring established knowledge. It achieved this through a thorough review of previous studies and scrutinizing scholarly works to create a conceptual framework. It followed logical procedures to formulate a hypothesis that was testable and could be proven or disproven. Additionally, this study adopted a positivist perspective to explore the

connections between variables using quantitative data. The researchers found the application of positivism appropriate as it facilitated an objective and empirical measurement of the variables of interest, and the testing of hypotheses derived from the existing literature.

This study used a survey research technique. Several such surveys are one-time (cross-section), while others are proceeding (longitudinal), permitting the researcher to notice changes over a long time. Data were collected from respondents on a single occasion, with no intended follow-up, indicating the adoption of a cross-sectional research design (Sekaran & Bougie, 2016). The rationale for choosing this design was to use quantitative data to test the hypotheses (Cooper & Schindler, 2013).

Sample Size and Technique

The intended sample for this research includes all Ugandan state entities established through legislative action to deliver services to citizens. The government entirely finances them. The Ministry of Public Service (2021) has reported that Uganda has 201 state agencies. These agencies operate in different sectors: health (23), education (24), work and transport (9), information and communication technology (12), justice, law, order (12), public sector management (4), and energy and mineral development (13). Other sectors include accountability (32), water and environment (4), public administration (6), tourism, trade, and industry (22), social development (11), agriculture (20), security (5), and lands, housing, and urban development (4).
Krejcie and Morgan (1970) provided a table, with a 3.5% margin of error and 95% confidence range. From the population, we selected a sample size of 160 individuals. The inquiry process required at least three TMT members from each agency to complete. The analysis phase focused on individual agencies by name. The research design used stratified sampling, based on the sector of each agency. Proportionate random sampling ensures an equal representation of each sector. Respondents were randomly selected from each sector's TMT members using a formula by Kothari (2004).

- $n_s = n * P_s$
- Where n is the sample size and P_s is the percentage of the population in each stratum.
- Consequently, the health sector sample, $n_{health} = 160 * \frac{23}{201} = 18$

Data Collection

State agency top managers, who oversaw strategy implementation and performance, filled out a questionnaire. It had four sections: (1) general information about the agency and the respondents; (2) strategy implementation, measured by operationalization and institutionalization scales; (3) performance, measured by efficiency and effectiveness scales. The scales were adapted and modified from previous studies (Machuki & Aosa, 2011; Mutuku et al., 2013; Charas, 2014; Kinuu, 2014) to fit the Ugandan state agency context. They employed a five-point Likert scale, with one denoting strongly disagree and five denoting great agreement. The questionnaire was pre-tested and pilot-tested with 10% of service-oriented private firms and some state agencies to check its validity and reliability. The feedback was used to revise and improve the questionnaire. The data collection was done from September to November 2021.

This study incorporated both primary and secondary data sources to improve the validity and reliability of the findings (Cooper & Schindler, 2013). An online questionnaire was used to collect primary data, and it was structured. An online hyperlink distributed the survey instrument to a minimum of three members of the executive team from each of the Ugandan government's designated bodies. The TMT members included the CEO/Managing Director, Deputy/ Assistant CEO, Corporation Secretary, and Heads of Department. The COVID-19 restrictions that limited physical access to the respondents led to the choice of the online method. The online method also offered the advantages of being fast, safe, and less intrusive, while it increased the response rate by ensuring anonymity and reducing social desirability bias. Performance reports, statements, and memos from 2017 to 2021 published by state agencies and oversight bodies provided the collection of secondary data, using a documentary checklist. The decision was made that this time frame would provide enough information on state agencies' performance. Secondary data was utilized to verify the results drawn from the original data and triangulate it. Of the 160 responses, 152 were received (95%) and after data cleaning, 152 were valid and usable.

Data Analysis Method

With SPSS software version 26, the data analysis was carried out. Using a variety of qualities, exploratory factor analysis (EFA) was utilized to determine the critical elements of organizational performance and plan execution. The items were extracted using principal component analysis, and then they were simplified by rotating them using Varimax and Kaiser Normalization. Only items with an eigenvalue above one and a factor loading above 0.6 were retained, following the suggestions of Kaiser (2016), Awang (2012), and Hoque and Awang (2016). Items with low factor loadings were deleted, and the filtering process was iterated to obtain a more parsimonious model.

The Master Validity plugin (Gaskin & Lim, 2016) and SPSS AMOS version 21 were utilized to perform Confirmatory Factor Analysis (CFA) and assess construct validity. How well the items measure the intended constructs is referred to as construct validity. Discriminant validity quantifies a measure's difference from another measure that is conceptually unrelated, whereas convergent validity quantifies an item's relationship with other things that it is logically anticipated to connect to. As seen in Table 1, convergent validity can be evaluated by comparing the AVE with MSV and ASV (Hair et al., 2010).

Table 1: Thresholds for CR, AVE, MSV, and ASV

Reliability	Convergent Validity	Discriminant Validity
CR greater than 0.7	AVE greater than 0.5	MSV greater than AVE ASV greater than AVE

Source: Hair et al. (2010)

This study examined the performance of Ugandan governmental agencies and the implementation of their strategies. The dependent variable is performance, which is determined by efficacy and efficiency. Operationalization and institutionalization are metrics used to measure independent variables in strategy implementation. The questionnaire responses were tested for internal consistency using reliability tests based on Cronbach's alpha with a cut-off of 0.7 and corrected item-total correlation coefficients (Murphy & Davidshofer, 1994). Additionally, the assumptions of the linear regression were examined. Multiple regression analysis and descriptive statistics were used to analyze the data. The sample and variable characteristics were summed up using descriptive statistics. The hypothesis was evaluated and the association between strategy implementation and performance was investigated using multiple regression analysis.
The multilinear regression model used in this study was as follows:
Performance = $\beta 0 + \beta 1$ Operationalisation + $\beta 2$ Institutionalisation + ε

Ethical Considerations

This study adhered to the ethical principles and guidelines of academic research such as respect, beneficence, justice, and integrity. Ethical approval was obtained from the Uganda Christian University, Uganda National Council for Science and Technology, and state agencies before collecting the data. Informed consent was obtained from all participants, and their anonymity was protected. It maintains the integrity and validity of the data and analysis by avoiding any falsification or distortion of the results. It cites the sources of information and ideas used in the literature review and discussion.

4. Results and Analysis

This section presents and interprets the EFA, CFA, Cronbach's alpha, inter-item correlation, descriptive statistics, and inferential statistics of the data. The variables and sample characteristics are summed up in the descriptive statistics. The hypothesis was tested, and the relationship between strategy execution and performance was examined using inferential statistics.

Exploratory Factor Analysis

Strategy Implementation: Table 2 shows the Principal Component Analysis (PCA) results for strategy implementation, including the rotated component matrix and the KMO and Bartlett's tests. These indicate the correlation of each variable with its component and the suitability of the data for PCA. Five out of thirteen items in total were iteratively removed in the final model before additional analysis.

Table 2 reveals the underlying factor structure of strategy implementation, which exhibits the underlying combination of its dimensions namely, operationalization (component 1) and institutionalization (component 2).

Table 2: Rotated Component Matrix for Strategy Implementation

	Component	
	1	2
Op01_mean	.733	
Op02_mean	.917	
Op03_mean	.898	
op04_mean	.908	
In01_mean		.844
In02_mean		.818
In03_mean		.765
In04_mean		.752

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.803
Bartlett's Test of Sphericity	Approx. Chi-Square	649.684
	Df	28
	Sig.	.000

Source: Primary Data (2021)

According to Table 2, the KMO measure of sampling adequacy is 0.803, which suggests that the data has enough shared variance and is appropriate for PCA. Furthermore, there are notable linkages between the variables, and the correlation matrix is not an identity matrix, as indicated by the statistical significance of Bartlett's test of sphericity at the 0.01 level. Therefore, the requirements for performing PCA were met, thereby guaranteeing the reliability of the results. The results presented in
Table 2 demonstrate that the factor structure of strategy implementation encompasses both of its dimensions as influential indicators.

Two components were extracted from the data, which explained 76.929% of the total variance. In their order of significance, they incorporate operationalization (component 1) and institutionalization (component 2) with 45.1% and 26.8%, respectively. The two components with eigenvalues larger than one, the first and second components with eigenvalues of 2.146 and 3.608, respectively, were identified as the main sources of variance in the application of the technique.

Ugandan State Agencies' Performance

Performance was measured using items categorized under two dimensions namely, effectiveness and efficiency. Eleven out of twenty-five items in total were iteratively taken out in the last model before additional analysis. Table 3 shows the underlying factor structure of the performance, which exhibits the underlying combination of its dimensions namely, effectiveness (component 1) and efficiency (component 2).

Table 3: Rotated Component Matrix for Performance of Ugandan State Agencies

	Component	
	1	2
EFF01_mean	.879	
EFF02_mean	.847	
EFF03_mean	.826	
EFF04_mean	.800	
EFF05_mean	.793	

EFF06_mean	.662	
EFF07_mean	.644	
EFF08_mean	.639	
EF01_mean		.907
EF02_mean		.784
EF03_mean		.781
EF04_mean		.780
EF05_mean		.732
EF06_mean		.613

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.846
Bartlett's Test of Sphericity	Approx. Chi-Square	1563.551
	Df	91
	Sig.	.000

Source: Primary Data (2021)

Table 3 reveals the factor structure of performance, which consists of all its two dimensions as significant indicators. The maintained items were significant and had standardized factor loadings higher than the suggested value of .60. Along these lines, the implications of these factors are maintained. Two components were identified through factor analysis, accounting for 67.080% of the variance in performance. These components, effectiveness (component 1) and efficiency (component 2), contributed 43.624% and 23.456%, respectively. The scale used in the analysis demonstrates strong explanatory power, explaining 67.080% of the performance variance in Ugandan State agencies. The performance of these agencies can be best understood through two underlying dimensions, as indicated by eigenvalues greater than one. The first and second components had eigenvalues of 6.107 and 3.284, explaining 36.877% and 67.080% of the total variance, respectively, after undergoing rotation.

Confirmatory Factor Analysis

Using Gaskin and Lim (2016) master validity tools in SPSS, Amos, CR, AVE, and MSV were generated. The composite reliability (CR) values for the first component (operationalization) and the second component (institutionalization) were 0.902 and 0.818, respectively. Conversely, the two performance factors, effectiveness (component 1) and efficiency (component 2), had high CR values of 0.909 and 0.879.

The study's various sections' coefficients of CR were higher than those of Hu and Bentler (1999) who suggested a cut-off point of 0.7. Moreover, each component of the model successfully converged, which is a crucial sign of its validity and reliability. The fact that each component's AVE was more than 0.50 made this clear. The MSV was less than the AVE in terms of discriminant validity, indicating the validity of the study's items.

Reliability Test

After conducting EFA and CFA, a reliability analysis was performed on the remaining items. The questionnaire items were divided into two categories: strategy implementation (further categorized into operationalization and institutionalization) and performance (divided into efficiency and effectiveness). The validity and reliability of these items were tested, yielding α values exceeding the recommended value of 0.7. Specifically, operationalization and institutionalization had α values of .892 and .799 respectively, while efficiency and effectiveness had α values of .867 and .903 respectively.

Test for Parametric Assumptions

Statistical tests depend on specific premises regarding the factors used in the analysis. Osborne et al. (2001) revealed that a couple of scholarly materials document evaluating the conditions of the statistical techniques they utilize for reaching their outcomes. Osborne and Waters (2002) maintained that unless these conditions

are fulfilled, the outcomes may be questionable. For the data analysis, assumptions for linear regression were appraised in relation to the normality test, homogeneity, and multicollinearity.

Test of Normality

Normality tests are essential for assessing the validity of assumptions underlying many statistical methods. If these assumptions are violated, the accuracy and reliability of inferential procedures may be compromised (Ghasemi & Zahediasl, 2012). The two primary strategies for evaluating normality are graphical means or statistical tests as Bland (2015) recommended. The numerical (Shapiro-Wilk test and Kolmogorov-Smirnov, skewness, and kurtosis) tests were used to assess the normality of the data. The dataset utilized in this study underwent a rigorous assessment known as the normality test, which seeks to ascertain the adherence of the data distribution to a normal or Gaussian pattern. The results of this statistically demanding procedure are shown in the comprehensive and elaborate Table 4.

Table 4: Normality Tests

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Strategy Implementation	.034	152	.200*	.994	152	.802
Performance of Ugandan State Agencies	.102	152	.001	.958	152	.000

*. This is a lower bound of the true significance.
Source: Primary Data (2021)

The significant values of the Shapiro-Wilk and Kolmogorov-Smirnov tests were all greater than 0.05, except for the independent variable. Thus, the assumption of normality was not disregarded in the strategy implementation. The data were normally distributed. However, for the performance, skewness and kurtosis were utilized, as indicated in Table 5, to ascertain a normal distribution.

Table 5: Descriptive of the Performance of Ugandan state agencies

			Statistic	Std. Error
Performance of Ugandan State Agencies	Mean		3.1360	.03491
	95% Confidence Interval for Mean	Lower Bound	3.0670	
		Upper Bound	3.2050	
	5% Trimmed Mean		3.1161	
	Median		3.0506	
	Variance		.185	
	Std. Deviation		.43034	
	Minimum		2.21	
	Maximum		4.45	
	Range		2.24	
	Interquartile Range		.45	
	Skewness		.761	.197
	Kurtosis		.920	.391

Source: Primary Data (2021)

According to Mishra et al. (2019), the performance of state agencies in Uganda had skewness and kurtosis values of .761 and .920, respectively, falling between the advised range of -1 and +1. Consequently, the performance variable follows a normal distribution.

Homogeneity Test

The Levene test, which measures constant variance across variables, was used to check data homogeneity (Newbert, 2007). The data are homogeneous if the Levene measurement is > 0.05 (Field, 2013). Table 6 presents the test results.

Table 6: Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Strategy Implementation	Based on Mean	.103	2	149	.902
	Based on Median	.203	2	149	.817
	Based on the Median and with adjusted df	.203	2	148.605	.817
	Based on trimmed mean	.113	2	149	.893
Performance of Ugandan State Agencies	Based on Mean	.570	2	149	.567
	Based on Median	.475	2	149	.623
	Based on the Median and with adjusted df	.475	2	144.383	.623
	Based on trimmed mean	.508	2	149	.603

Source: Primary Data (2021)

Table 6 displays the results of the Levene F Ratio for the effectiveness of Ugandan governmental agencies and the execution of strategies. Since all the sig column values in Table 11 were above 0.05, indicating that there was no chance of incest among the research variables, the homogeneity assumption was maintained.

Multicollinearity Test

Multicollinearity was assessed using VIF which estimates the amount of change in the assessed coefficients spread over the situation of no connection among the factors. To determine multicollinearity among the predictor variables, tolerance levels and variance inflation factor (VIF) were examined through multiple regression results. The acceptable values are that the tolerance level should exceed 0.20, and that the VIF should not exceed 10 (Hair et al., 2010). Both institutionalization and operationalization had a tolerance value of .928 and a VIF value of 1.078. All variables had the highest VIF which did not exceed 10, indicating no multicollinearity problem. In terms of tolerance values, the results indicated that the values exceeded 0.2. This implies that if the tolerance value for any of the factors is less than or equal to 0.2, there is evidence of collinearity among the factors.

Descriptive Statistics

Table 7 shows the descriptive statistics of the sample and variables. The sample consisted of 152 state agencies in Uganda, representing 75.6% of the population. State agencies perform various functions such as education, health, agriculture, energy, environment, finance, justice, security, and social welfare.

Table 7: Demographic Characteristics for the State Agencies

	Item	Frequency	Per cent
Age (in years) of the Agency	0 to 4	6	3.9
	5 to 10	51	33.6
	Above 11	95	62.5
Scope of the Agency	National	110	72.4
	Regional	32	21.0
	Central	10	6.6
Size of the agency	Less than 100	30	19.7
	100 – 500	93	61.2
	500 – 1000	19	12.5
	More than 1000	10	6.6
	Total	152	100.0

Source: Primary Data (2021)

From Table 7, the results show that most of the state agencies had spent 10 years or more in existence (62.5%), indicating sufficient experience in the industry. Most agencies (72.4%) were national in scope, implying that their scope of operation was countrywide. The results also show that most state agencies employ between 100-500 employees (61.2%), implying that these agencies were big enough, a sign of their performance. This implies that most agencies operate on a wider scale.

