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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 Ghana, Malaysia, Zimbabwe, Nigeria and Uganda. Digitalizing the Activities of Small-Medium-Size Construction Firms, Impact of Foreign Direct Investment on Unemployment, Perceived Inequities & Potential Reforms in Public-Private Partnerships, Institutional Environment, the Quest for Stable Exchange Rate, Assessment of the Altman Z Score on Predicting Corporate Failure, Exploring the Motivations, Challenges and Support Needs of Rural Entrepreneurs and Human Capital, Fixed Capital Formation and Economic Growth, Macro-Financial Determinants of Electricity Power Loss, Investigating the Relationships among GDP Growth, Gross Capital Formation, Population Growth and FDI and Effect of Social Capital and Personal Initiative on Women's Self-Employment 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

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Digitalizing the Activities of Small-Medium-Size Construction Firms

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Abstract: Ghana's construction sector faces many obstacles, such as modernization, inefficiency, and safety hazards. Small and medium-sized businesses (SMEs) are pivotal in job creation, economic expansion, and infrastructure development. To stay competitive, SMEs must embrace digital transformation as the industry experiences a digital revolution. This study examines the digital transformation of Ghanaian SME construction firms between 2018 and 2023, focusing on safety concerns, inefficiencies, and regulatory barriers, as well as the advantages of digitalization, such as improved communication and project management. A mixed-methods approach was used, combining structured surveys for SME employees with in-depth interviews with key stakeholders to gather both quantitative and qualitative data. The study investigates the use of digital technologies such as building information modeling (BIM), wearable technology, and real-time monitoring to address operational and safety issues. It also examines how digitization affects communication, resource allocation, project efficiency, and regulatory compliance. Factors such as government programs, technology adoption, and safety training are evaluated to determine their contribution to improving safety and productivity in the construction industry. The findings reveal that digital technologies significantly enhance project outcomes, safety management, and resource utilization. Government regulations also play a crucial role in supporting digitization initiatives. The study provides practical insights for policymakers, industry stakeholders, and researchers seeking to promote innovation and growth among SMEs in Ghana's construction sector.

Keywords: *Digitalization, Building, Construction, Digital, Sustainable*

1. Introduction

The notable expansion of Ghana's construction industry is driven by rapid urbanization and rising infrastructure development. Small and medium-sized enterprises (SMEs), are central to this growth, contributing significantly to job creation and economic advancement. SMEs constitute a significant share of Ghana's construction industry, making their success crucial to the nation's overall development. However, to remain competitive and meet the demands of a rapid market, these businesses must embrace digital transformation.

Digital technologists such as Building information modeling (BIM), project management software, drones, and mobile applications have the potential to revolutionize the construction industry by streaming processes, improving communication, and boosting efficiency. Yet, Ghanaian SMEs face several challenges, including the high cost of technology acquisition, limited access to specialized training, and concerns about data security. These challenges are exacerbated by financial constraints and skill shortages typical of developing nations.

This research explores how Ghanaian SMEs in the construction industry are addressing these challenges and leveraging new opportunities between 2018 and 2023, a time of swift legislative changes and technology improvements. This study provides insights into the potential of digital transformation to improve productivity, safety, and sustainability in developing economies by concentrating on the unique dynamics of Ghana's construction industry.

2. Review of Literature

Like many other emerging countries, Ghana's building industry faces a variety of difficulties and chances. The physical environment, economic growth, and the creation of new jobs are all heavily influenced by small and medium-sized construction enterprises (SMEs). However, Ghana's construction sector, like those throughout the world, has several problems including inefficiency, safety worries, legal difficulties, and the need for modernization. To solve these issues and improve chances for growth and sustainability, this study will examine

the process of digitalizing SME construction firms' operations in Ghana. The urgency of digitizing the operations of small- to medium-sized construction enterprises is inextricably linked to the difficulties that have beset Ghana's construction industry from 2018 to 2023. A systematic approach to overcoming these difficulties and altering the operational environment for such businesses is provided by digitization.

Quality Concerns

Quality issues have been a recurring problem in Ghana's construction sector (Agyekum-Mensah et al., 2018). Subpar workmanship, the use of substandard materials, and non-compliance with construction standards have led to structures that deteriorate prematurely. These quality concerns have far-reaching consequences, including heightened safety risks for occupants and the necessity for costly rectifications. Additionally, the reputation of construction firms involved in such projects can suffer, impacting their ability to secure future contracts.

Safety Hazards

The issue of safety failures in construction has been widespread (Laryea et al., 2020). On construction sites, accidents and injuries occur often due to inadequate safety training, lax adherence to safety standards, and a lack of suitable protective equipment. Beyond the immediate repercussions, these safety risks result in workers' long-term health issues, lost productivity from accidents, and significant legal penalties for construction companies.

Cost Overruns

Construction projects in Ghana have consistently faced financial difficulties due to cost overruns (Baiden et al., 2019). Ineffective project management, inaccurate budgeting, and unanticipated complications are just a few of the factors that frequently cause projects to go beyond their initial budgets. In addition to taxing construction companies' financial resources, this damages customer and contractor trust and raises the possibility of disagreements and legal problems.

Project Delays

Numerous reasons have contributed to the ongoing issue of project delays (Arku et al., 2023). Delays are caused by inadequate preparation, logistical difficulties, and outside factors like bad weather. Due to the lengthened project timelines, these delays increase project expenses, which affects both clients and construction companies. Project delays also impede economic growth by delaying the construction of infrastructure.

SMEs and Competitiveness

According to Agyekum-Mensah et al. (2018), small and medium-sized construction enterprises are particularly vulnerable to these issues. They struggle to deal with the financial and operational effects of quality issues, safety mishaps, cost overruns, and project delays because of their limited resources, including access to capital and experienced labor. As a result, they are less competitive in the construction industry, which could result in a consolidation of the industry and the dominance of larger firms.

Table 1: Field Survey, 2024

Factors To Enhance Digitalization in The Construction Industry	
Skilled Workforce	Employee training and upskilling initiatives. (Gupta et al., 2020) Recruiting digitally aware personnel to foster innovation. (Lee et al., 2020)
BIM Integration	Complete integration of BIM (Building Information Modeling). (Johnson et al., 2019) BIM standards and procedures for uniformity. (Smith et al., 2018)
Internet of Things (IoT) and Sensors	Using Internet of Things sensors to collect data. (Anderson et al., 2018) Monitoring of tools and buildings in real-time. (Garcia et al., 2020)
Mobile Technology	Field reporting and data gathering apps for mobile devices. (Jonhson et al., 2021) Access to project details via mobile. (Smith et al., 2020)

Cloud Computing	Project management and collaboration via the cloud. (Garcia et al., 2021) Cloud data storage and accessibility. (Johnso et al., 2019)
Data Analytics	Data analytics for preventative maintenance. (Brown et al., 2018) Making informed decisions with data. (Gupta et al., 2022)
Digital Twins	Making digital representations of construction sites. (Johnson et al., 2021) Virtual testing and monitoring. (Johnson et al., 2020)
Artificial Intelligence (AI)	AI-driven planning and optimization of projects. (Davis et al., 2019) AI for risk analysis that is predictive. (William et al., 2020)
Automation	Automatization of repetitive and manual processes. (Robert et al., 2020) Robotics for construction tasks. (Garcia et al., 2021)
Augmented Reality (AR)	AR for on-site visualization of building designs. (Lee et al., 2020) Using AR to improve worker training. (Brown et al., 2020)
Virtual Reality (VR)	Virtual reality for immersive project walkthroughs. (Garcia et al., 2022) Through VR presentations, clients are engaged. (Smith et al., 2021)
Drones and UAVs	Drones in the air for site surveys and inspections. (Gupta et al., 2020) Data from drones for 3D site mapping. (Lee et al., 2023)
3D Printing	On-site construction using 3D printing. (Williams et ai., 2021) 3D printing for quick prototyping. (Robert et al., 2018)
Blockchain	Blockchain for transparent and safe transactions. (Davis et al., 2021) Smart contracts for automatically generating project agreements. (Anderson et al., 2021)
Supply Chain Integration	The supply chain for the building has been digitally integrated. (Garcia et al., 2019) Materials and equipment are tracked in real time. (Lee et al., 2022)
Cybersecurity	Effective data protection cybersecurity measures. (Williams et al., 2020) Regular updates and checks of cybersecurity. (Smith et al., 2018)
Sustainability	Software for eco-friendly architecture and building. (Gupta et al., 2021) Tracking and documenting environmental impact. (Johnson et al., 2021)
Prefabrication and Modular Construction	Prefabrication of digital design and planning. (Brown et al., 2020) Construction that is modular and coordinated digitally. (Roberts et al., 2023)
Regulation Compliance	Compliance with digital rules and guidelines. (Williams et al., 2023) Ensuring data compliance and privacy. (Smith et al., 2022)
Platforms for collaboration	Platforms for online collaboration for project teams. (Gupta et al., 2023) Communication and document exchange in real-time. (Roberts et al., 2021)
Visualization Tools	Using 3D visualization software. (Anderson et al., 2020) Project management dashboards on the internet. (Williams et al., 2023)
Energy Efficiency	Software for designing energy-efficient buildings. (Smith et al., 2018) Monitoring and managing energy usage. (Garcia et al., 2020)
Predictive Maintenance	Predictive maintenance for machinery and equipment. (Lee et al., 2021) ❖ Using digital insights to prevent downtime. (Smith et al., 2021)
Geospatial information and GIS	Geospatial information systems (GIS) are used for site planning. (Williams et al., 2020) ❖ Including geographical data in project management. (Smith et al., 2022)

Source: Field Survey, 2024

Relevance to Digitizing Construction Activities

Digitization can address quality control issues by enabling real-time monitoring and management (Agyekum-Mensah et al., 2018). Safety can be enhanced through wearable technologies and IoT sensors (Laryea et al., 2020). Effective digital project management can prevent cost overruns and reduce project delays by improving scheduling and resource allocation (Baiden et al., 2019; Arku et al., 2023). Digitalization helps SMEs compete

more effectively by leveraging technology for better resource management and client communication (Ofori, 2021).

3. Methodology

Research design

The research design used in this study combines both qualitative and quantitative methods. Taking into account the complexity of technology adoption and the multidimensional character of the construction sector, this approach enables a thorough analysis of the digitalization process inside SME construction enterprises in Ghana.

Sampling

SME construction companies operating in Ghana will be picked via deliberate sampling, according to Johnson et al. (2018). The selection criteria will consider factors including company size, project diversity, and geographic location to ensure a representative sample (Smith & Brown, 2020; Garcia & Martinez, 2019).

Survey Participants

A survey will be distributed to staff at various levels, including owners, managers, project supervisors, and frontline employees, to get a diversity of viewpoints on digitization inside the selected firms (Smith & Johnson, 2020; Garcia et al., 2018). Stratified random sampling will be used to choose survey participants (Williams et al., 2021; Anderson & Davis, 2019).

Data Collection

In-depth interviews with key figures within the selected SME construction firms will be conducted to collect qualitative data (Williams et al., 2021). The major objective of these interviews will be to comprehend the challenges, opportunities, and experiences related to digitization (Garcia & Martinez, 2019). Semi-structured interview guides will be used to preserve consistency throughout interviews (Smith & Johnson, 2022). Quantitative Data

Quantitative information will be gathered through planned surveys that are given to employees (Smith & Johnson, 2020). The survey will inquire about the use of digital technology, its perceived benefits and drawbacks, and how digitalization impacts the productivity and safety of construction operations (Garcia et al., 2018; Anderson & Davis, 2019). Data Analysis

Data Analysis

Considering the ethical aspect. According to ethical guidelines, the study will ensure participant informed consent, data confidentiality, and the careful management of sensitive material (Anderson & Davis, 2019; Smith & Johnson, 2023).

Quantitative Data Analysis

To examine the quantitative data from the surveys, statistical tools will be used. Descriptive statistics like frequencies and percentages will be used to describe survey results. Inferential statistics like regression analysis and correlation analysis will be utilized to discover associations between variables (Smith et al., 2019; Johnson & Brown, 2020).

Combining qualitative and quantitative results. The qualitative and quantitative findings will be integrated to provide a thorough understanding of the digitalization process in SME construction firms. This integration will allow for a more thorough examination of the opportunities and issues, as well as how they may impact effectiveness and safety (Garcia & Martinez, 2018; Williams et al., 2021).

4. Data Analysis and Results

Educational Attainment and Industry Role

Most responders (66.67%) have postgraduate degrees, followed by graduates (33.33%), however none of them have a PhD. To investigate variations in digitalization preparedness according to educational attainment, a one-way ANOVA was employed. No statistically significant differences were found in the results ($F = 1.45$, $p = 0.27$), indicating that educational attainment by itself is not a reliable indicator of preparedness for digital transformation in the construction sector.

Work Experience and Perception of Digitalization

The majority of respondents (73.33%) had between 0 and 10 years of work experience, indicating a rather youthful workforce. Work experience and digitalization awareness were found to be significantly positively correlated by Pearson correlation analysis ($r = 0.45$, $p < 0.05$). This research highlights the necessity to customize training for less experienced staff members to close the awareness gap, while more seasoned workers may have a greater understanding of the potential of digital tools.

Digitalization Awareness

Perceptions of respondents' preparedness for digital transformation differed greatly. Significant differences were detected when mean ratings across levels of agreement were compared using a one-way ANOVA ($F = 4.12$, $p < 0.01$). Those who strongly agreed with digital adoption ($M = 20.2$, $SD = 14.29$) scored considerably higher than those who expressed slight ($M = 2.60$, $SD = 1.55$) or no agreement ($M = 1.00$, $SD = 1.18$), according to post-hoc analysis (Tukey HSD).

• Practical Implication: These findings highlight the necessity of focused awareness-raising programs, especially for individuals who are less likely to use digital tools.

Perceived Benefits of Digitalization

Respondents who strongly agreed and those who moderately agreed with digital adoption were asked to rank their impressions of the main advantages using a paired t-test.

• Reduced Document Errors: $t(28) = 3.21$, $p < 0.05$; strongly agreed group ($M = 3.40$, $SD = 2.49$) versus moderately agreed group ($M = 2.60$, $SD = 2.24$).

• Improved Communication: $t(28) = 2.87$, $p < 0.05$, comparing the strongly agreed group ($M = 3.00$, $SD = 2.83$) to the somewhat agreed group ($M = 2.50$, $SD = 2.19$).

These results highlight the concrete advantages of using digital tools in construction and the significance of informing stakeholders of these benefits clearly and concisely.

Barriers to Digitalization

To find important predictors of resistance to digitization, regression analysis was used. Sixty-two percent of the variation was explained by the model ($R2 = 0.62$, $F = 5.34$, $p < 0.01$). The biggest obstacles were:

- Lack of Training: $\beta = 0.48$, $p < 0.01$.
- Financial Constraints: $\beta = 0.33$, $p < 0.05$.
- Integration Challenges: $\beta = 0.21$, $p = 0.07$ ((marginal significance).
- Practical Implication: To advance digital transformation, these obstacles must be addressed with monetary incentives and extensive training initiatives.