Table 8: Demographic Characteristics of the Respondents

	Item	Frequency	Per cent
Age of the respondents	18 – 27	1	0.2
	28 – 37	51	9.6
	38 – 47	183	34.6
	48 – 57	190	35.9
	58 – 67	75	14.2
	68 and above	29	5.5
Employment tenure (in years)	0 to 4	36	6.8
	5 to 10	136	25.7
	Above 10	357	67.5
Number of years in this position	1-3	42	7.9
	3-5	190	35.9
	Greater than 5	297	56.1
Level of education	Bachelors' Degree	30	5.7
	Postgraduate	98	18.5
	Masters	209	39.5
	Professional qualification	147	27.8
	PhD	45	8.5
Gender	Male	319	60.3
	Female	210	39.7
Position in the Agency	Chief Executive Officer/Managing Director	102	19.3
	Deputy/ Assistant CEO	102	19.3
	Corporation Secretary	106	20.0
	Head of Department	219	41.4
Previous position	I was working for this agency or any of its affiliates in a separate capacity.	452	85.4
	A separate company employed me.	77	14.6
	Total	529	100.0

Source: Primary Data (2021)

Going by exception, the results show that 35.9% of the respondents were between 48 and 57 years old, whereas 34.6% were between 38 and 47 years old, an indication of mature respondents' dominance in state agencies. Most respondents (70.5 %) were in the 38–57 age range, which is in line with the average government agency recommendation. In addition, most of them had worked with the agencies for more than 10 years (67.5%), and 56.1% had spent more than five years in their current position. The extended periods of involvement decide the degree to which the respondent was knowledgeable about the business and the agency, and their adaptability to react to issues. The results also showed that most respondents (39.5%) had master's degrees, followed by professional qualifications (27.8%), postgraduate degrees (18.5%), and doctorates (8.5%). Furthermore, 39.7% of the respondents were women, and 60.3% were men. 41.4% of the respondents were department leaders, and 85.4% of the respondents had held several positions within the same organization before accepting their current role.

Multilinear Regression and Hypothesis Test Results

Ugandan state agencies' performance was compared to the institutionalization and operationalization constructs that were used to evaluate the implementation of the plan through multilinear regression analysis. Table 9 illustrates the relationship between strategy execution and state-agency performance in Uganda.

Table 9: Strategy Implementation and Performance of Ugandan State Agencies

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.699[a]	.489	.482	.30972

a. Predictors: (Constant), Operationalisation, Institutionalisation

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	13.672	2	6.836	71.263	.000[b]
	Residual	14.293	149	.096		
	Total	27.964	151			

a. Dependent Variable: Performance of Ugandan State Agencies
b. Predictors: (Constant), Operationalisation, Institutionalisation

Coefficients

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	1.382	.233		5.938	.000
	Institutionalisation	.469	.043	.669	11.010	.000
	Operationalization	.086	.058	.090	1.485	.140

a. Dependent Variable: Performance of Ugandan State Agencies
Source: Primary Data (2021)

As demonstrated in Table 9, there is a high correlation between the operationalization and institutionalization of strategies and Ugandan state agencies' performance (R = 0.699). This implies that the improved performance is the result of better strategy implementation. According to the R-squared value, strategy implementation was responsible for 48.9% of the performance variance in the model summary. The adjusted R-squared value was slightly lower, implying the absence of overfitting. The ANOVA section shows a significant linear relationship ($F = 71.263$, $p < 0.000$) between Ugandan state agencies' performance and the predictors (institutionalization and operationalization). The coefficient section presents the individual effects of each predictor on the outcome. The constant term is 1.382, which is the predicted value of performance when both predictors are zero. When operationalization is constant, institutionalization boosts performance by 0.469 units/unit. At the 0.05 level, this is significant ($p = 0.000$). Performance is marginally and insignificantly impacted by operationalization. Increasing operationalization by one unit only increases performance by 0.086 units when institutionalization is fixed. A p-value of 0.140 indicates that this effect is not dependable. Thus, institutionalization boosts performance in Ugandan state agencies, while operationalization has no significant effect. Thus, these agencies should prioritize institutionalizing over operationalizing their strategies.

5. Discussion and Conclusion

This study examines how Ugandan state agencies' performance, that is, their efficacy and efficiency, is impacted by the institutionalization and operationalization of strategies. It offers direction, evaluation, comparison, dialogue, and creativity to enhance strategy execution procedures. The findings are consistent with the premise that the performance of Ugandan state agencies and the execution of strategies have a positive and substantial relationship. These results are in line with earlier research (Mohamed et al., 2019; Kiragu et al., 2020; Mbogo, 2022; Onyegbula et al., 2023) which discovered a noteworthy and favorable correlation between strategy execution and organizational performance. The findings demonstrate that institutionalization significantly and favorably affects state agencies' performance. A notable study reveals that institutionalization plays a vital role in organizational performance. It is evident that well-structured systems and established procedures significantly contribute to the productivity and output of state agencies. This connection goes beyond mere coincidence or insignificance; it holds a substantial influence, making institutionalization a significant catalyst for performance enhancement. Hence, the findings strongly indicate that adopting institutionalization as a strategy can prove invaluable for public sector organizations aiming to increase their performance levels. This study underscores the crucial role played by institutionalization in state agencies by highlighting the direct correlation between institutionalization and improved performance.

Conversely, operationalization has a positive but insignificant effect on the performance of state agencies in Uganda. On the flip side, when considering the context of state agencies within Uganda, it is observed that operationalization does indeed play a role in influencing their performance, but it should be noted that although positive, this impact is not particularly significant. This is to say that although operationalization is seen to present some level of positive change or betterment in the Ugandan state agencies' performance, the magnitude

of this change is not substantial enough to be considered a pivotal or major determinant of their performance. There is an undeniable link, yet it is essential to underscore that this link is relatively weak, thus suggesting that operationalization's influence is not sufficiently impactful to considerably alter or radically transform the performance of these state agencies. Ultimately, operationalization can be considered a contributing factor to some extent, but it is not a deciding factor that would significantly influence how well state agencies work in Uganda. DCT is empirically supported in a certain setting, contributing to the body of literature.

Policymakers should create and implement a national framework for Ugandan state agencies' strategy formulation, implementation, and evaluation based on this study and others. They should also support and incentivize these agencies with capacity building, funding, recognition, and accountability. Practitioners should improve their strategic management skills and knowledge by joining relevant training, mentoring, and networking programs. They should also involve stakeholders in the strategy implementation process by promoting a culture of communication, collaboration, and feedback. This study has implications and provides recommendations for theory, policy, and practice. This study has some limitations and suggests future research directions.

The theoretical implications of this study are as follows: First, by offering empirical data on the relationship between strategy implementation and state agency performance in Uganda, this study adds to the body of knowledge on strategic management in public-sector contexts, especially in developing nations. Second, by looking at operationalization and institutionalization as important aspects of strategy implementation, and efficiency and effectiveness as important performance metrics, this study contributes to the body of knowledge on strategy implementation and performance.

The practical implications of this study are as follows. First, this research offers managers and policymakers useful perspectives and suggestions to enhance strategy execution and efficiency in Ugandan state agencies. Second, because the institutionalization of a strategic plan has a favorable and considerable impact on the efficacy and efficiency of state agencies, this study recommends that managers and politicians consider this. This study used a cross-sectional survey design, which restricted causal and temporal inferences between strategy implementation and performance. Second, this study used self-reported data from the heads of state agencies, which may introduce bias and error due to social desirability, recall, or interpretation. Third, not all performance facets or dimensions in state agencies can be covered by the effectiveness and efficiency metrics used in this study to gauge performance. It also focuses on state agencies in Uganda, which can restrict the relevance and transferability of the findings to other public sector organizations or developing countries.

First, a longitudinal or experimental approach could be used in future research to examine the causal and dynamic relationship between strategy implementation and performance in state agencies. Subsequently, scholars may utilize several channels and techniques for gathering information (such as discussions, visual aids, or secondary data) to verify and confirm the facts and examination. Additionally, future studies should consider using multiple measures or indicators of performance (e.g. customer satisfaction, employee engagement, and social impact) to comprehensively assess state agency performance. Furthermore, comparing the findings with other types or contexts of public-sector organizations in developing countries (such as ministries, local governments, and non-governmental organizations) would provide valuable insights. Moreover, exploring how institutionalization and operationalization affect performance using qualitative or mixed methods is essential. Finally, studies should investigate how contextual factors (such as resource availability, leadership style, organizational culture, and external environment) affect the correlation between plan execution and performance. Additionally, comparing Ugandan state agency performance with similar agencies in different countries or regions would be informative.

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Journal of Economics and Behavioral Studies (JEBS)
Vol. 15, No. 4, December 2023 (ISSN 2220-6140)

Corporate Strategies and Financial Performance among Foreign Commercial Banks in Bujumbura, Burundi

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Abstract: This study investigated the relationship between corporate strategies and financial performance among foreign commercial banks in Burundi. The study used cross-sectional descriptive research design using a quantitative approach. The target population was 219 employees including technical staff and management. A sample size of 142 respondents was determined and simple random sampling was used to select the respondents. The questionnaire was used as the main data collection instrument and data was analyzed using linear and multiple regression analysis. The study revealed that corporate strategy significantly affects the financial performance of foreign commercial banks in Bujumbura (Adjusted R^2=0.281, p=0.000). In addition, it was found that competitive strategy significantly affects the financial performance of foreign commercial banks in Bujumbura (Adjusted R^2=0.147, p=0.000). Similarly, the study revealed that operational strategy significantly affects the financial performance of foreign commercial banks in Bujumbura (Adjusted R^2=0.229, p=0.000). The study concluded that corporate strategies significantly affect financial performance. The study made the following recommendations: management of foreign commercial banks should employ the use of a total quality management system, should make use of a customer relationship management system, should employ advanced and constant methods of market research, and continuously develop new processes of delivering quality services to their customers.

Keywords: *Corporate strategies; financial performance; linear regression analysis; foreign commercial banks; Burundi.*

1. Introduction

In the business environment, an organization needs to have a strategy that will enhance its competitive advantage over its rivals (Chi, 2023; Farooq, Noor & Ali, 2022; Basyith, Ho and Fauzi, 2022). It is evident that the ever-increasing competition and entry of new firms in the banking sector make it mandatory for corporate, strategies to guarantee better and enhanced performance to gain a competitive edge. Corporate strategy varies from operational and competitive strategies since corporate strategy defines the strategic intentions of the firm and the nature in which a firm needs to be structured (Auma, 2013). Corporate strategy implies a series of consistent and logical decisions made by a firm over a span of time at the firm's corporate level which integrate the major; policies, goals, and action sequences of an organization into a logical perspective (Chi, 2023; Arasa & K'Obonyo, 2012). Corporate strategy does not function as an independent factor but comprises other constructs to function effectively. Corporate strategy influences the performance of business units which indirectly influences firm performance.

Competitive strategies basically imply the means used by a firm in an industry to increase its competitiveness (Muhammad, 2014). In Africa, the banking sector is seeking to maintain competitiveness and achieve high financial performance as well as expect what their customers need and at the same time determine if they are satisfied with the firm's goods (Keragia et al., 2017). However, in a country such as Kenya, there are difficulties in the marketplace which include the increase in competition, and updating the customer requirement. Similarly, in Uganda, commercial banks need stronger market presentation which comprises innovation in marketing practices that enable the survival of competitiveness. This implies that commercial banks in Uganda and Kenya need to manage their main markets more effectively and efficiently than their competitors. This means that business entities need to adjust their operations continuously to seize opportunities in the market as well as vend any business challenges that will affect the business strategies. For instance, Kenya Commercial Bank (KCB) opened a branch in Kampala (Uganda) that was later closed due to poor performance.

The bank, however, successfully ventured into Tanzania, Rwanda, and Southern Sudan before re-opening the Kampala branch (Ngwili, 2016). In Burundi, the banking industry continues to grow, though the penetration of its products and services remains low at 1.3% of GDP in 2017. This is still low as compared to the previous year (2016) where the penetration was estimated at 1.28% of the GDP (Burundi Ministry of Finance, 2018). In Burundi, as of the end of December 2017, the banking industry is composed of ten commercial banks, thirty-seven active microfinance banks, and one National Bank of Economic Development. Out of the ten commercial banks, four banks are foreign-owned (Shuman, 2018). Over the past ten years, commercial banks have found it difficult to cope with increasing competition by relying on the old operation strategies which put increasingly greater pressure on the banks to acquire and increase their performance. Therefore, to survive and thrive, commercial banks have to make greater efforts to acquire or improve constantly their competitive advantages, and as a result, their level of competitiveness can provide them with a higher level of financial performance (Brian, 2009; Gatwiri, Bichanga, Loki & Makau, 2014). The banking industry in Burundi has in the recent past witnessed fierce competition that rose to the point where banks have been forced to change their strategies to maintain and enlarge their markets (Jackson, 2009).

This has seen both the local and foreign commercial banks open new branches across the country and even others have entered the larger East African community markets through agency banking, internet banking, mobile banking as well as establish partnerships to enable them to be on the top in the industry (Cheruiyot, 2015). For instance, in 2008, Kenya Commercial Bank was the first Kenyan financial institution to move into Burundi, followed by Diamond Trust Bank in 2009; while Ecobank and CRDB started operating in Burundi in 2012. There has been a drop in the financial performance of foreign commercial banks in Burundi. This has been attributed to the high level of competition, political interference, high level of poverty and low level of penetration to the rural 'unbanked', failure to recover loans/increasing non-performing loans, and decrease in return on assets (Ministry of Finance, 2018). Further, the banks still have a challenge of achieving their profitability targets, total operational efficiency and service quality queried. For instance, the profitability of KCB dropped from $ 1,547 million in 2016 to $ 1,475 million in 2017 due to losses in loans. Similarly, the cash flow of ECOBANK dropped from $ 11 million in 2016 to $ 10.8 million in 2017 (Financial Sector Report, 2017).

Furthermore, a report by DTB in 2018 revealed that the bank's earnings in return on assets (ROA) dropped by 2% in 2017 (DTB Annual Report, 2018). This poor financial quality exposes foreign commercial banks to high levels of credit risk. The consequence of this problem lies in the depletion of the capital base of the bank. Thus, the study investigated to establish whether corporate strategy is among the reasons for the poor financial performance among foreign commercial banks in Burundi. Consequently, the purpose of the present study was to investigate the relationship between corporate strategies and financial performance among foreign commercial banks in Burundi. However, the specific objectives are: (i) to establish the effect of corporate strategy on the financial performance of foreign commercial banks in Bujumbura; (ii) to examine the effect of competitive strategy on the financial performance of foreign commercial banks in Bujumbura; (iii) to determine the effect operational strategy on the financial performance of foreign commercial banks in Bujumbura. This study was limited to the effect of corporate strategy on financial performance, the effect of competitive strategy on financial performance, and the effect of operational strategy on financial performance.

2. Review of Related Literature

This study was guided by two theories, namely Agency theory and Resource-based theory (Chi, 2023; Farooq, Noor & Ali, 2022). The agency theory was brought into perspective by Brian (2009) and Jackson (2009). Mitnick (2015) asserts that agency costs are brought about by the misunderstanding between the managers and the company's shareholders. Agency costs are referred to as the sum of monitoring paid by the principal, the bonding costs paid by the agent, and the overall residual loss. Good performances are often witnessed under situations of low agency costs which come with higher firm values keeping all other factors constant. This theory further states that the owners and management have varying interests. Agency conflicts arise when companies separate the functions of management and ownership. They further demonstrate that the agency costs are borne by the stakeholders regardless of the person making the monitoring expenditures. Higher interests are charged by debt holders anticipating monitoring costs. Higher likelihoods of monitoring costs lead to high interest rates and lower firm value to its shareholders keeping all other factors constant (Mitnick, 2015). The financial performance could be explained using three types of agency costs. The asset

substitute effect asserts that a rise in debt to equity increases the incentive of the management to undertake more risky projects. All the benefits accruing from successful projects benefit the shareholders whereas the unsuccessful project's debt negatively influences the debt holders.

The undertaking of projects increases the probability of wealth transfer from debt holders to shareholders and a decline in firm value. Risky debts often benefit the debt holders instead of the shareholders, leading to underinvestment. The management therefore has the mandate to reject projects with positive net present value despite their higher potential to increase firm value. It is also mandatory that the investors are given free cash flow failure to which the firm is allowed to destroy firm value through perks and empire building. Complete protection requires exemplary enforcement costs and extreme covenant specifications. As the residual firm owners, it is the responsibility of the stockholders to ensure that monitoring costs are held low up to some levels. The optimal amounts of debt that could be issued by a firm are limited by monitoring costs. There is a higher likelihood that the monitoring levels needed by the debtors rise with the outstanding levels up to some levels. Lenders engage in limited monitoring when the levels of debt are limited. There are substantial costs associated with protective covenants and increase as the debt financing levels increase. The monitoring costs incurred by the shareholders seek to ensure that the actions of the managers are based on optimizing the value of the firm.

Pouryousefi and Frooman (2017) assert that higher costs associated with equity and debt and the optimal combination of both debt and equity reduce total agency costs. The Resource-Based View (RBV) was developed by Brian (2009) and Jackson (2009) who contended that the bundles of assets at the firms' disposal and how they can be extended for different uses to gain a competitive advantage. It is a strategic management theory that assumes the heterogeneity of the firms' abilities and resources (Day & Wensley, 2008). The theory holds that unique capabilities and resources are essential in creating an ideal strategy for the firm to remain sustainable in a competitive environment. A firm's resources and capabilities determine sustainable firms' performance since they provide an inherent and superior competitive advantage over other firms in the industry. The resource-based theory (RBV) also extends to a level of creating strategies, products, and functions that cannot be duplicated by competitors (Brian, 2009). This enables the firm to have ideal resources like human resources, technological resources and capital resources that competitors find it difficult to match hence allowing the firm to be the leader in the market over a period of time. Having an ideal performance rate is a result of the unique skills and resources a company utilizes in its operations (Onikoyi & Awolusi, 2014; Day & Wensley, 2008).

This superiority of skills and resources is because of strategies implemented in the firm which improves the competitive position and sustainability. For the firm to continue enjoying the superiority of the skills and resources, there is a need to develop and implement corporate strategies that are favorable to the development of unique resources and capabilities (Mukonga & Awolusi, 2019; Wensley, 2008). Corporate strategy is defined by Wheelen and Hunger (2012) as a strategic platform, or organization capability to cope with a business in different environments with a set of strategic capabilities. Caldart and Ricart (2006) argue that corporate strategy is a dynamic framework for a company strategy involving three interconnected elements that shape a company strategy itself, which are: identifying success factors, the company's initiative strategy and architecture design. Corporate strategy is also a continuous process upon which the company is compelled to work tirelessly so that the investors are convinced that their money is being effectively utilized thus increasing the equity of the company (Day &Wensley, 2008). In this study, corporate strategy was operationalized as corporate strategy, competitive strategy, and operational strategy.

Financial performance refers to the degree to which financial objectives are being or have been accomplished (Wensley, 2008). It is the process of measuring the results of a firm's policies and operations in monetary terms. It is used to measure a firm's overall financial health over a given period and includes liquidity, profitability, market expansion, operating cash flows and debt-to-equity ratio among others (Ratembo, 2017; Makgati & Awolusi, 2019). In this study, financial performance was operationalized as profitability. Corporate strategy is a step taken by an organization to accomplish its goals to attain superior financial performance (Purce, 2014). It is concerned with how companies create value across different businesses. The development of a successful corporate strategy entails the creation of value and kind attention in three vital fields. The core function of corporate strategy is ensuring that at all times, the enterprise's value exceeds the sum of its components.

Corporate-level strategy is mainly concerned with the strategic decisions made by a business that influence the organization as a whole. Mergers and acquisitions, financial performance, resource allocation and human management of the personnel are elements of corporate-level strategy. An effective corporate strategy should aid effective resource allocation to bring the best investment opportunities.

Enhances the competitive position of a firm, adds value beyond the sum of its parts and drives raise expectations of the firm both internally and externally (Muhammad, 2014). Wensley (2008) recommends that a corporate strategy coincide with the competitive environment requirements. It also must make use of present and emerging opportunities and diminish the effects of major threats, placing realistic terms on the company‘s resources. Purce (2014) stipulates that corporate strategy must be developed and acted upon to reinforce set goals by a firm‘s business policy. It sets to answer questions such as, what set of businesses should the company be in? ‘More specifically, a corporate strategy is a company‘s way of creating value through the configuration and coordination of its multi-business corporation. A corporate strategy differs from a business strategy, which focuses on building a competitive advantage in the specific business or market of operation and hence can be considered as part of a corporate strategy. Therefore, a corporate strategy describes an organization‘s overall direction toward growth through investment in diversification, vertical integration, mergers and acquisitions, turnaround, strategic alliances and outsourcing.

With increased complexities in terms of uncertainties, threats and constraints in the business world, corporate strategy helps to keep pace with the business dynamic and fast changes, minimizes competitive disadvantage and competition (Porter, 1985). There is no standard criterion for the selection of the most suitable performance indicator since performance measurement could be performed for different reasons and each performance measurement is carried out for a specific reason. Firm performance entails the comparison of an organization’s actual output against the intended output. To boost performance, an organization’s governing body and managers formulate programs to ascertain the organization's current level of performance and come up with ideas for improving the infrastructure and behavior of the organization which are then implemented to attain higher yield. Simple forms of measurements are used to determine performance at the organizational level such as conducting surveys on customer satisfaction upon which qualitative performance information could be obtained from the customers’ point of view (Liu et al., 2013). Hubbard and Beamish (2011) opine that because corporate strategy is concerned with multi-business, it implies diversification of business.

Diversification may be defined as the entry of a firm or business unit into new lines of activity, either by processes of internal business development or acquisition, which entails changes in its administrative structure, systems, and other management process. Ireland et al. (2013) also stated that a corporate-level strategy specifies actions a firm takes to gain a competitive advantage by selecting and managing a group of different businesses competing in different product markets. Meanwhile, Kwabena (2016) said parent firms’ strategies refer to strategic motives, importance, focus, and competitiveness. Corporate strategy contributes to making the organization become integrated as one body through the addition of value in comparison to it acting as separate grouped components; it‘s made of four categories namely managing portfolio-practice, change of structure, skill movement, and sharing of knowhow (Kwabena, 2016). The creation of shareholder value through diversifying the firm portfolio depends on other mechanism as the factors cannot be mostly exclusive mutually. According to Paula (2006), portfolio–practice and restructuring do not need connection, but skill movement and knowledge sharing depend on communication through an established connection. In the present situation, more practicability is displayed by others although most of them have brought success in the best situations.

The ignorance of any of them can be a receipt for failing (Porter, 1980). Strategy at the corporate level deals with decisions that have a big impact on the entire organization (Kwabena, 2016). Performance on finance, when businesses merge and acquire, management of human capital, and the process of resource distribution happens at the corporate level. Strategies at the corporate level can be employed in three types (Jeremy, 2009). Businesses can strive to fight out competition to add their market share by using value-adding strategies. It is from using the above strategy that organizations are able to progress in value addition by taking advantage of capacity and capital endowed to itself and sharing them throughout the organization to lower cost and create effectiveness. Gopesh (2006) explains that diversifying is attributed to the forms used in the creation of value for organizations. The lack of distributing capital and human resources in a market by an organization forms

the value-neutral strategy; its main work is to increase the organization's operations. Reduction-value strategies come up when organizations shareholders of a large organization feel it's going opposite its core business and feel it is only strategic management who are gaining in diversifying.

The main purpose of this strategy is to reposition the targeted clients to curb unplanned and distractive expansion (Edward, 2014). Competitive strategy is defined as those strategies employed to determine how the firm will compete in its markets, aiming to secure sustainable competitive advantage. In other words, strategies that operate at the business level of the firm (Kwabena, 2016). Examples of competitive strategies include the discovery of new market opportunities, and the development of new products and services to satisfy customer demand. The most influential competitive strategy typologies include those of Wulff (2015) reactor, prospector, analyzer and defender model, and Porter's (1980) generic competitive strategies. According to Porter (1985), competitive strategy is the search for a favorable competitive position in an industry, the fundamental arena in which competition occurs. Competitive strategy aims to establish a profitable and sustainable position against the forces that determine industry competition. Wambua (2014) and Wulff (2015) note that competitive strategy is concerned with how a business achieves a competitive advantage in its domain of activities. Porter (1996) argues that competitive strategy is about being different. It means deliberately choosing a different set of activities to deliver a unique mix of value.

Competitive strategy is concerned with how a company can gain a competitive advantage through a distinctive way of competing. Kimando (2012) laments that having a competitive advantage is necessary for a firm to compete but what is more important is whether the competitive advantage is sustainable. Poddar and Gadhawe (2007) posit that the core of a firm's competitive strategy consists of its external and internal initiatives to deliver superior value to its customers. It includes offensive and defensive moves to counter the maneuvering of rivals, actions to shift resources around to improve the firm's long-term competitive capabilities and market position and tactical efforts to respond to whatever market conditions prevailing at the moment. The competitive aim is therefore to do a significantly better job of providing what buyers are looking for, thereby enabling the companies to earn a competitive advantage and out-compete rivals in the marketplace. According to Mwaura (2013), a firm in a very attractive industry may not earn profits if it has chosen the wrong strategy and conversely, a firm in an excellent competitive position may be in a poor industry that is not profitable. Porter's (1985) five forces framework helps identify the attractiveness of an industry in terms of five competitive forces: the threat of a new entrant, the threat of substitutes, the power of buyers, the power of supplies and the extent of rivalry between competitors.

Operational strategy is defined as those functional-level strategies created to implement and execute competitive strategy. Short-term operational strategies direct individual departments within the firm. Johnson and Scholes (1999) defined operational strategies as those concerned with how the parts of the organization in terms of resources, processes, people and their skills effectively deliver the corporate and business level strategic direction. According to Swink et al. (2005), organizations seek to integrate the overall corporate strategy with the operations of the individual banking facilities. Thus, how well this integration is achieved affects the profitability and long-term success of the firm. Miller and Roth (1994) explain that there are two main elements to the operations strategy. First is what it must be able to do to produce a competitive product such as efficiency, goals, flexibility, costs and quality. The other is the set of decisions made to support banking services equipment choices, vertical integration, quality procedures, etc. and these choices must match the product strategy (Miller & Roth, 1994). According to Edward (2014), the pattern of banking choices that a company makes is one element of a banking strategy. Brown (2014) classifies strategic banking decisions as "bricks and mortar" decisions and infrastructure.

"Bricks and mortar" decisions are decisions about facilities, technology, vertical integration, and capacity. Banking infrastructure decisions relate to topics such as organization, quality management, workforce policies, and information systems architecture (Miller & Roth, 1994). "Achieving long-term success requires that banks possess not only the operational capabilities and competencies to compete in existing markets but also the ability to recombine and reconfigure assets and organizational structures to adapt to emerging markets and technologies," (O'Reilly & Tushman, 2008). Swink et al. (2005) focused on five major banking practices: workforce development, process quality management, just-in-time (JIT) flow, supplier relationship management, and product-process development. Workforce development practices improve workers' abilities

through enhanced worker control over their work and cross-training (Wulff, 2015; Zekiri, 2011). Process quality management practices make use of associated tools to promote the continuous improvement of process capabilities. Just-in-time flow practices have the primary goal of eliminating wastes such as unnecessary movement, work-in-process inventories, and queuing (Giffi et al., 1990).

According to Edward (2014), supplier relationship management practices move the company from arm's length transactions toward partnerships and promote closer involvement with fewer, select suppliers by establishing long-term relationships, information-sharing systems, certification and training, and joint investments. These partnerships allow for more learning through problem-solving with customers and suppliers and have been called external learning (Schroeder et al., 2002). One of the big advantages from an RBV and competitive advantage point of view is that relationships with customers and suppliers create tacit knowledge that is not easy to duplicate (Bates & Junttila, 2002). Performance refers to the ability to operate efficiently, profitably, survive, grow and react to environmental opportunities and threats (Wambua, 2014). Performance is one of the major indicators that explain the level of development of any society. Recently, the challenges of the global business environment have re-echoed the need for corporate organizations to have more concerns about the success of business firms. As a social business, commercial banks have both financial as well as social objectives.

Given this, the performance of commercial banks should be measured by using not only financial but also non-financial or social measures (Zhou, Dev & Brown, 2017). To measure bank performance, the extant literature relies on both accounting and market measures (Zhou, Dev & Brown, 2017). Market performance reflects expectations of a firm's prospects and its ability to adapt to potential changes (Malhotra et al., 2013; Zhang et al., 2016). It includes the present value of expected future profits valued by the financial market. However, the market measure fits only listed firms and is appropriate if the market is efficient. Some studies have used different types of performance indicators to measure firm performance. For example, Wulff (2015) and Zekiri (2011) identified 71 performance parameters that have been used by researchers to measure both financial and non-financial performance. In most situations, researchers use financial measures to explain firm performance. For instance, measures such as return on investment, return on sale and return on equity are some of the commonly used parameters to measure performance (Malhotra et al., 2013; Zhang et al., 2016). Thus, for a more comprehensive assessment, organizations have resorted to the utilization of both financial and non-financial performance measures.

For example, Wulff (2015) and Zekiri (2011) have used both financial and non-financial indicators such as process improvements, customer satisfaction, capacity utilization and product service quality to measure firm performance (financial profitability, growth in size/assets, customer satisfaction, product/service quality, capacity utilization, process improvements, employment stability, employee training). Profitability is the ability of a business to earn a profit (Wahlberg, 2017). Profitability is the ability of a company to use its resources to generate revenues over its expenses. In other words, this is a company's capability of generating profits from its operations (Pustelnik & Hallberg, 2013). Profitability is the primary goal of all business ventures. Asimakopoulos et al. (2013) explain that without profitability a banking institution will not survive in the long run. So, measuring current and past profitability and projecting future profitability is very important. Stierwald (2016) contends that profitability is one of the four building blocks for analyzing financial statements and company performance as a whole. The other three are efficiency, solvency, and market prospects. Investors, creditors, and managers use these key concepts to analyze how well a company is doing and the future potential it could have if operations were managed properly (Stierwald, 2016).

According to Gituma (2017), the two key aspects of profitability are revenues and expenses. Revenues are the business income. This is the amount of money earned from customers by selling products or providing services. Generating income is not free, however Gituma (2017) maintains that businesses must use their resources to produce these products and provide these services. Al-Nimer and Yousef (2015) reason that resources, like cash, are used to pay for expenses like employee payroll, rent, utilities, and other necessities in the production process. Therefore, profitability looks at the relationship between revenues and expenses to see how well a company is performing and the future potential growth a company might have (Al-Nimer & Yousef, 2015). Profitability is measured by an income statement that maintains a record of income and expenses over an interval of time (Adefulu, 2015). Businesses cannot survive without profitability, and a highly profitable

business rewards its owners with a considerable return on their investment. According to Adefulu (2015), business managers are responsible for increasing a firm's profitability, by subjecting each process under scrutiny, the aim is to point out changes that improve profitability.

These changes can be examined with a pro forma income statement, also referred to as a partial Budget, allowing one to analyze the impact of these modifications on profitability, before implementing it (Asimakopoulos et al., 2017). According to Fitzsimmons et al. (2016), different decision tools or profitability ratios can be employed to evaluate a bank's profitability. The tools include among others, profit margin, return on assets and return on equity. According to Meriläinen (2015) profit margin is expressed in percentage and can be assessed by dividing net income by revenue. Net income or net profit is the remaining amount after subtracting company expenses from total revenue. Gross profit margin, pre-tax profit margin, net margin, operating margin are different kinds of profit margins commonly used during evaluation. Andersson and Wachtmeister (2016) claim that though it is quite helpful in comparing the profitability of two different companies, it is necessary that both these organizations have to be from the same industry, contain similar business models and demonstrate the same revenue. A comparison otherwise would be inaccurate, and therefore, redundant. In the case of companies that are losing money, the profit margin is inconsequential as they are not generating any profit (Alharthi, 2016). According to Seidu (2011), four useful measures of firm profitability are the rates of return on firm assets (ROA), the rate of return on firm equity (ROE), the operating profit margin and net firm income.