Implementation Readiness

ANOVA was used to examine several professional jobs to evaluate the preparedness for digitization. There were notable variations ($F = 3.56$, $p < 0.05$). While positions like electrical engineers trailed behind, construction project managers had the greatest preparedness levels ($M = 3.40$, $SD = 2.59$).

• Practical Implication: To provide less prepared roles with the knowledge and tools they need to adopt digital tools, tailored approaches are required.

5. Contributions, Policy Implications, And Conclusion

Contribution of The Study

This study offers several key additions to the academic discourse and practical understanding of digitalization in the building industry:

Empirical Evidence: The study offers empirical information on the construction professionals' knowledge, preparedness, and obstacles to digital transformation in the construction industry. This information closes a significant vacuum in the literature, especially when it comes to developing nations.

Framework Development: The study establishes the foundation for a conceptual framework that will direct future research on digital transformation in the construction industry by identifying important factors like lack of training, financial restrictions, and job experience.

Sector-Specific Insights: In contrast to broader research on digitalization, this study focuses exclusively on the construction sector, providing specific insights that tackle its particular potential and constraints.

Policy Implications

The study's conclusions have useful policy ramifications for all parties involved, including governmental bodies, business watchdogs, and private enterprises:

Investment In Training Programs:

Policy Recommendation: Government and business organizations ought to work together to create training programs that are sponsored and aimed at giving professionals the technical know-how required for the adoption of digital tools.

Anticipated Result: This will improve digital preparedness and close the skills gap, especially for less seasoned workers.

Incentivizing Digital Adoption:

Policy Recommendation: Provide subsidies or tax breaks to businesses that invest in digital tools and technologies.

Anticipated Result: These incentives will promote wider adoption of digital solutions by easing financial limitations, a major obstacle noted in the study.

Standardization and Regulation:

Policy Recommendation: To guarantee uniformity and interoperability, create national standards and guidelines for the incorporation of digital technology in building projects.

Anticipated Result: This will resolve integration issues and promote a more unified strategy for industry-wide digitization.

Public Awareness Campaigns:

Policy Recommendation: Start public awareness initiatives emphasizing the advantages of digitization, like enhanced communication and fewer document errors.

Anticipated Result: Raising awareness will change attitudes, especially among stakeholders who are apprehensive about digital transformation.

Pilot Projects and Research Collaborations:

Policy Recommendation: Promote collaborations between industry and academia to test digital technologies and assess how they affect project cost and efficiency.

Anticipated Result: Pilot projects will yield practical data that will aid in improving implementation tactics and persuading reluctant stakeholders of their worth.

Conclusion

This study recognizes the obstacles that need to be removed while highlighting the revolutionary potential of digitization in the construction sector. This study adds to academic knowledge and offers practical suggestions for industry stakeholders by highlighting the significance of customized training, financial incentives, and legislative support.

To sum up, digital transformation is a strategic necessity for raising productivity, efficiency, and competitiveness in the construction industry rather than only a technical change. The information presented here is intended to

help industry executives and governments navigate the challenges of this shift while promoting an innovative and resilient culture.

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The Impact of Foreign Direct Investment on Unemployment in Mena Region

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Abstract: This paper examines the impact of foreign direct investment on unemployment in the MENA (Middle East and North Africa) region from 2011 to 2021. To achieve this, the study employed fixed effect and random effect estimators. The findings reveal that FDI, GDP growth, and population growth have negative coefficients and a significant impact on unemployment, whereas government expenditures and exports have negative coefficients but no significant impact on unemployment. This suggests that FDI, GDP growth and population growth reduce unemployment in the MENA region. Since the countries in this region have experienced high concentrations of unemployment, the government should focus on implementing policies that develop the skills and training of the people to prevent mismatches and encourage the private sector to create new jobs. In addition, the government should develop policies that facilitate the access and operation of FDI investors, as this will further assist in lessening unemployment in the MENA region.

Keywords: *FDI, GDP growth, MENA region, panel data, unemployment.*

1. Introduction

There are four major macroeconomic issues, which include unemployment, inflation, Economic growth, and the balance of payments. Both developing and industrialized nations are increasingly dependent on foreign direct investment (FDI) for the transfer of resources. The FDI inflows offer various tangible and potential advantages, such as the transfer of technological knowledge, the creation of employment opportunities, and the enhancement of managerial expertise and productivity. The lack of capital in least-developed countries and the potential benefits from these activities make them crucial for promoting growth and development (Gizaw, 2015; Bakar, Raji, & Adeel-Farooq, 2019). Numerous African countries have implemented a multitude of policy reforms to establish a favorable investment climate, aiming to attract a significant influx of foreign direct investment (Nikola & Pavlos, 2017).

It is widely believed that FDI and international commerce are crucial drivers of economic growth and effective means of alleviating unemployment (Alalawneh, & Nessa, 2020). FDI has a significant role because it promotes private investments, generates employment opportunities, and enables the relocation of information and skills (Ibrahim, & Raji, 2018). There is a lack of agreement on how FDI affects host economies. Several recent studies have decided to examine the impacts of FDI on various economic factors. While the researchers widely recognize the correlation between economic growth and investments, addressing the association concerning FDI and unemployment is a complex task. According to Pandya (2010), certain economists contend that FDI inflows only benefit the labor market when it comes to skilled workers. On the other hand, Hale and Xu (2016) argue that FDI generally has a positive effect on overall employment and productivity in developing nations, but its impact in advanced countries is more complex. The current study seeks to examine the influence of FDI on unemployment rates in the MENA region and to comprehend the causal connections between FDI, economic growth, government expenditure, unemployment, and exports. FDI plays an essential role in encouraging the development of the infrastructure and industries necessary for economic growth, which in turn increases productivity and creates jobs (Adeel-Farooq, Bakar, & Raji, 2018; Dritsakis & Stamatiou, 2017).

Unemployment is a crucial indicator for any country worldwide. Romer et al. (2012) define unemployment as the state in which individuals actively seek job opportunities but are currently unemployed. Unemployment significantly affects the economies of both advanced and emerging nations, resulting in many socioeconomic challenges. A high unemployment rate signifies a persistent scarcity of available job opportunities, resulting in increased poverty and insufficient living conditions (Alhdiy et al. 2015). It can heighten an individual's susceptibility to criminal activity, hence potentially destabilizing economic equilibrium (Jawadi et al. 2021).

Unemployment is an underutilization of human resources, resulting in a waste of resources. More so, insufficiently utilized resources in the production process lead to suboptimal outcomes (Dornbusch et al., 2011). Unemployment has been described to be a state of imbalance when the number of available workers exceeds the number of job opportunities. It arises when there is an excessive increase in the labor force or insufficient growth in employment (Hjazeen et al. 2021). It can be influenced by economic crises defined by deteriorating macroeconomic indicators such as reduced economic growth, devalued currency, and reduced purchasing power. This was evident during the COVID-19 pandemic-induced crisis (OECD, 2020).

The global unemployment rate had a slight decline to 6.2 percent in 2021; however, it remains significantly higher than the pre-pandemic record of 5.4 percent. In 2021, there were an additional 28 million individuals who were unemployed, compared to the number in 2019. The International Labour Organisation (ILO) predicts that unemployment will continue to exceed 2019 levels until at least 2023. Nevertheless, it is important to acknowledge that the unemployment rate fails to fully reflect the full employment consequences of the crisis, as a significant number of individuals who exited the workforce have not re-joined (ILO, 2022).