In addition, ROA measures the return to all firm assets and is often used as an overall index of profitability, and the higher the value, the more profitable the firm business (Kharatyan, 2016). According to Baten and Kamil (2016), return on assets (ROA), also known as return on investment (ROI), acts as an indicator of a company's profitability of its total assets. It reveals how efficient the management is in employing resources to its full potential, to generate profit. ROA is denoted as a percentage and is calculated by dividing an organization's annual earnings by its total assets (Akhmedjonov & Balci, 2015). In the case of public companies, ROA varies significantly as they are quite dependent on the industry. Therefore, ROA, when used to compare company profitability should be evaluated against past ROA numbers or ROA of an analogous company. A higher ROA is the preferable result as it denotes that the business is generating more revenue on less investment (Chavarin, 2016). On the other hand, ROE measures the rate of return on the owner's equity employed in the firm business (Mubin et al., 2014). Similarly, ROE is the ratio that assesses revenue generated by a company about investments made by equity holders (Alarcon & Sanchez, 2013).

It is also denoted as a percentage and measures a company's efficiency, indicating its capacity to generate profit without much investment (Mungal, 2015). A higher ROE is a measurement of management efficiency when utilizing investment. One should be aware that a decrease in the value of shareholder's equity, for instance, write-downs or share buy-backs, boosts the ROE number mechanically. The same thing can be observed in cases of high debt. Therefore, to get accurate ROE, comparisons should be made within the same industry, and evaluation (high or low) should be achieved under the same context (Cardesjö & Lind, 2017). Furthermore, profit margin, net margin, net profit margin or net profit ratio is a measure of profitability. It is calculated by finding the net profit as a percentage of the revenue (Heino, 2015). The profit margin is calculated with the selling price (or revenue) taken as base times 100. It is the percentage of the selling price that is turned into profit, whereas "profit percentage" or "markup" is the percentage of the cost price that one gets as profit on top of the cost price (Puccinelli et al., 2013). While selling something one should know what percentage of profit one will get on a particular investment.

So, companies calculate profit percentage to find the ratio of profit to cost. According to Dao (2016), the profit margin is used mostly for internal comparison. It is difficult to accurately compare the net profit ratio for different entities. Individual businesses' operating and financing arrangements vary so much that different entities are bound to have different levels of expenditure, so that comparison of one with another can have little meaning. Ginting (2015) argues that a low-profit margin indicates a low margin of safety: a higher risk that a decline in sales will erase profits and result in a net loss, or a negative margin. Profit margin is an indicator of a company's pricing strategies and how well it controls costs. Differences in competitive strategy and product mix cause the profit margin to vary among different companies (Svahn, 2013). Ratembo (2017) also conducted a study to find out the association between corporate strategy and the financial performance of Kenyan

insurance companies. The data were analyzed through regression analysis, and it was established that the corporate strategy adopted influenced the firm performance as measured by both financial and non-financial metrics.

It was also established that more companies are adopting strategic alliances and partnerships to increase and maintain respective market shares. It was established that corporate strategy enhances the competitive advantage of the organization over its rivals. The research recommended that the government through its various agencies should put in place the right policies that support the insurance firms as a way of increasing their contribution to the economy. Further studies are recommended to establish the effect of competitive advantage on the survival of insurance companies and how portfolio mix influences the adoption of generic corporate advantage strategy by insurance companies in Kenya. Arasa and Nduku (2015) conducted a study to examine the influence of international market entry strategies on the financial performance of manufacturing multinationals in Kenya. The questionnaire was used as the preferred data collection tool. Both descriptive and inferential statistics were utilized to facilitate data analysis. Results indicated that manufacturing multinationals used various international market strategies to venture into business.

These strategies include licensing, wholly owned subsidiaries, joint ventures, exporting, direct investment and strategic alliances. Study findings also indicated that firms intending to go international do consider various factors when choosing a market entry strategy. These considerations include resources available, company competence, competition in the market, size of the host country, availability of possible partnering firms within the host country, host country requirements and state of firm development. Regression results indicated that market entry strategies do influence firm financial performance (profitability and market share). The study concluded that manufacturing multinational firms use more than one market entry strategy to venture into the international arena and all market entry strategies have a positive and significant relationship with the performance of firms. Consequent to the above-reviewed literature, the present study, therefore, hypothesized the following: Ho_1: There is no significant effect of corporate strategy on the financial performance of foreign commercial banks in Bujumbura; Ho_2: There is no significant effect of competitive strategy on the financial performance of foreign commercial banks in Bujumbura; and Ho_3: There is no significant effect of operational strategy on the financial performance of foreign commercial banks in Bujumbura.

3. Methodology

The study adopted a cross-sectional descriptive survey design. Cross-sectional descriptive design aims to describe or define a subject, by creating a profile of banks through the collection of data and tabulation of the frequencies of research variables or their interaction (Jahanshahi et al., 2012; Malhotra et al., 2013). Wambua (2014) and Wulff (2015) argued that descriptive surveys describe and interpret phenomena and are concerned with conditions or relationships that exist, opinions that are held, processes that are going on, and evident effects or trends that are developing. The choice of this research design is justified since the study aims to identify the general characteristics of corporate strategies employed by foreign commercial banks in Burundi. Similar studies that have used this approach include: Arasa and Nduku (2015), Wambua (2014); Wulff (2015) and Zekiri (2011). According to Wambua (2014) and Zekiri (2011), a population is a well-defined set of people, services, elements events groups of things or households that are being investigated.

A research study's target population should be clearly defined, and the unit of analysis should be identified, which is not easy sometimes (Jahanshahi et al., 2012). The target population consists of all the units being studied. The unit of analysis is the entity or who is being analyzed. The population of the study in this current research comprised all the commercial banks in Burundi which have entered into foreign markets. According to the Bank of the Republic of Burundi Annual Report (2017), 4 commercial banks have entered Burundi. Thus, all of the foreign commercial banks participated in the study since the population is small. The study looked at 219 employees (technical staff) and managers from the marketing departments of the four commercial banks (Bank of the Republic of Burundi Annual Report, 2017). The sample size for this study was calculated using Slovene's formula (Awolusi, Mbonigaba & Tipoy, 2018). Consequently, the sample size was 142. Table 1 gives a summary of the population and sample size.

Table 1: Study Population and Sample Size

Banks	Target Population	Sample Size
CRDB	47	30
KCB	65	42
DTB	46	30
ECOBANK	61	40
Total	**219**	**142**

Source: Bank of the Republic of Burundi Annual Report (2017)

This study used both the non-probability and probability sampling techniques. In the non-probability technique, the study employed purposive sampling to select the managers of marketing departments because it is useful in identifying uniquely qualified respondents to provide needed information. The selection was based on expert knowledge of the particular problem of the research. On the other hand, probability sampling, specifically simple random sampling was used to collect data from the technical staff. The study used primary data sources. Primary data was collected using a questionnaire on the topics of corporate strategy and financial performance. The questionnaire was used as the data collection method. The questionnaire survey was done objective by objective targeting the technical staff to respond to questions regarding corporate strategies and financial performance. The data collection tool that was employed in this method was a questionnaire (structured questionnaire). The questionnaire was preferred because it is easy to administer, saves time and allows for doubts to be clarified on the spot by many respondents (Sekaran, 2003). The questionnaire was preferred in this study because it is cheap and can cover a wide range of respondents; provides respondents with adequate time to understand the questions asked and provide answers accordingly.

A researcher is able to collect data from a wide range of samples from the target population, group or elements under investigation; and questionnaires maximize objectivity since the researcher is dependent on respondent's views/opinions (Awolusi, Mbonigaba & Tipoy, 2018). To ascertain the validity of the instrument, content validity was adopted. The instrument was validated by the researcher's supervisors. They ensured that the instrument represents the entire range of possible items to be tested in the study. The questionnaires were modified in line with their recommendations. Furthermore, a content validity index (CVI) was used; where a CVI value greater than 0.70 was considered valid otherwise not valid (Amin, 2005). The resulting CVI of 0.92 in the present study implied that the instrument was valid (Amin, 2005). Alternatively, the reliability of the instrument was ascertained using the internal consistency method (Sekaran & Bougie, 2010). The questionnaire was given to a 10-man expert on the field for their grading based on a 5-point Likert scale. The researcher used Cronbach's alpha correlation matrix to test the reliability of the instrument as ranked by the experts (Sekaran & Bougie, 2010). Table 2 provides the rule of thumb for Cronbach's alpha coefficient value by Zikmund et al. (2010), while Table 3 gives the Cronbach's results for the study.

Table 2: Rule of Thumb for Cronbach's alpha Coefficient Value

Alpha Coefficient Range	Strength of Association
0.90 to 1.0	Excellent
0.80 to 0.89	Very Good
0.70 to 0.79	Good
0.60 to 0.69	Moderate
Less than 0.60	Poor

Adopted from: Zikmund et al. (2010)

Table 3: Cronbach's Reliability Results

Tested Variables	Number of Items	Cronbach's Alpha
Corporate strategies	18	0.931
Financial performance	8	0.847

The above results show that Cronbach's alpha value on corporate strategies was interpreted as 'Excellent', implying that there was a high level of reliability because of the high level of internal consistency. On the other hand, Cronbach's alpha value for financial performance was interpreted as 'Very Good', implying a high level of reliability due to a high level of internal consistency. Linear regression analysis was used to determine the extent to which corporate strategies predict the variation in financial performance. The null hypothesis was tested using the level of significance ($p \leq 0.05$); if the p-value is less or equal to 0.05, it was considered significant; otherwise, the null hypothesis was rejected.

4. Results and Discussion of Findings

The demographic characteristics of respondents in this study included age, gender, education level, and work experience. The majority, (64.8%) of the respondents were male while 35.2% of them were female. The dominance of the male respondents in the study implies that foreign commercial banks prefer to employ men because they are energetic, enthusiastic, and focused in their work compared to their female counterparts especially in the area of family-work life balance. Furthermore, (43%) of the respondents were within the age group of 40-49 years, followed by 28.9% who were within the age group of 20-29 years, while those within the age group of 30-39 years and 50 and above were represented by 21.1% and 7% respectively. The dominance of the respondents within the age group of 40-49 years implies that foreign commercial banks prefer to employ persons who have developed their professionalism in the banking sector and are therefore more staple-minded and well-decided to work and develop their career. Also, the majority (62%) of the respondents were bachelor's degree Holders, followed by 17.6% who were Diploma Holders, and 12.7% who were master's degree Holders. No respondent was a PhD Holder. The dominance of bachelor's degree Holders in in this study implies that foreign commercial banks prefer employing people who are well-educated, knowledgeable and highly skilled to promote the right corporate strategies and consequent financial performance of the organization.

Results: The Effect of Corporate Strategy on the Financial Performance of Foreign Commercial Banks in Bujumbura**.** The first objective of this study was to establish the effect of corporate strategy on the financial performance of foreign commercial banks in Bujumbura. Table 4 gives a summary of the findings.

Table 4: The Effect of Corporate Strategy on the Financial Performance of Foreign Commercial Banks in Bujumbura

				Std. Error of	Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**	**the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.535[a]	.286	.281	.52160	.286	56.129	1	140	.000

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15.271	1	15.271	56.129	.000[b]
	Residual	38.090	140	.272		
	Total	53.361	141			

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	1.845	.263		7.006	.000
	Corporate strategy	.505	.067	.535	7.492	.000

a. Dependent Variable: Financial Performance

Table 4 revealed that corporate strategy significantly affects the financial performance of foreign commercial banks in Bujumbura (Adjusted R^2=0.281, p=0.000). This is because corporate strategy significantly causes a variance of 28.1% in financial performance. This implies that when foreign commercial banks focus on competitors, service quality, customers, and market research, it becomes much easier for them to realize financial performance in terms of an increase in sales volume and subsequent increase in profit margin. The decision rule was that: if $p \leq 0.05$, the null hypothesis would be rejected, and the alternative hypothesis accepted. For that reason, the finding in Table 4 shows that the null hypothesis that there is no significant effect of corporate strategy on the financial performance of foreign commercial banks in Bujumbura was rejected, and

the alternative hypothesis that there is a significant effect was upheld. Furthermore, the study revealed that the regression model was a good fit for predicting the effect of corporate strategy on financial performance (F=56.129, p=0.000). Similarly, the study revealed that every unit change in corporate strategy would significantly predict variance in financial performance by 53.5% (Beta=0.535, p=0.000).

The Effect of Competitive Strategy on the Financial Performance of Foreign Commercial Banks in Bujumbura: The second objective of this study was to examine the effect of competitive strategy on the financial performance of foreign commercial banks in Bujumbura. Table 5 gives a summary of the findings.

Table 5: The Effect of Competitive Strategy on the Financial Performance of Foreign Commercial Banks in Bujumbura

				Std. Error of the Estimate	Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**		**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.392[a]	.153	.147	.56807	.153	25.355	1	140	.000

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.182	1	8.182	25.355	.000[b]
	Residual	45.179	140	.323		
	Total	53.361	141			

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.240	.312		7.187	.000
	Competitive strategy	.402	.080	.392	5.035	.000

a. Dependent Variable: financial performance

Table 5 revealed that competitive strategy significantly affects the financial performance of foreign commercial banks in Bujumbura (Adjusted R^2=0.147, p=0.000). This is because competitive strategy significantly causes a variance of 14.7% in financial performance. This implies that when foreign commercial banks make use of advanced technology, employee training and development, and promotional ventures, they can penetrate the market and financially become viable. The decision rule was also that: if p≤0.05, the null hypothesis would be rejected, and the alternative hypothesis accepted. For that reason, the finding in the table shows that the null hypothesis that there is no significant effect of competitive strategy on the financial performance of foreign commercial banks in Bujumbura was rejected, and the alternative hypothesis that there is a significant effect was upheld. Furthermore, the study revealed that the regression model was a good fit for predicting the effect of competitive strategy on financial performance (F=25.355, p=0.000). Similarly, the study revealed that every unit change in competitive strategy would significantly predict a variance in financial performance by 39.2% (Beta=0.392, p=0.000).

The Effect of Operational Strategy on the Financial Performance of Foreign Commercial Banks in Bujumbura: The third objective of this study was to determine the effect of operational strategy on the financial performance of foreign commercial banks in Bujumbura. This gives a summary of the findings.

Table 6: The Effect of Operational Strategy on the Financial Performance of Foreign Commercial Banks in Bujumbura

				Std. Error of the Estimate	Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**		**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.484[a]	.234	.229	.54033	.234	42.773	1	140	.000

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	12.488	1	12.488	42.773	.000[b]
	Residual	40.873	140	.292		
	Total	53.361	141			

Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	2.465	.208		11.863	.000
	Operational strategy	.383	.059	.484	6.540	.000

a. Dependent Variable: financial performance

Table 6 revealed that operational strategy significantly affects the financial performance of foreign commercial banks in Bujumbura (Adjusted R^2=0.229, p=0.000). This is because operational strategy significantly causes a variance of 22.9% in financial performance. This implies that when foreign commercial banks have adequate finances to train their employees and constantly improve their operational processes, then they can improve their financial performance. The findings in Table 7 show that the null hypothesis that there is no significant effect of operational strategy on the financial performance of foreign commercial banks in Bujumbura was rejected, and the alternative hypothesis that there is a significant effect was upheld. Furthermore, the study revealed that the regression model was a good fit for predicting the effect of operational strategy on financial performance (F=42.773, p=0.000). Similarly, the study revealed that every unit change in operational strategy would significantly predict a variance in financial performance by 48.4% (Beta=0.484, p=0.000).

Table 7: Multiple Regression Analysis for the Effect of Corporate Strategies on Financial Performance

				Std. Error of	Change Statistics				
Model	**R**	**R Square**	**Adjusted R Square**	**the Estimate**	**R Square Change**	**F Change**	**df1**	**df2**	**Sig. F Change**
1	.665[a]	.442	.430	.46457	.442	36.415	3	138	.000

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	23.578	3	7.859	36.415	.000[b]
	Residual	29.783	138	.216		
	Total	53.361	141			

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.588	.322		1.824	.070
	Corporate strategy	.322	.068	.341	4.756	.000
	Competitive strategy	.291	.067	.283	4.338	.000
	Operational strategy	.243	.056	.307	4.366	.000

a. Dependent Variable: financial performance

The results presented in Table 7 show that all the corporate strategies employed in this study together significantly affect financial performance by a variance of 43% (Adjusted R^2=0.430, p=0.000). This implies that a combination of corporate strategy, competitive strategy and operational strategy influences financial performance by 43% while 57% of the variance in financial performance is accounted for by other variables beyond the scope of this study. Additionally, the study revealed that the regression model was a good fit for predicting the effect of corporate strategies on financial performance (F=36.415, p=0.000). Furthermore, the study in Table 4.4 revealed that corporate strategy was the highest predictor of financial performance. This is because a unit change in corporate strategy would significantly cause a variance of 34.1% in financial performance (Beta=0.341, p=0.000). The second highest predictor of financial performance was operational strategy. This is because a unit change in operational strategy accounted for a 30.7% variance in financial performance (Beta=0.307, 0.000). Lastly, the least predictor of financial performance was the competitive strategy. This is because a unit change in competitive strategy accounted for a 28.3% variance in financial performance (Beta=0.283, p=0.000). This therefore implies that foreign commercial banks in Bujumbura should ensure that they place more emphasis on the application of corporate and operational strategies to penetrate the market and continue soaring in the banking arena of Burundi.

Discussion of the Findings: The finding of the current study is in line with that of Marous (2018) who found that corporate strategy allows organizations to be proactive, by better understanding opportunities and threats that may be in the market. The author argued that being proactive can improve differentiation from the competition and enable the efficient deployment of resources. Grinblatt and Titman (2016) also found that corporate strategy increases operational efficiency, helps to increase market share and profitability, and makes

the overall business more sustainable in the long term. Similarly, Purce (2014) found that any corporate strategy should take into account the starting point and the customer, competitive, technological and regulatory trends affecting a bank and its markets. It should also equip the bank to manage through financial market and economic cycles, being explicit about the risk exposures desired and how to adjust those exposures throughout the cycle. This therefore implies that corporate strategy has the capacity to identify attractive markets and the ability of a bank to develop a strong and sustainable position in those markets so that it can build a few distinctive assets and capabilities that set it apart. In other words, differentiation should come not from baseline steps such as moving activities online but rather by molding features that will induce customers to take out a mortgage or invest their wealth with one bank over its competitors.

Therefore, foreign commercial banks in Burundi should know and understand that consumers want simple ways to interact with their financial institutions that will be contextual to their personalized needs. They do not want to visit a branch unless necessary. Instead, they want financial solutions that are proactive and reflect real-time activities and needs, not pre-scheduled product campaign messages that provide minimal value. For that reason, Kwabena (2016) opines that banking institutions of all sizes should have the ability to use data and advanced analytics to proactively engage with consumers in ways that will save them time and money. In return for this enhanced value proposition, consumers will be more satisfied, more loyal and will deepen their relationship. Thus, foreign commercial banks in Burundi must re-calibrate how they engage with their customers and members to reach the potential that corporate strategy is meant to achieve. These findings in the second objective concurs with those of Anand (2012) who identified key parameters of competitive rivalry to include price discounting, new product introduction, advertising campaigns and service improvements. Mathooko and Ogutu (2015) also found that competition is inevitable for commercial banks to be successful and competitive. This helps the banks to learn how to cope with business rivals.

This highlights the need for managers to be vigilant in developing competitive strategies, especially in considering the objectives of rivals and strategizing on how to position their organizational strategies. Consequently, Kwabena (2016) examined the impact of generic competitive strategies on organizational performance and established significant positive effects of the three competitive strategies: cost leadership, differentiation and focus strategies on performance. Furthermore, Mugo et al. (2012) investigated competitive intelligence practices and their effect on the profitability of firms in the banking industry using the case of Equity Bank. The study highlighted intelligent product development as one measure of effectiveness in the application of competitive strategies. Similarly, Naiye (2016) found that quality of service or/and management, corporate social responsibility, strategy formulation, (electronic) marketing innovation and creativity, among others are factors influencing competitive strategies in the banking sector. Likewise, Kariuki (2014) found that increased competition in the banking industry threatens the attractiveness of the industry thereby reducing commercial banks' profitability. This is because it exerts pressure on banks to be proactive and to formulate successful strategies that facilitate proactive responses to anticipated and actual changes in the competitive environment.

Therefore, for foreign commercial banks in Burundi to remain competitive and outperform their competitors, they should develop appropriate strategies to drive their performance. For example, they can identify a market niche they wish to serve. Thus, by focusing on a given niche in the market, commercial banks are able to customize their financial services to the needs of that market niche. In addition, Reimink (2019) also observed that forward, innovative thinking combined with impactful strategies and efficient operations are essential to respond to rapidly changing markets, technologies, and regulations. We understand that sound operational strategies go beyond daily business requirements in helping to increase competitive advantages and compete with industry leaders. This is the reason why Olsen et al. (2017) found in their study that the operational strategy enhanced by the use of technology and automation in the banking sector is threefold: to have applications that allow customers to make transactions or obtain information on a self-service basis without requiring employee efforts; to use technology to reduce the time employees spend on finding information; and to use automated business rules and decision models to move work more quickly and efficiently through processes. Migdadi (2013) also conquered that operational strategy facilitated by automating core processes, affects not only how customers interact with the bank.

But also, how banks communicate important information internally and how they manage their sales and customer relationship activities. However, contrary to the present study, Edward (2014) found that the opportunity to improve operational strategy through process costs often is underappreciated in banks, in part because it involves taking a more built-up view of business processes. Edward (2014) indicated that process improvement in this area involves continual performance monitoring and often comes about as a result of analyzing, mapping, benchmarking, and ultimately rethinking back-office processes. In addition, Brown (2014) found that the goal of operational strategy is to improve the bank's efficiency ratio by reducing the unit cost-to-value ratio of each activity or transaction – such as the cost of opening an account, creating a loan document package, or handling a specific type of transaction (Zekiri, 2011; Zhang et al., 2016; Zhou, Dev & Brown, 2017).

5. Conclusion, Recommendations and Policy Implications

This study therefore investigated the relationship between corporate strategies and financial performance among foreign commercial banks in Burundi. The following objectives guided the study: to establish the effect of corporate strategy on the financial performance of foreign commercial banks in Bujumbura; to examine the effect of competitive strategy on the financial performance of foreign commercial banks in Bujumbura; and to determine the effect of operational strategy on the financial performance of foreign commercial banks in Bujumbura. The study used cross-sectional descriptive research design using a quantitative approach. The target population was 219 employees including technical staff and management. A sample size of 142 respondents was determined and simple random sampling was used to select the respondents. The questionnaire was used as the main data collection instrument and data was analyzed using frequency, percentage tables, mean, standard deviations, and linear regression analysis. The study concluded that corporate strategy significantly affects the financial performance of foreign commercial banks in Bujumbura. This is attributed to the fact that the use of a search mechanism for information about competitors, emphasis on quality service, constant development of information about customer needs and improving existing customer service, gives a leveled ground for opportunities of realizing growth in financial performance over the years.

The study also concluded that competitive strategy significantly affects the financial performance of foreign commercial banks in Bujumbura. This is largely because when foreign commercial banks decide to focus their attention on customers, technological advancement, advertisement and promotional activities, market research and employee training and development, then they end up establishing a fertile ground for a better competitive advantage that can help them harness improvement in financial performance in a long run. Lastly, it was concluded that operational strategy significantly affects the financial performance of foreign commercial banks in Bujumbura. This is because when foreign commercial banks have enough financial resources to make use of constant improvement in their services, skilling employees and developing new processes of delivering quality services to customers, they become unstoppable to realize a boom in financial performance. Given the findings and conclusions made in the preceding sections, the following recommendations were contrived: The management of foreign commercial banks in Bujumbura should employ the use of a total quality management system to improve the quality of their services to the customers.

This can be done through quick customer feedback, professional handling of customer complaints, after-sales services, providing diverse banking services that meet all the demographics of the population in Burundi, and providing fast services that are not bound to delays. Furthermore, the management of foreign commercial banks in Bujumbura should make use of a customer relationship management system. This they can do by creating a customer database that enables them to understand their customer's likes and preferences. This can help them maintain a good relationship with customers by providing them with alert messages of newly available products or services, discount offers, and opportunities to participate in business forums. In the long run, they retain existing customers and attract new customers, thus a boom in financial performance. The management of foreign commercial banks should employ advanced and constant methods of market research to be in 'the know' of market threats, and opportunities. This will help them come up with better solutions that address the immediate needs in the market thus wooing customers in such a given market segment. Similarly, given the fact that the banking sector is very dynamic, the management of foreign commercial banks should heavily invest in technologies that are tailor-made to meet the ever-growing banking needs of the banked and the unbanked urban and rural populations respectively.

This can be done through several ways among which include Internet banking, mobile money banking, agent banking, ATM banking, Point-of-Sale banking and any other innovation that might be better at meeting market needs. Thus, once these technologies are used successfully, they can be able to attract customers, thus improving their financial performance. Furthermore, foreign commercial banks should invest heavily in advertisement and promotional activities to make customers aware of the services they are offering and how better they are compared to those of their competitors. The advertisements can be done through the main media platforms and social media. They can also use seminars, symposiums, trainings, and business forums to assert their presence in the market. Promotional activities such as discounts, providing subsidized financial services to entrepreneurs such as vulnerable women and youth, sponsoring community social services such as water, and sanitation, reproductive health, child nutrition, HIV/AIDs, football clubs, or educational ventures can be a good start to affirm community social relationship. Lastly, the management of foreign commercial banks should develop new processes for delivering their services to their customers. This they can achieve by using new technologies, or by bringing their services much nearer to the customer, for example, by having banking points in busy markets, bus terminals, institutions of learning, health facilities, or any public spaces. In addition, these banking points should be accessible, secure, convenient and reliable for customers to perform their banking transactions with ease.

Furthermore, to stay at the top of the competition, the management of foreign commercial banks should constantly develop the skills and knowledge of their employees through regular training, conferences, and in-service education where they can sharpen their banking skills by interacting with different brains from across the globe and discuss on topics that readily address banking needs in society. Thus, when armed with skilled, informed and professional employees, it will be a matter of time before financial performance can be realized. In other words, the employee should be made to feel like 'a boss' and fellow 'partner' in the business and the rest will find themselves in line automatically. Studies by Arasa and Nduku (2015), and Ratembo (2017) indicate that corporate strategies employed by insurance companies and manufacturing companies have a significant influence on financial performance. Thus, this study also adds knowledge that in the banking industry, the use of corporate strategies, competitive strategies and operational strategies has significant effects on financial performance. However, the current study used a descriptive research method using a primary source of data which was collected using a questionnaire as the main research instrument; future studies may adopt a longitudinal research method expanding up to 10 years using secondary data collected from annual financial statements to substantiate the trend in the financial performance of foreign commercial banks in terms of profitability, return on assets, return on investments, and return on equity. Furthermore, the current study only looked at the financial performance of foreign commercial banks, however future studies should also look at the quality of services, the level of customer and employee satisfaction, and market share.

Acknowledgment: This paper is an extract from a master's in international business thesis at Kampala International University, Kampala, Uganda. Prof. Olawumi .D. Awolusi was the supervisor of the study

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Journal of Economics and Behavioral Studies (JEBS)
Vol. 15, No. 4, December 2023 (ISSN 2220-6140)

Determinants of Uganda's Debt Sustainability: The Public Debt Dynamics Model in Perspective

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Abstract: To investigate Uganda's debt sustainability determinants. The fundamental framework for this study is the public debt dynamics model, which looks at connections between changes in public debt and important macroeconomic factors such as real GDP, primary balance, currency rate, real interest rate, and trade openness. While acknowledging the significance of the primary variables identified by Mupunga and Le Roux, our empirical analysis of a country's debt dynamics extends beyond these factors. Additional considerations include the incorporation of controls such as the production gap and the non-interest current account balance. Tailored to Uganda's economic context, our comprehensive empirical model aims to provide a nuanced understanding of the diverse determinants influencing debt dynamics in the region. The major conclusions indicate that the Primary Balance, Real Interest Rate, and Real Effective Exchange Rate all positively and significantly affect the debt ratio, suggesting that fiscal surplus, low-interest rates, and currency appreciation are favorable to debt reduction and sustainability. The paper also finds that the debt ratio is negatively and significantly influenced by the Current Account Balance, indicating that trade surplus is beneficial for debt management. The paper further finds that the debt ratio is not significantly influenced by GDP growth, suggesting that economic growth may not have a strong effect on debt dynamics in Uganda. Given the significant impact of the "Primary Balance" on the "Debt-to-GDP ratio in the long run, policymakers should prioritize maintaining a fiscal surplus and prudent fiscal management. Implementing measures to enhance revenue generation, control government expenditures, and reduce budget deficits can contribute to reducing the debt burden and ensuring long-term debt sustainability. To keep the debt-to-GDP ratio in good shape, fiscal policies and long-term restraint are crucial.

Keywords: *Debt Sustainability, Public debt dynamics model, Uganda*

1. Introduction

Public debt is a key source of financing for many countries, especially for developing countries that face resource constraints and development challenges. Infrastructure and public capital projects that are necessary for social welfare and economic progress can be financed in part by public debt (Debrun et al., 2019). However, public debt can also pose serious risks for macroeconomic stability and long-term debt sustainability if it exceeds the country's ability to repay and service its obligations (Wyplosz, 2011). Therefore, for any government to design macroeconomic policies that are wise and effective, it is imperative to understand the factors that determine debt sustainability.

This study looks at Uganda's debt sustainability factors. Uganda is an African developing nation whose public debt has significantly increased recently. Under the Multilateral Debt Relief Initiative (MDRI), 36 low-income countries, including Uganda, had their external debt to international organizations eliminated in the 1990s and 2000s (Cirolia, 2020). However, because of increased borrowing from both local and foreign sources, Uganda's debt situation has gotten worse recently, raising questions about its sustainability and susceptibility to shocks from the outside world (Atta-Mensah & Ibrahim, 2020).

Uganda's external borrowing has been partly motivated by the need to attract foreign direct investment (FDI) to supplement its domestic resources and support its development agenda (Probst et al., 2021). FDI can provide foreign exchange and enhance the country's capacity to import and export goods, which can improve its balance of payments and economic growth (Bahmani & Mohammadian, 2017). However, FDI can also increase the country's exposure to exchange rate fluctuations and external debt servicing costs, which can worsen its debt situation and increase its vulnerability to external shocks.

This paper's primary research question is: What factors influence Uganda's debt sustainability? The long-term link between the debt-to-GDP ratio and the following five explanatory variables is examined in this study using a cointegration approach: primary balance, real interest rate, GDP growth, real effective exchange rate, and current account balance. Furthermore, the study uses a public debt dynamics model created by Mupunga and Le Roux (2016) to pinpoint the primary causes of variations in the debt-to-GDP ratio.

The study adds to the body of knowledge on debt sustainability by offering empirical support and recommendations for policy for Uganda, a nation that has not received enough attention in previous studies. Additionally, the study makes use of an extensive dataset that spans 1988 through 2021, making it possible to assess the impact of current policy shifts and economic developments. According to the report, Uganda's debt load grew by 11% from $5.3 billion in the 2019–2020 fiscal year to $5.9 billion in the 2020–2021 fiscal year (Bank of Uganda, 2022). It is expected to rise to 53.1 percent of GDP in the 2023–2024 fiscal year, surpassing the 50 percent threshold that the International Monetary Fund (IMF) recommends for developing nations (MOFPED, 2023). The study also shows how Uganda's debt dynamics are influenced by significant macroeconomic parameters such as economic openness, real GDP, real interest rate, real primary balance, and real currency rate.

The paper is formatted as follows: Section 2 reviews the pertinent literature on debt sustainability and its causes. Section 3 explains the data and methods used in the article. Section 4 presents and discusses the empirical results. A discussion of the consequences of policy finishes Section 5.