In the last ten years, including the COVID-19 pandemic period, governments in the MENA area have faced substantial challenges in dealing with high levels of unemployment (Alalawneh & Nessa, 2020). The International Monetary Fund (IMF) has reported that these countries have the highest unemployment rates globally (Abdulai, 2022). The Middle East and North African countries, along with other developing nations, face several economic disparities and developmental obstacles. The most significant is the imperative to address the issue of unemployment reduction. These nations aim to alleviate foreign direct investment (FDI) to bolster economic expansion, enhance trade, and lessen unemployment.

The countries possess a common set of attributes, with the most significant being their status as developing nations that do not heavily rely on oil exports. They aim to attract foreign direct investment as a substitute for loans from external sources to address the issue of rising unemployment rates. Additionally, these countries are actively striving for economic openness and offering various exclusions and motivations for foreign financing interest, particularly in initial sectors (Adeel-Farooq, Bakar, & Raji, 2017; Mohamed, 2020). During the previous three decades, all these OIC members have demonstrated political and economic stability. They benefit from the development of human capital and the trade of skilled labor to the Arab Gulf countries. Based on these common traits, the study predicts that FDI's impact on unemployment will be similar in each of these nations (Alalawneh & Nessa, 2020).

In contemporary years, there has been an expanding focus on capital movements and their impacts due to the acceleration of globalization trends. Many emerging countries, without sufficient domestic savings to enable economic development, rely on foreign resources to fill the gap (Abonazel, & Shalaby, 2020). Many economic variables, such as a country's GDP, trade deficit, inflation, productivity, and poverty rate, are seen to benefit from foreign direct investment. In addition, the unemployment rate will decrease as a direct result of these investments. When people who are competent and eager to work can't find a job, they are unemployed. People who don't take part in making anything pay a hefty price in social and economic terms. The real rate of national production falls short of the potential rate of national output in economies where unemployment is high because resources are not being used effectively (Alabed, et al. 2022).

Due to its expanding economy and substantial infrastructure investments, Saudi Arabia is widely considered the primary recipient of FDI in the MENA region (Ehmaidat & Jajuga, 2023). The Saudi Arabian General Investment Authority's summer 2019 reports a significant 24% growth in FDI inflows during the first quarter of 2019. All through, the initial six months of the year, there was an 85% increase in new licenses granted to foreign investors. Additionally, the National Competitiveness Center successfully implemented economic reforms, achieving a 55% success rate. Significant investment agreements are being finalized, and large-scale projects are moving forward. International investors started to set up shop in greater numbers; notable recent investments have come from the USA, UK, France, Egypt, China, and India, among other nations. Remarkably, the two main sources of foreign direct investment in the country are the United States and China. Attracting "quality FDI," which is defined as international investors with ties to the local economy of the host nation, must be the Kingdom of Saudi Arabia's top priority (Alkofahi, 2020). High-quality FDI actively supports the creation

of meaningful and valuable employment opportunities, raises the skill level of the economies receiving it, and makes it easier for technology, knowledge, and expertise to be transferred (Moran et al., 2017).

Following the contradictory outcomes on the link involving FDI and unemployment, for instance, in Arab countries, research examines the macroeconomic effect of FDI on unemployment rates. The research finds that FDI has a positive influence on reducing national unemployment in Jordan, Morocco, and Tunisia, both individually and collectively. However, in Egypt, FDI hurts unemployment (Alalawneh & Nessa, 2020). Therefore, there is a research gap to examine the issues or aggregated character of host nation macroeconomic factors. This study explores the connection between FDI and unemployment in the member nations of the MENA region. Specifically, it examines whether FDI among other determinants has a mitigating effect on unemployment in the region.

The global competition to attract foreign investment and stimulate local investment has significantly increased during the past decade. Due to significant changes in the framework of international economic exchange, governments have made efforts to enhance their economic and legislative systems to attract foreign investors and promote global investment localization (Anowor et al. 2019). Most countries reduced restrictions on the movement of capital to facilitate significant FDI inflows.

The unemployment rates in the MENA countries have been relatively high over the past decade, particularly among youth, and the COVID-19 pandemic has further exacerbated the issue. Therefore, understanding the influences of factors such as FDI, economic growth, population growth, government expenditure, and exports that can mitigate the rate of unemployment in the region will help to provide better recommendations for policymakers to address the problem. The result is likely to offer useful hints to policymakers, scholars, and professionals who seek to comprehend how to improve the region's labor market in terms of job opportunities.

2. Literature Review

The primary focus of several studies has been to determine the influences of FDI on various economic factors. The studies conducted in different countries provide varying perspectives on the correlation involving FDI and unemployment rates. In the case of Saudi Arabia, Alkofahi (2020) utilized the Ordinary Least Squares Model (OLS) to investigate the effect of FDI on unemployment from 2005 to 2018. The study found that FDI inflows and total output had a negative and significant impact on the unemployment rate in the country. This suggests that an increase in FDI and overall economic output contributed to the reduction of unemployment in Saudi Arabia. In Pakistan, Zeb et al. (2014) conducted research covering the years 1995–2011 using multiple regression analysis. Their findings indicated that FDI acted as an important factor in reducing unemployment in the country, supporting the idea that FDI had a positive impact on the job market in Pakistan.

Several studies have discovered the association between FDI and unemployment in different countries. Zdravković et al. (2017) concluded that the long-term impact of FDI on unemployment in transition nations is weak or non-existent. Furthermore, studies carried out in the Western Balkan region of Albania, Macedonia, and Bosnia and Herzegovina demonstrate a statistically insignificant effect of FDI on unemployment (Kirkpatrick, 2016). However, studies conducted in Pakistan reveal that FDI and foreign remittances have significant impacts on reducing unemployment, but their effects are statistically insignificant in the short run (Maqbool et al., 2013; Mazher et al., 2020).

Johnny et al. (2018) conducted research on Nigeria from 1980 to 2015, using FDI and capital formation as explanatory variables, and the unemployment rate as the explained variable. Their analysis includes unit root tests, cointegration tests, and ordinary least squares tests. Results revealed a negative but statistically insignificant association between FDI and Nigeria's unemployment rate. This suggests that, during the study period, FDI did not play a role in reducing unemployment in Nigeria. Another study (Muhd et al., 2016) found that FDI, the number of foreign workers, and GDP significantly influenced Malaysia's unemployment rate, as determined using the ARDL model, based on annual data from 1980 to 2012.

In Bahrain, a study found that fixed capital formation and government spending have a significant impact on unemployment (Alrayes & Wadi, 2018). In Nigeria, data spanning from 1980 to 2013 revealed that capital

investment acts as a catalyst for reducing job loss in both the short and long run, while recurrent expenditure is statistically insufficient to do so (Onodugo et al., 2017). A study from 1990 to 2019 in Jordan estimated the impacts of government spending on unemployment. The researcher discovered a strong negative and statistically significant association between government spending and the unemployment rate, as well as a considerable positive impact on joblessness in the short run (Saraireh, 2020). A study used Blanchard and Perotti's (2002) structural vector autoregressive model to evaluate the effects of fiscal policy shocks on the unemployment rate in Egypt. They used annual time series data from 1976 to 2018 and determined that an increase in government spending lowered the unemployment rate, whereas an increase in tax revenue raised it (Omran & Bilan, 2020).