2. Literature review and hypothesis development

Empirical literature review

Debt sustainability: Bandiera and Tsiropoulos (2020) state that a nation's debt is sustainable if its government can fulfill all of its debt service obligations going forward without having to use accruals or debt rescheduling. According to this definition, debt sustainability is when debt service payments are consistently made by borrowers without significant changes to the borrower's income or spending patterns. According to Mohammadi et al. (2007), debt sustainability happens when a government can settle its debt and the intertemporal budget constraint is met. The debt to GDP ratio, debt to exports ratio, government debt to current fiscal revenue ratio, share of foreign debt to total debt stock, percentage of short-term debt to total debt stock, and share of concessional debt to total debt stock are among the first set of debt sustainability indicators (IMF, 2000). Debt service as a percentage of GDP, government debt service as a percentage of current fiscal revenue, and external debt service as a percentage of exports are included in the second category of measurements.

The second set of indicators is more useful for warning of potential debt service issues and drawing attention to the consequences of intertemporal trade-offs resulting from prior borrowing decisions, as they focus on the country's immediate need for cash to meet its debt service commitments. The third set of forward-looking indicators (Muhanji & Ojah, 2011) includes the average interest rate on outstanding debt as a percentage of nominal GDP growth, which shows how the debt load will change over time. By Ajayi's (1991) and Imimole et al.'s (2014) research, we assessed Uganda's debt sustainability using the debt-to-export ratio.

Primary balance and debt sustainability

When net interest payments on public debt are subtracted from the fiscal balance, we get the primary balance. Simply said, the primary balance is the total of a government's revenue minus its expenditures on public goods and services (capital & capital, 2019). The fiscal balance of a country is its ability to cover its expenses with tax receipts. It's a visual representation of the extent to which annual revenues are sufficient to meet annual expenditures. When government spending exceeds tax receipts, a fiscal deficit results, and vice versa when a budget surplus occurs (Zeb *et al*., 2022). The primary balance represents the government's finances after deducting net interest payments on the debt. (Shankar & Trivedi, 2023).

Stated differently, the primary balance is the total of a government's tax income and the expenses incurred in delivering public services. A primary deficit occurs when a country's outlays for essential public services exceed its tax receipts. The government will have to take out loans because of this (Wray, 2019).

As an illustration, by 2009, the average OECD country had a general government budget balance of -8.7% of GDP, all attributable to the Great Recession of 2007-2008. The deficits continued to shrink over the next few years, averaging -3.2 percent of GDP this year. Budget deficits increased in all 26 OECD member nations in 2020 compared to the previous year, and 18 of these countries had deficits bigger than -5% of GDP. Governments were able to raise spending substantially on healthcare, income support, and other programs to help individuals and businesses in the wake of the COVID-19 crisis because of the resulting budget deficits. The forcible closure of various economic operations led to a decline in economic activity and tax revenue, contributing to a widening deficit. To wit: (Dauti & Elezi, 2022). The United Kingdom had the largest fiscal deficit (-12.3% of GDP) in 2020 among the 26 OECD countries for which data was available, while Denmark had the smallest deficit (-1.1% of GDP). Denmark was able to provide significant fiscal help while keeping a minor deficit since it had the second-largest fiscal surplus in the OECD at the onset of the crisis. Norway had the largest budget surplus of any country when the crisis hit. For example, Canada's fiscal balance worsened by 11.2% of GDP while Sweden's was just -3.7% (Debaere, 2023) of GDP.

Long-term deficit spending leads to an increase in the national debt since interest payments on borrowed funds must be paid back with interest paid to the public (Reis, 2022). Prolonged fiscal deficits cause the government to borrow money regularly, which drives up the deficit. This is due to the company's commitment to making interest payments on its existing debt. If the government borrows more money than expected, it will have to pay more in interest, which could raise the budget deficit (Mwankemwa & Luvanda, 2022). Without special financial support or by default, a government with a persistent budget deficit is doomed to be unable to fulfill its debt in the long run (Deheri & Nag, 2022).

According to data comparing Sub-Saharan Africa's budget balance to GDP between 2017 and 2021, with predictions through 2027, the region's budget deficit in 2021 amounted to about 5.12% of GDP (Malla & Pathranarakul, 2022). Average growth in Africa's external debt was 4.3%, bringing the total stock to $591 billion, excluding South Africa's contribution. Senegal and Cote D'Ivoire are only two examples of countries whose external debt is expected to increase by double digits in the next years (Agyeman, Sakyi & Oteng-Abayie, 2022). Long-term economic growth has been negatively impacted by debt loads in many African countries, leading to slower GDP growth, lower assets from investment and profits or capital formation, and higher tax rates in the affected nations to raise more revenue to pay off the debts (Manasseh *et al*., 2022).

Recent analyses on debt sustainability from the IMF and the Ministry of Finance suggest that while Uganda's debt is currently sustainable, there is a slight chance that it will become unsustainable in the medium and long run (Mageto, 2022). Uganda's fiscal deficit increased from 9.9 trillion shillings in the fiscal year 2019–20 to 13.5 trillion shillings in the fiscal year 2020–21, while the country's current account balance (as a percentage of GDP) was -8.8% in 2021. Uganda's current account balance (as a percentage of GDP) decreased continuously from 2002 to 2021, reaching -8.8% in that year, despite notable changes in earlier years. Uganda's debt to GDP was 46.32% in 2020 (Mageto, 2022).

Real effective exchange rate and debt sustainability

The real effective exchange rate can be found by subtracting the price deflator or cost index from the nominal effective exchange rate. The nominal effective exchange rate is the value of a currency relative to a basket of other currencies (Thuy & Thuy, 2019). When the real effective exchange rate increases, trade competitiveness decreases since there are greater export costs and lower import costs as a result (Boubakri et al., 2019). A country must see a decline in import prices and an increase in export prices to become less trade competitive due to an increase in its real effective exchange rate (Tran, 2022).

Using a co-integration test and dynamic OLS, Greenidge et al. (2010) investigated the factors impacting external debt in the Caribbean Community. They found that export, foreign debt, and the real effective exchange rate (REER) were negatively correlated. Export and GDP indicate a positive correlation with debt sustainability, per Kiptoo's (2012) review of the factors influencing Kenya's foreign debt sustainability. The analysis also shows a significant inverse relationship between foreign debt and debt sustainability. Mahmood et al. (2009) investigated Pakistan's debt sustainability using a number of techniques, including the debt-to-export ratio. Their results suggest that interest rates have less of an impact than the fiscal deficit.

In the debt accumulation experiments carried out in Nigeria by Ajayi (2000) and Uganda by Barungi and Atingi (2000), external effects were investigated. The study's findings demonstrate that these countries' real effective exchange rate (REER) and terms of trade (TOT) significantly affect their foreign debt. Loser (2004) discovered that the relative economic efficiency ratio, total outstanding debt, interest rate, and fiscal deficit are all indications of how sustainable external debt is in low- and middle-income countries. The primary causes of external debt, according to Bader and Magableh's (2009) examination of the variables influencing Jordan's foreign debt buildup, were the budget deficit, the overall amount of external debt, and the saving gap. REER was the most important factor affecting the total amount of external debt.

The study conducted by Awan et al. (2011) investigated the correlation between the terms of trade, exchange rate, and fiscal deficit of Pakistan and its external debt. This analysis demonstrates that the previously mentioned explanatory variables and foreign debt have a strong long-term link. Similarly, trade openness, the nominal currency rate, and the budget deficit were found to be significant predictors of Pakistan's external debt in a recent study by Awan et al. (2015). According to Pyeman et al. (2014), Malaysia's foreign debt was significantly influenced by exports, GDP, and foreign direct investment. Co-integration analysis was utilized by Imimole et al. (2014) to investigate the factors that support and compromise Nigeria's ability to pay back its foreign debt. They found that while there is an inverse link between the total amount of external debt and the ratio of external debt to GDP, this relationship is not statistically significant. Ajayi's (1991) regression analysis shows a negative correlation between Nigeria's debt-to-export ratio, the state of the government's finances, the deceleration of income growth in developed countries, and the increase in real interest rates worldwide. Additionally, he found concrete evidence that Nigeria's falling terms of trade were the reason behind the country's rising debt-to-export ratio.

Real GDP and debt sustainability

Economic growth can be influenced by a wide range of circumstances, and the factors influencing national economies have been the subject of numerous studies (Batrancea et al., 2022; Alagidede & Ibrahim, 2017). On the other hand, a high level of indebtedness impedes economic progress (Herndon *et al*., 2014). Debt sustainability studies and analyses are plentiful, and the reasons that cause debt levels to fluctuate have been thoroughly researched. Piscetek (2019) finds that the main balance is a significant contributor to altering debt levels, whereas other drivers, such as interest-growth difference and currency rate, have a more muted effect. However, studies also demonstrate that financial limitations improve the micro-financial performance of businesses (Batrancea et al., 2021). This is nevertheless true even in cases where macroeconomic analysis shows that countries are becoming more indebted because of financial difficulties. Nonetheless, budgetary pressure also significantly affects publicly traded companies' short- and long-term financial health (Batrancea, 2021). Debt dynamics may be impacted by the production gap and the requirement for large stock-flow adjustments to finance social and political expenditures (Mupunga & Le Roux, 2016). D'Erasmo and Mendoza (2016) found that changes in the interest rate, currency rate, inflation, and economic growth rate characterized the debt dynamics in a panel analysis using data from 117 nations. The dynamics of debt in most African countries are significantly impacted by differences in interest rate growth (Ncube & Brixiová, 2015).

The first is able to calculate a country's debt-to-GDP ratio by dividing its total debt by its GDP. According to Thullah (2023), analysts use economic production as a substitute for the debt-to-GDP ratio when assessing a nation's ability to repay debt. A high ratio of national debt to GDP is undesirable since it increases the chance of default. According to World Bank research (Liu, 2023) economic development will be negatively impacted by an extended ratio greater than 77%. A high debt-to-GDP ratio, in Song and Zhou's opinion (2020), increases the possibility and risk of a country's default, which could destabilize domestic and international financial markets.

Due to persistent economic stagnation and demographic problems, Japan currently has the highest debt-to-GDP ratio in the world. The debt-to-GDP ratio was 221.32% at the start of 2023. It has been shown (Tsigaris *et al*., 2023), that.... In 2021, Japan's national government had a gross debt equal to 263% of GDP. Borrowing may appear affordable so long as the average return is close to zero, but this is no longer sustainable as Japan lags behind the rest of the globe in monetary tightening. Among African countries, Eritrea has the highest debt-to-GDP ratio, at 175.1% of GDP. Owusu-Nantwi, S., & Owusu-Nantwi, S. (2023). The deputy governor of the Bank of Uganda, Michael Atingi-Ego, reported to the parliament's Finance Committee in November 2022 that the

national debt had reached 80 trillion shillings by the end of September 2022, equal to about 50% of GDP. This is the year 2023 (Serumaga, 2023).

A rise in deficit expenditure that generates rapid near-term inflation is one long-term concern posed by a high debt percentage to GDP. It will be more difficult for the country to pay off its debts because of these variables leading to higher interest rates, slower revenue growth, and a minor but increased danger of a fiscal catastrophe (Liu, 2023).

Uganda's state debt is manageable in the medium term, with the impending execution of fiscal reduction measures and the winding down of crisis measures. Uganda faces a moderate danger of an external and general public debt crisis due to the country's limited ability to absorb shocks. However, stress testing highlights deviations from the norm for public debt and external debt load, especially in light of export shocks. Uganda, in particular, has limited buffer space because even a moderate shock could force the country to fail to meet its external debt servicing objectives. In 2023 (Bulime & Nakato), they predict. Therefore, GDP expansion in Uganda is required for debt-to-GDP reduction. According to the economic assessment, Uganda has the potential to generate up to 23% of GDP annually by implementing tax reforms to eliminate leakages, broadening the tax base by focusing on hard-to-reach economic activity, and increasing the effectiveness of its revenue administration systems. Additionally, by doing this, the debt-to-GDP ratio would decrease and become somewhat more manageable.

Trade openness and debt sustainability.

Increased economic and political relations between countries lead to the facilitation of cross-border commerce and economic activity, which is known as trade openness. These countries are linked by the free movement of labor and capital, as well as by global financial and economic exchanges (Igudia, 2004). The findings show that increased commerce opens opportunities for investment and growth. Two trade policies that impact economic growth are the real effective exchange rate and the average weighted tariff rate (Chhabra et al., 2023).

Kim (2011) shows that whereas developing countries suffer from trade openness, industrialized nations gain from it in terms of real income growth and economic expansion. The real impact of trade is also influenced by inflation and the degree of financial growth. Trade liberalization has a detrimental effect on economic growth in countries with poor financial systems and minimal effect on countries with strong financial systems. Trade openness encourages economic growth in nations with low inflation; it does not affect those with high inflation. Kim, Lin, and Suen (2012) claim that whereas trade has the opposite effect in countries with these attributes, it promotes economic growth in those with high incomes, low rates of inflation, and little to no agricultural exports.

The European Union (EU) is one of the most trade-friendly regions of the globe because of its relatively low import levies. In 2019, over 63% of EU imports were duty-free, according to Eurostat research. As of 2023, the European Union (EU) had signed 29 FTAs with a total of 40 countries and territories (Mtar & Belazreg). The average level of trade openness among African countries in 2018 was 74%, based on data from 49 different nations. Sudan had the lowest percentage, at 1.3%, while Djibouti had the highest at 300.4%. Kelbore (2015), and Namahoro *et al*., (2023). From what we can tell, Uganda's trade openness peaked at 41.92% in 2021 (Esaku, 2021). More trade openness will increase economic activity and raise GDP, which will lower and more manageably raise the percentage of debt compared to GDP (Biemudo et al., 2022).

Debt sustainability analysis has been the subject of a number of research in addition to the literature on debt dynamics (Ghosh *et al*., 2013). Most of these studies use a stochastic analysis of debt and the fiscal reaction function. Pakistan's debt is extensively assessed, however most of the research to date has focused on either the causes of debt growth or its long-term viability. Various major components are identified in the available research as causes of debt increase or reduction.

The primary deficit and ER fluctuations were determined to be the main factors of debt accumulation in Pakistan by Bilquees (2003) and Chandia and Javid (2013). Awan *et al*., (2011), provide additional evidence in support of these results. However, the authors of this study indicate that Pakistan's trade openness has an additional effect on the country's debt load. In contrast, Akram's (2011) studies suggest that economic growth

and stability have a favorable impact on lowering debt levels. Pakistan's debt levels are generally considered to be unsustainable or poorly sustainable in the research on debt sustainability that makes use of the fiscal reaction function (Chandia *et al*., 2019). While these studies don't focus on predicting or forecasting the sustainability of public debt, Naveed and Islam (2022) do and they find that Pakistan's debt is unsustainable for the 2019–2025 projection period.

Some research has indicated a negative association between trade openness and debt sustainability (Babatunde, 2017; Eris & Ulasan, 2013), even though there is empirical evidence of a favorable relationship between the two. Increased levels of trade openness, say Solomon and Tukur, (2019)), may be detrimental to economic growth due to the uncertainty it introduces into the economy and the accompanying fluctuations in the exchange rate and inflation. Malefane and Odhiambo (2019) researched the impact of increased commerce on Lesotho's debt-servicing capacity. Regardless of the trade openness proxy used, trade has no discernible effect on debt sustainability over the long run, according to the scholars cited above.

Real effective interest rate and debt sustainability

As assessed by the GDP deflator, the real interest rate is the lending interest rate adjusted for inflation. However, comparing lending rates between countries is difficult because of the varying terms and circumstances that come with them. To calculate the GDP deflator, the International Monetary Fund (IMF) uses data from the World Bank. According to Reis,(2022), a real interest rate is an interest rate that more accurately represents the cost of borrowing and lending money by considering the effects of inflation on the value of money.

As reported in an IMF working paper (2020), many nations have experienced a negative difference between the implicit interest rate on government debt and nominal GDP growth since the 2008 financial crisis. In light of the recent dramatic increases in interest rates seen in many countries, the results suggested that it may become increasingly difficult for less developed nations to repay their obligations without also increasing the amount of principal owed on such loans.