Several studies have investigated how various countries' unemployment rates relate to their population growth rates. Using panel data regression analysis spanning 2010–2015, researchers in Indonesia's Special Province Yogyakarta discovered that a rise in the population substantially decreased the rate of unemployment (Feriyanto, 2018). An analysis of panel data covering the years 2001–2012 in the BRIC nations (China, Russia, India, and Brazil) indicated that inflation and population growth were the main drivers of increasing unemployment rates (Gur, 2015). A key component impacting unemployment in Bahrain using to ARDL model, is the country's growing population, which has a beneficial effect on the jobless rate (Manaa & ul Haq, 2020).

From 1999 to 2013, researchers in the Kingdom of Saudi Arabia identified the factors that affected the unemployment rate. According to the regression results, the unemployment rate was positively affected by population growth, and negatively by GDP and population expansion (Haque et al., 2017). From 1990 to 2020, researchers in Zanzibar analyzed the impact of population growth on unemployment rates. According to the findings, the unemployment rate rose by 5.2% due to population growth, whereas it fell by 0.3% due to GDP per capita and 0.7% due to inflation (Ali, Omar, & Yusuf, 2021). There is a long-term correlation between unemployment, economic growth, education, female population, and urban population in Jordan, according to Hjazeen et al. (2021). It was shown that economic growth had a negative link with unemployment in Jordan. On the other hand, education, the female population, and the urban population had positive correlations with unemployment.

A study used yearly data from 1991 to 2019 to examine the Algerian economy using Okun's law. Using the ARDL bounds testing technique model and the gap version of Okun's coefficients. The results showed that Okun's law was true for the Algerian economy. The factors in the gap version also showed that the GDP gap significantly and negatively affected unemployment rates (Louail & Benarous, 2021). When looking at the correlation between GDP and unemployment, the data suggests a medium-run equilibrium where regional output changes are correlated with regional unemployment changes. In addition, there is an asymmetry in the medium run between the effects of a GDP expansion and an increase in unemployment; a reduction in GDP has a smaller absolute value influence on unemployment than an expansion in GDP (Palombi et al., 2015).

Doğan (2012) investigated the relationship between unemployment and several macroeconomic shocks from 2000: Q1 to 2010: Q1. The study found that unemployment and exports were negatively impacted by GDP growth, export growth, and inflation, whereas interbank government spending and money growth had favorable effects. In a study by Omotayo (2018), both the unemployment rate and the trend of Nigeria's non-oil exports were examined. An additional focus of the study was on how non-oil exports relate to Nigeria's jobless rate. This study utilized the autoregressive distributed lag (ARDL) model to examine the effect of non-oil exports on the unemployment rate in Nigeria from 1981 to 2017. Global product, export inflation, and public spending were the non-oil export factors. Regression results confirmed that non-oil exports from Nigeria did not affect the country's unemployment rate.

Various scholars in diverse countries, including developed and underdeveloped nations, have investigated the issue of unemployment and foreign direct investment in previous studies. However, this study considers other variables such as exports and population growth. It also focuses on the impact of FDI, GDP growth, and government expenditure on unemployment. The geographical area of this current study is the MENA region because of the existence of high unemployment rates that have occurred in recent years, due to the impact of COVID-19 and the ongoing conflicts between Ukraine and Russia, Israel, and Palestine.

3. Method of Estimation and Data Structure

Method of estimation and model

In this study, we establish the following model to test the following variables where FDI and unemployment are the independent variables and a dependent variable respectively, while the rest of the variables are control variables. Some of these variables have been used in previous studies, such as Azhar (2023) and Alalawneh and Nessa, (2020). Hence, we estimated the following model,

$UNEt = \alpha + \beta FDI_t + \gamma GDP_t + \lambda PG_t + \varphi GE_t + \omega EXP_t + \mu_t$

UNE = F (FDI, GDP, PG, GE, EXP)

$UNE = B_0 + B_1FDI + B_2GDP + B_3PG + B_4GE + B_5EXP + e$

UNE= unemployment, FDI = foreign direct investment, GDP = gross domestic growth, PG = population growth, GE = government expenditure, EXP= export, e= error.

The study utilizes the Levin-Lin (LLC) and Im-Pesaran-Shin (IPS) tests for panel data analysis. The IPS test can be combined with any parametric unit-root test if the panel is balanced and the t-statistics for the unit-root in each cross-section have an equal distribution, ensuring the same variance and mean. The Central Limit Theorem (CLT) might then be utilized. The IPS test is commonly employed in practice due to its simplicity and ease of use, although it requires a balanced panel (Raji, Adeel-Farooq, & Ahmad, 2024). Next, to examine the relationship between variables, the paper employed panel data regression models. The study conducted fixed effect estimators, random effect estimators, and pooled OLS models. For model selection purposes, the study used the Breusch Pegan LM test and the Hausman test. While the Breusch Pegan test is used to select between the fixed effect estimator and pooled OLS model, the Hausman test is used to select between the fixed effects model and the random effects model.

Data sources and structure

This paper aims to study the influence of FDI on unemployment in the Mena area. Our observation covers yearly data from 2011 to 2021 for 12 nations in MENA. All the data are collected from World Development Indicators (WDI). The study employed panel data for the 12 nations in the MENA region. The following Table 1 shows the description of variables and their sources.

Table 1: Description of Variables and Sources

Variable	Unit	Description	Source
Unemployment	(% total labor force)	The unemployed are people of working age who are without work, are available for work, and have taken specific steps to find work (Reserve Bank of Australia, 2019).	WDI
FDI	FDI net inflows (% of GDP)	Foreign Direct Investment (FDI) offers essential resources to developing countries, including technology, capital, entrepreneurship, and skilled labor, which are crucial for generating employment opportunities and consequently reducing unemployment (World Bank, 2022).	WDI
GDP	GDP growth (annual %)	Gross Domestic Product (GDP) is the aggregate value in dollars of all completed products and services produced within a country during a certain period (OECD, 2010).	WDI
Population growth	PG (annual)	Population growth refers to the change in the size of a population over a specific period. We can measure it by calculating the change in the number of individuals	WDI

		within the population per unit of time. (World Bank,2022).	
Government expenditure	GE (% of GDP)	Government expenditure (GE) is a public expenditure that refers to the financial resources allocated by the government to acquire commodities and deliver services, including but not limited to education, healthcare, and social welfare (World Bank, 2022).	WDI
Exports	EXP (% of GDP)	Exports include the economic value of all goods and additional market-based services supplied to foreign countries (World Bank, 2022).	WDI

Note: WDI stands for World Development Indicators

Figure 1 shows the graphical relationship between individual regressor and the response variable, the unemployment rate in the Mena region.

4. Results and Discussion

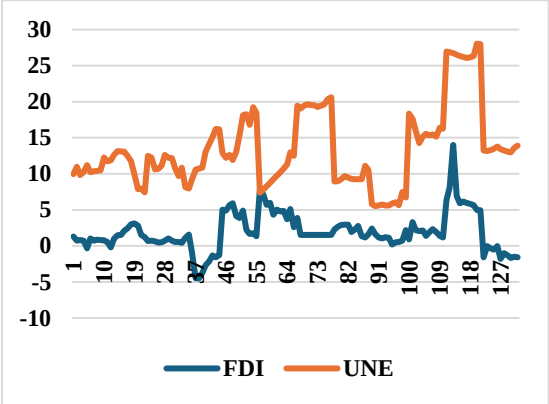
This section discusses the results of the relationship between the independent variables such as FDI, GDP growth, population growth, government expenditure, and exports and the dependent variable of unemployment in the MENA region. Furthermore, the study conducted descriptive statistics, panel unit root tests, variance inflation factor, cross-sectional dependencies, regression analysis, and causality tests. To begin with descriptive statistics, Table 2 shows the results of the descriptive statistics of all the variables which consist of the mean, median, standard deviation, minimum, and maximum of all variables in the model. Export has the highest mean value means that it is a significant contributor to the economy while GDP has the lowest value indicating slow or modest economic growth. Apart from unemployment, all the variables have a kurtosis value greater than 5 which means that all variables have significant outliers except unemployment which has a normal distribution.

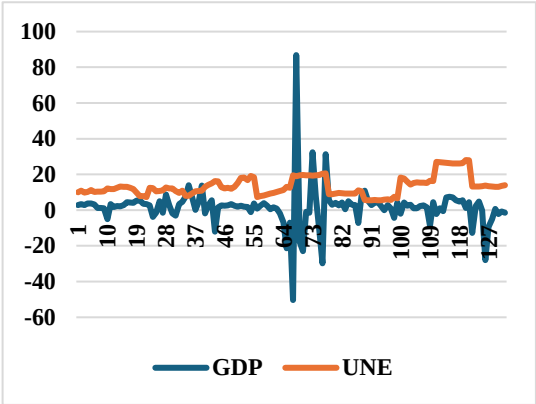
Table 2: Results of descriptive statistics

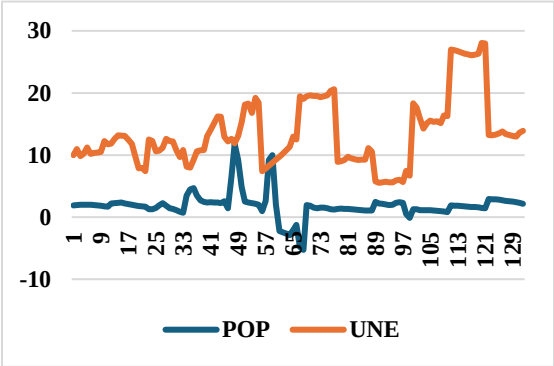
	UNE	FDI	GDP	PG	GE	EXP
Mean	13.461	1.923	1.607	1.869	18.604	38.106
Median	12.460	1.539	2.530	1.856	17.999	32.401
Maximum	28.048	14.000	86.826	11.794	61.166	166.717
Minimum	5.520	-4.541	-50.338	-5.280	2.360	4.809
Std dev	5.471	2.620	11.567	2.067	8.513	31.366
Skewness	1.012	0.849	2.161	1.182	2.148	2.809
Kurtosis	3.585	5.799	27.694	11.374	9.813	10.768
Observations	132	132	132	132	132	132

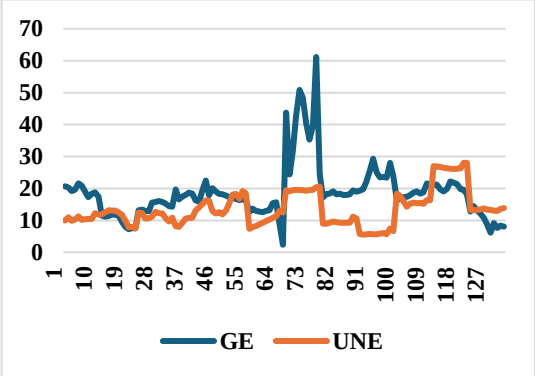
Note: UNE= unemployment, FDI = foreign direct investment, GDP = gross domestic growth, PG = population growth, GE = government expenditure, EXP= export.

Figure 1: Graphical representation of the relationship between each regressor and unemployment rate









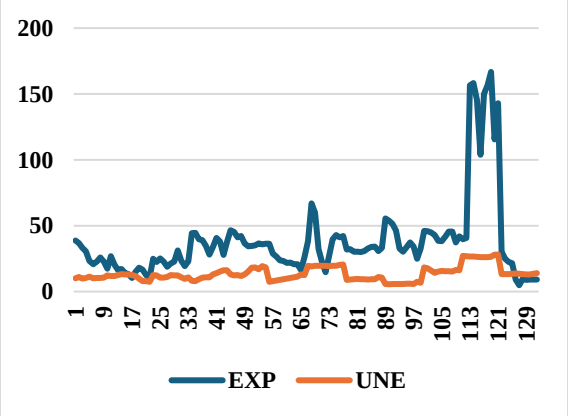


Table 3: Results of LLC Test **Results of IPS Test**

Variable	Level	1st difference	Decision	Level	1st difference	Decision	VIF
UNE	0.39143	-4.94575***	I(1)	1.31059	-1.353939**	I(1)	-
FDI	-6.21859***	-12.3623***	I(0)	-2.97807***	-6.99495***	I(0)	1.39
GDP	-6.42786***	-11.8956***	I(0)	-3.75830***	9.389404***	I(0)	1.06
POP	-13.5439***	-58.0246***	I(0)	-9.24056***	-14.3883***	I(0)	1.02
GE	-4.34445***	-7.73636***	I(0)	-2.69169**	-5.28580***	I(0)	1.09
EXP	-6.61051***	-6.16515***	I(0)	-3.62190***	-3.59271***	I(0)	1.49

Note: ***,**,* indicate level of significance at 1%, 5% and 10% respectively.

Table 3 shows the outcomes of the LLC and IPS tests regarding panel unit root tests. The results indicate that all variables are stationary at I (0) except unemployment, which is at I (1). Next, the study conducts a test for

multicollinearity and Table 3 shows the results of VIF, which confirm that all variables have values less than threshold 5, indicating that there is no problem with multicollinearity in the model.

Table 4: Results of Cross-sectional Dependence

Test	Statistic	d.f	Prob
Pesaran CD	1.710921	66	0.087**

Note: ***, **,* indicate level of significance at 1%, 5% and 10% respectively.

In addition, the study examines the cross-sectional dependencies among MENA countries, and the Pasaran (2004) test was utilized. The results in Table 4 reveal that there is no cross-sectional dependency among the residuals of MENA countries. Next, the study tests whether pool OLS is more appropriate than a random effect estimator. To do this, the Breusch Pegan Langrage Multiplier test was conducted, and the result is reported in Table 5.

Table 5: Results of the LM Test

Test Summary	Cross Section	Prob
Breusch-Pegan LM Test	285.63	0.000***

The Breusch-Pegan LM test clarifies the best model between pooled OLS and random effect estimator, and it showed a statistically significant result, which means rejection of the null hypothesis of pooled OLS and accept random effect estimator.

Table 6 shows the results of the Hausman test to identify the most suitable model between the fixed effect model and the random effect model. The Hausman test results show that the probability value is 0.000, which is less than 0.05. This suggests that the random effect model is rejected in favor of the fixed effect model. This study applies the fixed effect model and Table 6 also outlines the outcomes of the estimators.

Table 6: Results of fixed effect and random effect estimators

Fixed Effect Model			Random Effect Model	
Variable	Coefficient	Prob	Coefficient	Prob
C	15.367	0.000***	14.660	0.000***
FDI	-0.364	0.000***	-0.316	0.003**
GDP	-0.026	0.036**	-0.025	0.048**
POP	-0.245	0.000***	-0.256	0.000***
GE	-0.022	0.584	-0.002	0.948
EXP	-0.007	0.398	-0.0005	0.947
R^2	0.940			
Adj R^2	0.932			
Hausman test	Chi sq statistic	Chi sq d.f.	Prob	
	17.609	5	0.003***	

Note: ***, **, * indicate level of significance at 1%, 5% and 10% respectively. The dependent variable is unemployment.

The R-squared value of 0.940 implies that 94% of the variations in unemployment are explained by the variables that were selected, such as FDI, GDP growth, population growth, government expenditure, and exports. With an R-square of 94%, it shows that the model is well-fitted. The adjusted R-squared value of 0.932 also suggests that the selected variables account for 93.2% of the unemployment variation.