The existing body of empirical evidence analysis has generally indicated that rising real interest rates on borrowed funds in emerging nations have an adverse effect on the sustainability of debt. (Ahmed & Maarouf, 2021) examined the process via which debt negatively affects this industry and verified how real interest rates affect the sustainability of debt for a sample of 99 developing countries. They were able to do this by figuring out that interest rates had three different ways of transmitting their influence on debt sustainability. These include the interest rate's impact on a debt's repayment capacity, the cost of debt servicing, and the debt's indirect impact on public spending and deficits. The study's conclusions suggest that both economic growth and the sustainability of debt are negatively impacted by rising interest rates. In a related study, published in 2004, Patillo et al. used a growth accounting model on a sample of 61 developing countries and discovered that lending rates, physical capital per capita, and total factor productivity all slowed down by almost one percentage point as the average level of external debt increased.

3. Methodology

Research Design; A hybrid research design, which incorporates aspects of both longitudinal and causal connection research designs, is used in this study. Time series data have been created by compiling Uganda's annual statistics from 1988 to 2022. Time series data regression techniques have been used to analyze these data sets.

Data Type and Data Sources: Secondary data from the Uganda Bureau of Statistics is used in this study. Because the data is set up in a time series format, time series data analysis methods can be applied to the analysis. The significance of analyzing time series data is crucial, as it serves a fundamental role in extracting valuable insights from temporal information (Lim et al., 2021).

Model specification, data and estimation procedures

Theoretical framework

In this study, the public debt dynamics model developed by Mupunga and Le Roux (2016) provides the theoretical framework for analyzing the variables connected to Uganda's debt sustainability. The model links changes in real GDP, real effective interest rate, real GDP, real exchange rate, and economic openness, among other important macroeconomic variables, to changes in the total public debt as a proportion of GDP. According to the model, these variables include the primary determinants of a nation's debt dynamics, including exchange rate risk, fiscal health, borrowing costs, and trade performance.

The model can be expressed as follows:

DSt = β0 + β1 PBt + β2 REERt + β3 RGDPt + β4 EXRt + β5 OPENt + εt ……. (1)

where RGDPt represents real GDP, REERt stands for real effective interest rate, PBt stands for primary balance, DSt stands for a shift in the overall national debt relative to gross domestic product, and OPENt stands for transparency of the economy.

Description of the variables and model estimation

The government's financial situation is gauged by the primary balance, which does not include interest payments on outstanding debt. A fiscal surplus is indicated by a positive primary balance, and a fiscal deficit is indicated by a negative primary balance. While a fiscal deficit can raise it, a fiscal surplus can lower the percentage of debt on a nation's growth. Therefore, the expected sign of β1 is negative.

The actual effective interest rate, which takes inflation and fluctuating currency rates into account, is what the government must pay to borrow money. Growing real effective interest rates imply higher debt servicing costs, which could push up the percentage of debt on a nation's growth. Therefore, the expected sign of β2 is positive. The country's economic growth is gauged by the real GDP, which has two ways of influencing the debt-to-GDP ratio. On the one hand, faster economic development can lower the percentage of debt on a nation's growth by raising government revenue and lowering the demand for borrowing. Higher economic growth, however, may also result in a greater demand for public goods and services as well as increased pressure on the government to spend more money, which could increase the debt-to-GDP ratio. Therefore, the expected sign of β3 is ambiguous.

The relative costs of local and imported commodities are determined by the actual exchange rate, which has two possible effects on the percentage of debt on a nation's growth. By raising the value of the external debt to local currency, a decline in the real exchange rate may influence the percentage of debt on a nation's growth. A decline in the real exchange rate can lower the percentage of debt on a nation's growth while simultaneously making local exporters more competitive and lowering the trade deficit. Therefore, the expected sign of β4 is ambiguous.

An economy's level of integration with the global market is gauged by its level of openness, which can affect the percentage of debt on a nation's growth in two ways. Increasing transparency can help reduce the debt-to-GDP ratio by making it easier to get outside funding and foreign currency. Openness, however, can also make a country more vulnerable to external shocks and increase the volatility of capital flows, which could increase the debt-to-GDP ratio. Therefore, the expected sign of β5 is ambiguous.

Model estimation

In addition, the model was further extended by additional openness of the economy as suggested by Bandiera and Tsiropoulos (2020) and now the model is specified as;

$nDS_t = \beta_0 + \beta_1 InPB_t + \beta_2 InREER_t + \beta_3 InRGDP_t + \beta_4 InEXR_t + \beta_5 InOPEN_t + \varepsilon_t$ …… *(2)*

Whereby;

It represents the natural log

B_0 represents the constant

B_1 to B_5 represent the parameters of the independent variables

OPE is the openness of the economy

Model 3 was estimated in ARDL form as

$$\Delta DS_t = \beta_0 + \beta_1 DS_{t-1} + \beta_2 PB_{t-1} + \beta_3 REER_{t-1} + \beta_4 RGDP_{t-1} + \beta_5 EXR_{t-1} + \beta_6 OPEN_{t-1} \sum_{P=0}^{n1} \theta 1\ \Delta DS_{t-p} + \sum_{P=1}^{n2} \theta 2\ \Delta PB_{t-p} + \sum_{P=0}^{n3} \theta 3\ \Delta REER_{t-p} + \sum_{P=0}^{n4} \theta 4\ \Delta RGDP_{t-p} + \sum_{P=0}^{n5} \theta 5\ \Delta EXR_{t-p} + \sum_{P=0}^{n6} \theta 6\ \Delta OPEN_{t-p} + \varepsilon_1 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Table 1: Data type and source

Variable	Definition	Source
Debt sustainability	The total amount of state debt relative to GDP	Bank of Uganda
Primary balance as a percentage of GDP	The primary balance refers to the discrepancy between the government's revenue collection and its outlays for public goods and services.	Bank of Uganda
Real GDP	A macroeconomic metric that accounts for inflation and assesses the worth of the products and services generated by an economy over a given time frame	World Bank
Real effective interest rates	The real interest rate is the loan rate after inflation is taken into account and the GDP deflator is used to calculate it.	Bank of Uganda
Real effective exchange rate	A price deflator or cost index can be used to divide the real effective exchange rate, which determines a currency's worth in reference to a weighted average of many foreign currencies.	IMF
Openness of the economy	The extent to which imports and exports, or nondomestic transactions, occur and impact a country's economy's size and growth	World Bank

4. Empirical Results and Discussion

Descriptive analysis

The study employed data from the period in which there were no missing values. A general description of the data's properties was given through the summarization of descriptive statistics. By doing this, it was possible to guarantee that the data was suitable for estimation and would not yield inaccurate findings. To be more specific, a calculation was done to compile the mean, minimum, maximum, and standard deviation values.

Table 2: Summary of study variables

Variable	Mean	Standard Deviation	Minimum	Maximum
DEBT	46.4326	27.95301	14.79281	141.1539
Primary Balance	.0976023	3.649355	-5.223994	13.40504
Real Interest Rate	5.112639	21.04402	-53.44	23
GDP growth rate	6.085	2.403918	.39	11.52
Real Effective Exchange Rate	153.7923	108.6067	91.73405	511.0456
Current Account Balance	-885,000,000	997,000,000	-3,550,000,000	49,200,000

Observations for all variables = 36. Source: Researcher's computation using secondary data

The analysis presents descriptive statistics for six variables—DEBT, PB, REER, GDP, REXR, and CAB—that are associated with Uganda's debt sustainability. The variables' varying averages, standard deviations, minimums, and maximums, which represent the various degrees of data variability and dispersion, are shown by the findings. The variable DEBT exhibits the greatest mean and biggest range, indicating a high and heterogeneous degree of debt in Uganda. The variable PB has the lowest mean and a wide range, implying a low and variable level of fiscal surplus in Uganda. The variable REER has a moderate mean and a relatively narrow range, indicating a moderate and stable level of borrowing cost in Uganda. The variable GDP has a high mean and a

reasonable range, suggesting a high and well-behaved level of economic growth in Uganda. The variable REXR has a high mean and a large range, indicating a high and diverse level of exchange rate risk in Uganda. The variable CAB has a negative mean and a large range, implying a negative and dispersed level of trade balance in Uganda. The results also show that the variables were log-transformed to deal with outliers. A general observation that can be derived from these statistics is that Uganda faces significant challenges and risks for its debt sustainability and stability, as it has a high and increasing percentage of debt on a nation's growth, a low and variable fiscal surplus, a high and diverse exchange rate risk, and a negative and dispersed trade balance.

Pre estimation diagnostics

Unit Root Tests

The Augmented Dickey-Fuller (ADF) test, one of the stationarity tests most frequently used in academic literature, was employed in the study's subsequent stationarity tests on model variables. By testing the null hypothesis, the ADF test seeks to ascertain if a unit root exists in a given time series sample. If the test statistic (t-statistic) within the ADF is smaller than the corresponding crucial value at the 5% significance level, the null hypothesis cannot be rejected. Throughout the investigation, both the original discrepancies and the variable's unit roots were looked for.

Table 3: ADF test results

	ADF		
Variables	**Levels**	**First difference**	**Integration**
DEBT	-2.451	-3.089**	I(1)
Primary Balance	-0.212	-6.651***	I(1)
Real Interest Rate	-3.172**	-	I(0)
GDP growth rate	-7.847***	-	I(0)
Real Effective Exchange Rate	-4.471***	-	I(0)
Current Account Balance	-4.873***	-	I(0)

Source: Researcher's computation using secondary data

According to the above table's unit root test results, the levels of debt and main balance are non-stationary. As a result, one-time differencing must be used to change them into stationary values. The other variables are in a state of hovering stationary. According to the results, there are varying degrees of stationarity among the variables that should be included in the model.

Cointegration test

Given that some of the study variables were discovered to be non-stationary at levels but became stationary only after differencing them one time, it indicates that they could possess long-run relationships. The characteristic of variables having a long-run relationship is known as cointegration. Therefore, the presence of cointegration among the study variables needs to be confirmed. To find this long-term association, the study used the limits test for cointegration within the Auto Regressive Distributed Lag framework.

The null hypothesis, which asserts that there is no cointegration between the variables, is investigated using the limits test. The null hypothesis is rejected if the computed F and t-statistics are greater than the tabulated critical values at the upper and lower limits at all significance levels; if not, it cannot be rejected. The results of the test are displayed in Table 4 below.

Table 4: ARDL bounds test results

Wald statistics: F = 7.814. t = -4.140

	10%		5%		1%		P-values	
	I(0)	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**	**I(0)**	**I(1)**
F	2.525	3.930	3.094	4.719	4.516	6.671	0.000	**0.004**
t	-2.482	-3.792	-2.866	-4.259	-3.664	-5.230	0.004	**0.060**
Decision	r		.		.			

H0: no level relationship. Source: Researcher's computation using secondary data

The results of the cointegration test using the Pesaran, Shin and Smith (2001) bounds test in the table reveal that the calculated Wald statistics, with F = 7.814 and t = -4.140, were compared against critical values at different levels of significance (10%, 5%, and 1%). The F-test produced a noteworthy outcome, as the computed F-statistic exceeded all critical values, and the associated p-value was 0.000, providing compelling evidence to reject the null hypothesis of no cointegration (I(0)). Conversely, the t-test exhibited mixed outcomes, with the t-statistic falling below the critical values at the 1% and 5% significance levels but surpassing the critical value at the 10% level. At the 1% significance level, the null hypothesis—that there is no cointegration—was further refuted by the p-value of 0.004. As a result, the research concluded that cointegration between the variables occurs at the 10% significance level, indicating a sustained association between them.

The test for multicollinearity

When an independent variable in a multiple regression equation has a strong correlation with one or more other independent variables, it presents an econometric challenge known as multicollinearity. A model's ability to account for multicollinearity weakens the impacted variables' statistical significance. This study evaluated the variance inflation factor (VIF) for each independent variable after creating a correlation matrix between them to test for multicollinearity. The following is an indication of the outcomes;

Table 5: Test for multicollinearity

	1	2	3	4	5	6
DEBT (1)	1.0000					
Primary Balance (2)	0.2865	1.0000				
Real Interest Rate (3)	-0.2621	0.0119	1.0000			
GDP growth rate (4)	0.0393	-0.2335	0.2987	1.0000		
Real Effective Exchange Rate (5)	0.4275*	0.0019	**-0.8060***	-0.2654	1.0000	
Current Account Balance (6)	0.1271	-0.1024	0.0336	0.0353	0.0013	1.0000

* Indicates significance at 0.05 level. All variables are in log form. Source: Researcher's computation using secondary data

The correlation analysis was conducted as a preliminary step toward testing for multicollinearity among the variables in the dataset. The results show generally weak correlations among most variables, which is reassuring as it suggests that multicollinearity may not be a significant concern in the regression model. Nonetheless, the Real Effective Exchange Rate and the Real Interest Rate have a significant negative connection (-0.8060). This implies that the two variables have a strong linear relationship. Further research is required because higher multicollinearity between the Real Effective Exchange Rate and the Real Interest Rate may have an impact on the precision and consistency of the model's coefficient computations. The Variance Inflation Factor (VIF) analysis was used to make sure the regression model was stable and comprehensible as well as to give a more thorough knowledge of the relationships between the variables. This allowed for a thorough assessment of the presence and impact of multicollinearity.

Table 6: VIF Results

Variable	VIF	1/VIF
Real Interest Rate	2.94	0.340054
Real Effective Exchange Rate	2.87	0.348715
GDP growth rate	1.17	0.853153
Primary Balance	1.08	0.928673
Current Account Balance	1.01	0.985791
Mean VIF	**1.81**	

All variables are logged. Source: Researcher's computation using secondary data

The Variance Inflation Factor (VIF) results show that all independent variables in the model have VIF values below 5. This suggests that the variables do not significantly exhibit multicollinearity. Generally, VIF values above 10 are considered indicative of severe multicollinearity, but in this case, all variables have VIF values

well below these thresholds. The mean VIF value of 1.81 further supports the observation of minimal multicollinearity. As a result, the regression model is not adversely affected by multicollinearity, and the coefficient estimates for the independent variables can be reliably interpreted. The relatively low VIF values imply that the independent variables contribute independently to explaining the variance in the dependent variable, and the model can be considered stable for further analysis and inference.

Model estimation

Given the mixed nature of stationarity of the model variables and the short time series that this study used, the ARDL model was identified as the best estimation technique because it is very prominent in scenarios of small samples where data is characteristic of mixed orders of integration. Enkoro (2016) claims that the main benefit of the ARDL approach is that, with the right augmentation, it can overcome endogeneity and serial correlation issues. For the model variables, two lags were the ideal lag duration. Before creating the final ARDL model's error correction form, this was established using the ARDL framework. The table below displays the ARDL model's results in error correction form.

Table 7: Results of the estimated ARDL model

Dependent Variable: **D.(Debt to GDP)**			
Independent Variables	**Coefficient.**	**Std. Error**	**P>|t|**
ADJ Debt $_{L1}$	-0.2046304***	.0494267	0.000
	Long Run		
Primary Balance	0.155486*	0.0787306	0.062
Real Interest Rate	0.29198***	0.1007568	0.009
GDP growth	0.251906	0.2977203	0.407
Real Effective Exchange Rate	1.949161***	0.4930953	0.001
Current Account Balance	-0.0772669**	0.034031	0.034
	Short run		
Debt$_{t-1}$	0.3946573***	0.1084379	0.002
D(Real interest rate)	-0.0162872	0.0152704	0.298
Real interest rate$_{t-1}$	-0.0317295**	0.0115002	0.012
D(Real Effective Exchange Rate)	-0.5245274**	0.2256006	0.030
D(Current Account Balance)	0.0169105***	0.0038951	0.000
Current Account Balance$_{-1}$	0.0099788***	0.0028474	0.002
Constant	-1.679549***	0.4635137	0.002
R-squared = 0.8677			
Adj R-squared = 0.7920			
Root MSE = 0.0958			
A number of obs. = 34			
Log-likelihood = 39.695046			
Sample: 1988 - 2021			
ARDL(2,0,2,0,1,2) regression			

Notes: D = First difference in variable. ***, **, * At the 1%, 5%, and 10% levels, respectively, indicate significance. Source: ARDL computation by the researcher utilizing secondary data

The ARDL findings presented in the table above reveal that, in the short run, the debt-to-GDP ratio from the previous year positively impacts the current debt level. Specifically, a percentage increase in debt from the previous year results in a 0.39 percentage increase in the current debt, and vice versa, all else being constant. This effect is significant at the 1% level, indicating strong evidence of persistence in the percentage of debt to a country's growth.