According to the results, FDI and POP are significant at 1%, while GDP is significant at 5%. However, government expenditure and exports are not significant enough to affect unemployment. The empirical result from the model reveals that FDI has a negative and significant impact on unemployment in the Mena region. This indicates that an increase in FDI by one unit decreases unemployment by 0.364 units. This result corresponds to the hypothesis and assumptions that foreign direct investment leads to economic benefits for workers, such as higher real wages, improved productivity, and the formation of vertical and horizontal integrations. It also

promotes the development of supportive projects and the creation of new job opportunities. The findings of this study align with prior research, such as Dritsakis and Stamatiou (2017), Makun and Azu (2015), Irpan (2016), and Zeb et al. (2014), which found that FDI lowers unemployment. However, the results contradict some previous studies, such as Alamoudi, (2017), Kurtovic et al (2015) and Bayar (2014).

On the other hand, GDP growth has a negative and significant effect on unemployment. This means that as GDP rises by 1 unit, unemployment reduces by 0.026 unit, holding other factors constant. The results of the research support Okun's law regarding the correlation between economic growth and unemployment. The rise in GDP in the MENA countries effectively decreased unemployment. This aligns with the findings of Hjazeen et al. (2021) but contradicts those of Hassan and Nassar (2015). Sustainable economic growth is a key factor in enhancing living standards. Each of the MENA countries has implemented both fiscal and monetary policies that have led to an increase in GDP and a decrease in unemployment.

According to the results, population growth is found to have a negative and significant effect on unemployment. This indicates that when the population rises by 1 unit, unemployment decreases by 0.245 units while other factors remain constant. This study is aligned with others like Raouf (2022), Ali and Ahmed (2023), and Yusuf and Mogadishu (2021). The study's findings align with the Keynesian Theory of Unemployment, which claims that population growth is the primary driver of increasing unemployment levels. Consequently, the study affirms the favorable effect of population growth on unemployment in the region.

Table 7: Results of pairwise Granger causality test

Null hypothesis	F statistic	Prob
PG ≠ UNE	2.43345	0.092**
UNE ≠ PG	0.02956	0.970
EXP ≠ UNE	1.32211	0.271
UNE ≠ EXP	8.37020	0.000***
EXP ≠ FDI	6.61230	0.0020***
FDI ≠ EXP	6.83317	0.0016***
PG ≠ GDP	3.17366	0.0460**
GDP ≠ PG	11.8670	2.E-05***
GE ≠ GDP	3.20090	0.0448**
GDP ≠ GE	7.00877	0.0014***
GE ≠ PG	3.92137	0.0228**
PG ≠ GE	0.78978	0.4567

Note: ***, **, * indicate level of significance at 1%, 5% and 10% respectively. To conserve the space, any pair of variables not significant is not included in the table. ≠ indicates "not granger cause".

Table 7 illustrates the Granger causality test. The result shows that PG and EXP have a unidirectional relationship with unemployment that is, PG causes unemployment and unemployment causes EXP. In addition, other variables like EXP & FDI, PG & GDP, and GE & GDP have a bi-directional relationship which means that the variables cause each other. There is a unidirectional relationship between GE & PG with GE causes PG.

5. Conclusion and Implications of Results

This study analyzed the influence of FDI on unemployment in the Mena area. It used some factors that affect unemployment in the region, such as foreign direct investment, GDP growth, population growth, government expenditures, and exports. So, the study shows that FDI, GDP growth and population growth have a negative and significant effect on unemployment; in contrast, government expenditure and exports have an insignificant effect on unemployment in the MENA zone. The persistent challenge of unemployment necessitates proactive measures from government agencies. To effectively address this issue, a multifaceted approach focusing on foreign direct investment (FDI), local enterprise development, and strategic industry support is essential. Herein, several key strategies are outlined to promote employment and economic growth. Firstly, implementing policies to encourage FDI in technology, research and development, and innovation sectors can significantly reduce unemployment. Governments should provide incentives for the transfer of advanced technologies and foster collaboration with local educational institutions. This collaboration can cultivate a proficient workforce

equipped to meet the demands of these high-growth industries. Secondly, the development of laws that promote partnerships between international investors and local small and medium-sized enterprises (SMEs) is crucial.

In addition, provision for local collaborations, offering financial assistance, and facilitating joint ventures may be helpful. These measures can strengthen domestic enterprises, enhance their capabilities, and create a more robust job market. Cluster development strategies represent another vital initiative to attract FDI to specific locations or industries. This approach involves designating industrial areas, improving infrastructure, and streamlining regulatory procedures. By concentrating resources and efforts, governments can create attractive investment environments that stimulate economic activity and job creation. In addition, establishing and enforcing regulations that encourage diversification away from traditional sectors, such as oil, is imperative. Allocating resources to infrastructure, providing incentives, and creating a conducive business environment for non-traditional industries can foster a more resilient and varied economic landscape. This diversification can lead to sustained employment opportunities across multiple sectors. Creating incentives and support systems for industries with high job potential, such as manufacturing, construction, and services, is also essential. Measures such as tax incentives, financial aid, and simplified regulatory processes can facilitate growth in these industries, leading to increased employment. Lastly, allocating funds to infrastructure projects can directly boost economic growth and employment. Infrastructure developments, such as building and transportation projects create immediate job opportunities and enhance logistics and connectivity, making the region more attractive to various sectors. In conclusion, reducing unemployment requires a comprehensive and strategic approach by government agencies. By encouraging FDI, supporting local enterprises, promoting industry diversification, and investing in education and infrastructure, governments can create a conducive environment for job creation and economic growth. These actions can lead to a more resilient and dynamic economy with ample employment opportunities for its workforce.

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Exploring the Perceived Inequities and Potential Reforms in Public-Private Partnerships for Infrastructure Development: A Qualitative Study of Stakeholder Perspectives in Zimbabwe

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Abstract: Public-private partnerships (PPPs) are an essential tool for mobilizing private investment and expertise to address infrastructure shortfalls globally, especially in developing countries such as Zimbabwe. However, the public sector is frequently harmed and citizens are burdened by Zimbabwe's current PPP frameworks, which calls for an analysis of the financial dynamics and consequences for equity. The purpose of this study is to investigate perceived inequities in Zimbabwe's PPP arrangements. Research gaps include inadequate attention to comprehensively explore perceived inequities and socio-economic impacts across sectors beyond transport, such as energy and healthcare, and a lack of focused, in-depth qualitative analysis of stakeholder perspectives specific to Zimbabwe, particularly from affected communities and local officials. The study adopts a descriptive and exploratory design, semi-structured interviews, and focus group discussions with a range of stakeholders. The data was analyzed using NVivo software and thematic analysis. The findings highlight the need for an in-depth qualitative understanding of stakeholder difficulties, demographic variety, and effects on development and financial well-being. While Public-Private Partnerships (PPPs) have improved infrastructure and local economic prospects, worries about financial strain on local governments, socioeconomic inequality, and environmental sustainability still exist. To promote transparency, justice, and more public benefit, recommendations for restructuring PPPs include equal risk sharing, more robust accountability systems, greater stakeholder participation, and giving priority to initiatives that benefit communities. These changes are necessary to guarantee that PPPs properly support Zimbabwe's aims for sustainable development and cater to the wide range of requirements of its populace.