On the other hand, although this benefit only becomes noticeable after a year, the real interest rate has a short-term negative effect on debt. The amount of debt decreases by precisely 0.03 percentage points for every percentage increase in the real interest rate over a year. A percentage increase in the real interest rate is

correlated with a 0.29 percentage increase in the quantity of debt, but with time, this effect grows and turns positive.

The data also demonstrate that, when all other factors are held constant, the actual effective exchange rate has a short-term negative influence on debt, with an average 0.52 percentage decrease in debt for every percentage increase in the exchange rate. Over time, though, this effect increases and becomes positive; a one percent increase in the exchange rate corresponds to a 1.95 percent increase in debt.

There is a positive short-term correlation between debt and current account balance: for every percentage increase in current account balance, debt for the current period increases by 0.169 percentage points. A percentage increase in the current account balance after a year causes the debt to increase by 0.0099788 percentage points. The fact that a percentage rise in the current balance lowers the debt level by 0.77 causes this initially beneficial influence to gradually turn negative.

Furthermore, the findings show that the primary balance has a positive long-term impact on debt levels; for example, a percentage increase in the primary balance results in a 0.155 percentage increase in debt. At a 10% level, this effect is marginally significant. In contrast, GDP growth is only found to positively impact debt in a non-significant way over the long term. The constant term in the model (-1.679549) is negative and significant, signifying that the debt level in Uganda would be negative in the absence of the specified independent variables.

Post-estimation diagnostic tests

After estimating the model, the study proceeded to carry out further diagnostic tests to determine that there were no common econometric problems.

Serial correlation test

The Breusch-Godfrey LM test for serial correlation was used in the investigation. *There is no serial correlation*, which is the null hypothesis for this test. The null hypothesis is rejected if the corresponding chi-square value is not significant at the 5% threshold of significance. The study found that the B-Godfrey test's chi-square value (0.462) was not significant at the 5% level. Therefore, it was not possible to rule out the null hypothesis. Consequently, the analysis concluded that serial correlation did not pose a problem for the model. The results are presented in 4.8 below

Heteroscedasticity test

The Breusch-Pagan test was used in the study to determine whether heteroscedasticity was present. In this test, the absence of heteroscedasticity is the null hypothesis. The null hypothesis cannot be rejected if the test's chi-square result is not significant at the 5% level of significance; if it is, it is. The chi-square value (0.30) in this investigation was found to be non-significant at the 5% level. Thus, the null hypothesis of the test could not be rejected. The research concluded that the computed model did not exhibit heteroscedasticity. The results are displayed in Table 8 below.

Table 8: Serial correlation and Heteroscedasticity test results

Test	lags(p)	Chi(2)	df	Prob.
B-Godfrey test	1	0.462	1	0.4966
Breusch-Pagan		0.30		0.5835

Source: Researcher's computation using secondary data

Test for Normality of Residuals

The Skewness and kurtosis test for Normality was utilized in the study to verify if the residuals in the model had a normal distribution. *Normalcy is the test's null hypothesis.* The null hypothesis cannot be rejected if the chi-square value, skewness, and kurtosis values are not significant at the 5% significance level. If not, it is rejected. The outcomes are shown in Table 9 below.

Table 9: Skewness & Kurtosis tests for Normality results

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
r	36	0.0694	0.6840	3.74	0.1539

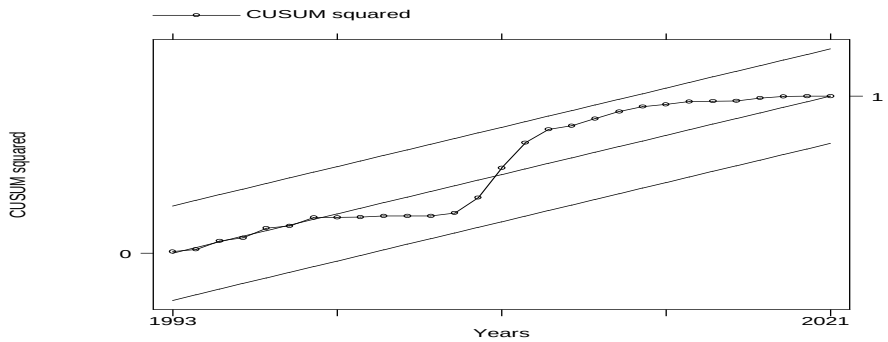
Ho: Normality. Source: Researcher's computation using secondary data

The results indicate both the skewness and kurtosis tests for the residuals suggest that the data is approximately normally distributed. The non-significant p-values for both tests indicate that the data's skewness and kurtosis are not significantly different from those of a normal distribution. As a result, these tests do not provide compelling evidence to refute the model's residuals' assumption of normalcy.

Test for Model Stability

The study tested to confirm whether the estimated model was stable. The Cumulative Sum (CUSUM) test was used. This test is based on recursive regression residuals plotted against possible break points in the model within critical bounds of 5% significance. The model is stable if the CUSUM of residuals falls within the 5% critical bounds. The test results are represented in the form of a graph in the figure below

Figure 1: The CUSUM graph



The CUSUM graph indicates that the dotted line (the cumulative sum of residuals) entirely falls within the upper and lower critical bounds over the tested study period (1993-2021). The study thus concluded that the estimated model is stable.

Discussion

Effect of primary balance on debt in Uganda

The hypothesis posits a positive relationship, and the ARDL model results support this, revealing a positive coefficient of 0.1554868 in the long run. This shows that, under the assumption that other variables stay constant, an increase in "Primary Balance" causes a corresponding rise in "Debt to GDP," and vice versa. The results indicate a correlation between an elevated percentage of debt on a country's growth and a larger primary balance, which indicates government revenue exceeding expenditures. Conversely, a negative primary balance (deficit) signals excessive government spending relative to revenue, resulting in higher borrowing and, consequently, a heightened percentage of debt on a country's growth.

In the Ugandan context, the positive relationship is attributed to persistent budget deficits, reliance on a few sectors vulnerable to global shocks, and the need for substantial funding for economic growth and development initiatives. Additionally, inefficiencies in public financial management and weak revenue mobilization further contribute to challenges in maintaining fiscal sustainability and managing public debt dynamics effectively.

Effect of real interest rate on debt in Uganda

The second objective of the study is to look at the relationship—if any—between real interest rates and Uganda's debt sustainability, assuming that one is negatively correlated. The ARDL model's long-term results, however, show a positive coefficient of 0.2919845, indicating a positive correlation between "Real Interest Rate" and "Debt to GDP." Put another, the "Debt to GDP" ratio rises by roughly 0.292 units for every unit increase in the "Real Interest Rate," assuming no other variables change. The reasons behind the observed

positive connection can be explained by the mechanisms of debt financing in Uganda. The government will pay more to repay its debt if the "Real Interest Rate" rises. As borrowing costs rise, the government must pay more interest on its outstanding debt, which means a bigger portion of the GDP is now going toward debt repayment. As a result, an increase in the "Real Interest Rate" is accompanied by a larger "Debt to GDP" ratio.

There is further nuance in the relationship between "Real Interest Rate" and "Debt to GDP" due to macroeconomic factors and monetary policy. Whether in response to inflation or to attract foreign investment, central banks' hikes in interest rates can impact changes in the "Debt to GDP" ratio and the cost of borrowing for the government. The analysis indicates that over the long run, a larger "Debt to GDP" ratio is associated with a higher "Real Interest Rate". This is because greater debt payment expenses accumulate over time and short-term interest rate changes immediately impact the situation.

Effect of GDP growth rate on debt in Uganda

The third objective of the research was to determine how Uganda's GDP growth affected its debt, with the corresponding hypothesis being that GDP growth improves Uganda's ability to sustain its debt. As per the findings of the ARDL model, the non-significant coefficient implies that there is no statistically significant correlation between "Debt to GDP" and "GDP Growth Rate" over an extended period. In particular, the coefficient value of 0.2519068 indicates that, under the assumption that all other independent variables remain constant, an increase of one unit in the "GDP Growth Rate" is linked to an increase of roughly 0.252 units in the "Debt-to-GDP ratio. Likewise, a one-unit decline in the "GDP Growth Rate" corresponds to a 0.252-unit decline in the "Debt-to-GDP ratio.

The lack of statistical significance suggests that "The GDP Growth Rate" may not be a major long-term predictor of changes in the "Debt-to-GDP ratio in the Ugandan context. The non-significant coefficient implies that variables other than the "GDP Growth Rate" may be more important in determining Uganda's debt levels, including borrowing decisions, fiscal policies, and external economic shocks.

Effect of real effective exchange rate on debt in Uganda

The fourth goal of the study was to ascertain how Uganda's debt was impacted by GDP growth, with the underlying hypothesis being that GDP growth increases the nation's capacity to service its debt. The ARDL model results show that there is a positive long-term correlation between "Debt to GDP" and "Real Effective Exchange Rate". An increase in the "Real Effective Exchange Rate" is linked to a significant increase in the "Debt-to-GDP ratio, while a decrease in the exchange rate is linked to a significant decrease in the debt ratio, according to the coefficient of 1.949161, which is statistically significant at the 1% level (p-value = 0.001). The long-run effect emphasizes how the dynamics of the country's debt are still influenced by the real effective exchange rate.

A negative coefficient indicates that short-term changes in the real effective exchange rate have a negative influence on the "Debt to GDP" ratio in the present period while all other variables are held constant. Put otherwise, for every unit increase in the short-term shift of the real effective exchange rate, the "Debt to GDP" ratio falls, and vice versa.

The findings suggest that changes in the real effective exchange rate are influenced by the dynamics of the country's debt in both the short and long term. With time, a higher debt-to-GDP ratio is associated with a higher real effective exchange rate. This relationship may be caused by a number of factors, including decreased export competitiveness or currency appreciation that results in higher debt obligations denominated in foreign currencies. In the short run, fluctuations in the exchange rate can exert immediate downward pressure on the debt ratio, potentially affecting debt repayment and financial stability in the short term.

Effect of openness on debt in Uganda

The study's fifth objective was to determine how GDP growth affected Uganda's debt, and its related hypothesis was that *openness has a positive effect on Uganda's debt sustainability*. The economic openness was measured using the current account balance.

The negative coefficient in the ARDL model results indicates an inverse association between the "Current Account Balance" and the "Debt to GDP" ratio. More specifically, for every unit rise in the current account balance, the "Debt to GDP" ratio decreases by approximately 0.077 when all other variables are unchanged. On the other hand, the debt ratio increases by about 0.077 for every unit decrease in the current account balance. This inverse association suggests that a current account surplus—which happens when a country's exports exceed its imports—is associated with a lower debt-to-GDP ratio. Conversely, a higher debt-to-GDP ratio is linked to a current account deficit, which happens when imports are higher than exports. This pattern can be explained by the way that a nation's net trade position and capacity to fund its expenses and investments are reflected in its current account balance.

A current account surplus provides additional financial resources to the country, which can be used to repay existing debt, invest in productive activities, or build reserves. This, in turn, contributes to a lower debt-to-GDP ratio. On the other hand, a current account deficit implies a need for external financing to cover the shortfall, which may lead to increased borrowing and higher debt levels relative to the size of the economy, resulting in a higher debt-to-GDP ratio.

We observe a shift in the direction of the link between the debt-to-GDP ratio and the current account balance when comparing the long- and short-term effects. Both historically and currently, it has been shown that there is a short-term association between a higher current account balance and a higher debt-to-GDP ratio. On the other hand, consistent current account surpluses are linked to debt levels that gradually decline in GDP. This shift in the relationship between the short- and long-term effects implies that while sustained improvements in the trade balance over time can contribute to a more significant reduction in the debt burden, short-term fluctuations in the current account balance may have temporary implications for the debt dynamics.

5. Conclusions from the study

Primary Balance demonstrates a statistically significant and positive coefficient in the long run. This finding suggests that maintaining a fiscal surplus and sound fiscal management can contribute to reducing the "Debt to GDP" ratio, indicating the crucial role of prudent fiscal policies in managing debt levels over time.

The "Real Interest Rate" exhibits a highly significant and positive coefficient in the long run and therefore reveals that higher real interest rates are associated with increased indebtedness relative to GDP. Policymakers should be mindful of the impact of rising interest costs on government debt, which can escalate the debt burden and hinder long-term debt sustainability.

While "GDP growth" shows a positive effect in the long run, it is not statistically significant suggesting that GDP growth may not have a substantial impact on the "Debt to GDP" ratio in the context of Uganda. In the long run, the "Real Effective Exchange Rate" shows a highly significant and positive coefficient, suggesting a correlation between increased debt about GDP and a decline in the real effective exchange rate. Exchange rate swings have an impact on debt payment costs and overall debt sustainability, which policymakers need to take into account. In the long run, the "Current Account Balance" shows a statistically significant and negative coefficient that emphasizes the role that trade balances play in determining the dynamics of debt. Long-term current account deficits may result in greater debt, although sustained surpluses might help lower the "Debt to GDP" ratio.

Policy Recommendations

Given the significant impact of the "Primary Balance" on the "Debt-to-GDP ratio in the long run, policymakers should prioritize maintaining a fiscal surplus and prudent fiscal management. Implementing measures to enhance revenue generation, control government expenditures, and reduce budget deficits can contribute to reducing the debt burden and ensuring long-term debt sustainability. Long-term fiscal discipline and responsible fiscal policies are essential for maintaining a healthy debt-to-GDP ratio.

The substantial effect of the "Real Interest Rate" on the debt dynamics highlights the importance of interest rate management in debt sustainability. Policymakers should carefully monitor and manage interest rates to avoid significant increases in borrowing costs. Implementing measures to stabilize interest rates and promote

monetary policies that strike a balance between economic growth and inflation control can help mitigate the negative impact of high-interest rates on government debt.

Although "GDP growth" does not show a statistically significant effect on the "Debt to GDP" ratio, it remains a critical factor for overall economic development. Policymakers should continue to prioritize policies that stimulate economic growth and productivity. Sustained efforts to improve the business environment, enhance infrastructure, and invest in human capital can foster economic expansion, which indirectly contributes to debt sustainability by increasing the capacity to service debt.

The observation that rising debt levels relative to GDP are associated with a drop in the "Real Effective Exchange Rate" should be noted by policymakers. To mitigate the effects of exchange rate volatility on debt levels, it is prudent to practice conservative foreign exchange management and exchange rate stability. One way to lessen the risks associated with exchange rate volatility is to diversify your sources of income and reduce your reliance on debt denominated in foreign currencies.

The importance of trade balances in debt sustainability is highlighted by the "Current Account Balance" major impact on debt dynamics. Policymakers should strive to achieve and maintain current account surpluses, as they contribute to reducing the "Debt to GDP" ratio over time. Encouraging export-led growth strategies, promoting domestic industries, and implementing policies that enhance competitiveness in international markets can all support efforts to achieve sustainable trade balances.

Limitations and areas recommended for further research

Sample Size and Period: The findings' generalizability may be constrained by the study's dependence on a comparatively small sample size of 34 observations spanning the years 1988 to 2021. An extended period and a more extensive dataset may offer a more thorough comprehension of the connections between the variables and the dynamics of debt. Additionally, the inclusion of more recent data may capture the effects of recent economic events and policy changes.

Endogeneity and Omitted Variables: The ARDL regression approach assumes that the independent variables are exogenous, but in reality, there may be endogeneity issues where the variables affect each other. Omitted variables that are not accounted for in the model could also bias the results. Future studies could address endogeneity issues and find potential missing variables that could affect debt dynamics by utilizing sophisticated econometric techniques like panel data models or instrumental variable estimates.

Country-Specific Context: The study's analysis is based on data from a specific country (not mentioned in the provided table). As a result, the findings may be influenced by the unique economic, political, and institutional characteristics of that country. Therefore, caution should be exercised when applying the results to other countries or regions. Comparative studies across multiple countries could provide valuable insights into the generalizability of the observed relationships.

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