Keywords: *Public-private partnerships, inequities, infrastructure development, reforms*

1. Introduction

Public-Private Partnerships (PPPs) have played a significant role in alleviating infrastructure deficiencies worldwide, especially in developing nations. PPPs have been effectively implemented by nations including the UK, Canada, and Australia to improve infrastructure while dividing risks between the public and private sectors (Boardman, Greve, and Hodge, 2015). PPPs have become more widely used in Africa to address the continent's expanding infrastructure demands. This is evident in nations such as South Africa, Nigeria, and Kenya which have built roads, hospitals, and energy projects by utilizing these partnerships (Kyei and Chan, 2016). Despite these initiatives, PPPs have had varying degrees of success in Africa, frequently hampered by issues including inadequate risk-sharing agreements, opaque regulations, and weak regulatory frameworks (Bloomfield, 2006). Projects that disproportionately benefit private investors at the expense of the general welfare have been the outcome of these difficulties. PPPs have emerged as a key tool for the development of infrastructure in many developing African nations, including Zimbabwe (Chilunjika, 2023). The goal of these partnerships is to improve public infrastructure projects by utilizing private capital, expertise, and efficiency. PPPs in Zimbabwe, however, have frequently faced criticism due to their unbalanced structures that prioritize private investors above public interests, raising expenses and burdens on the populace despite their possible advantages (Miraftab, 2004). PPPs in Zimbabwe need to be thoroughly examined and reformed to ensure that these partnerships effectively contribute to national development and public well-being. These criticisms have generated questions about the long-term sustainability and equality of PPPs (Masekesa, 2021). Therefore, it is essential to comprehend these processes to rethink PPP frameworks that are more equitable and advantageous to Zimbabwe's socioeconomic environment.

Statement of the Problem

Public-private partnerships as they currently exist in Zimbabwe frequently burden Zimbabwean citizens and disadvantage the public sector (Miraftab, 2004). The Beitbridge to Chirundu road project is a notable example

illustrating these concerns. It was awarded to Gieger International, a foreign entity, under a PPP model based on a Build-Operate-Transfer (BOT) framework in 2016 and was initially valued at US$2.7 billion. Nearly three years later, no construction had begun because the company was unable to secure the necessary funds (Maguwu, 2018). The tender was subsequently cancelled and the project is currently being completed for US$1 billion by a local player who was directly chosen by the government (AIDDATA, 2017; Matabvu, 2019). This case illustrates the risks and financial difficulties associated with PPPs. The large decrease in the cost of building highways also begs the question of whether private investors stand to gain disproportionately at the expense of the state, other local construction companies, taxpayers, and project users in the future. These incidents highlight the necessity of closely examining the implications on equity and financial dynamics of PPP agreements. Furthermore, the difference in execution and cost between international and local stakeholders emphasizes the necessity of a thorough qualitative examination of stakeholder perceptions and experiences. To improve the effectiveness and fairness of PPPs that benefit Zimbabwe as a whole, this study aims to identify key problems and offer workable solutions by looking at the perspectives of various PPP players regarding the injustices within the current PPP frameworks.

Objectives of the Study

This study's main goal is to investigate and comprehend the perceived injustices in Zimbabwe's current PPP institutions. The study's specific objectives are:

- To evaluate the perceived injustices in Zimbabwe's current PPP arrangements.
- To determine, from the viewpoint of various stakeholders, the principal issues and challenges related to current PPP agreements.
- To evaluate how PPPs affect Zimbabwean citizens' possibilities for development and financial security.
- Investigating possible changes and tactics that might be used to reorganize PPPs to guarantee more equitable results and benefits to the general public.
- To offer suggestions to stakeholders and legislators on how to develop more equitable and balanced PPP frameworks.

Significance and relevance of the study

This study tackles a critical problem in Zimbabwe's infrastructure development, which makes it noteworthy. By highlighting perceived disparities within PPPs, the study establishes the structural defects impeding just and fair growth. Policymakers, investors, and the general public should find value in the findings because they offer insights into how PPPs might be redesigned to increase efficiency and fairness. Furthermore, the study's recommendations may influence frameworks and policies in the future, ensuring that PPPs enhance national development objectives and raise the standard of living for Zimbabweans.

Delimitation of the Study

This study is limited to investigating the views of parties engaged in Public-Private Partnerships (PPPs) for the development of infrastructure in Zimbabwe, with particular emphasis on the transportation, energy, and healthcare sectors. It will focus on qualitative information obtained from government representatives, private investors, businesses who submitted bids, and members of the public that utilize these PPPs through focus group discussions and interviews. The technical evaluation of specific projects or the quantitative examination of financial data will not be covered by the research. Additionally, to guarantee relevance and up-to-date findings, the study will only include PPP projects that have been completed in the last ten years.

2. Literature Review

To identify the perceived injustices and possible reform paths, this review of related literature will critically analyze these two points of view while concentrating on the unique circumstances of Zimbabwe.

Theoretical Framework

The following theories offer a thorough comprehension of the dynamics involved in public-private partnerships (PPPs) for infrastructure development. They emphasize the significance of coordinating interests, handling disputes, and upholding justice to establish partnerships that are both equitable and long-lasting.

Public Choice Theory

Developed by James M. Buchanan and Gordon Tullock, the Public Choice Theory emphasizes the self-interested conduct of persons in the public sector and offers a framework for understanding how public decisions are formed (Buchanan & Tullock, 1962). The Public Choice Theory explains why government officials and private investors choose to structure partnerships in the setting of PPPs (Black, 2020). Private investors want to maximize profits, whereas government officials may pursue personal or political rewards. PPP agreements that favor private interests over public benefit may result from this. To establish equitable and fruitful partnerships, the idea emphasizes the necessity of procedures that align the interests of all parties.

Agency Theory

Introduced by Michael Jensen and William Meckling, agency theory investigates the conflicts that result from asymmetric information and different goals between principals (owners) and agents (managers) (Jensen & Meckling, 1976). The government serves as the principal in PPPs while private investors serve as agents, as captured by the Agency Theory (Wang and Liu, 2015). The idea clarifies how private investors could use informational advantages to bargain for conditions that favor them disproportionately, resulting in unfair consequences for the general public. Strong incentive programs and efficient oversight are necessary to reduce these conflicts and guarantee that PPPs advance the interests of the general public.

Stakeholder Theory

According to Freeman's Stakeholder Theory, businesses should take into account the interests of all parties involved in their decision-making processes (Freeman, 1984). When it comes to PPPs, the Stakeholder Theory recommends that all relevant parties—private investors, government agencies, and the general public—ought to have their concerns taken into consideration (Wojewnik-Filipkowska and Węgrzyn, 2019). PPPs can therefore be designed to balance advantages and avoid disparities, promoting a more inclusive approach and guaranteeing that the projects serve the general good rather than specific private interests.

Equity Theory

According to John Stacey Adams' (1965) Equity Theory, people should try to strike a balance between the inputs they provide and the results they receive in social transactions. The theory centers on the idea of fairness. By analyzing whether the distribution of advantages and responsibilities between the public and private sectors is equitable, the Equity Theory can be applied to PPPs to evaluate the fairness of the partnership structures. A partnership may be considered unfair if private investors profit disproportionately from their contributions while the general public pays disproportionately high costs. PPPs must be reformed to guarantee a more equitable distribution of risks and profits for them to be accepted and successful.

Conceptual Framework

This study's conceptual framework is set up to give readers a thorough grasp of the dynamics among different stakeholders and the ramifications that follow in Zimbabwe's socioeconomic and political environment. The framework encompasses multiple essential components, including stakeholders, perceived disparities, structural issues, and possible solutions. Within the larger framework of Zimbabwe's political and socioeconomic environment, these components interact. A thorough description of each component of the conceptual framework may be found below. The variables that comprise this research's conceptual framework are as follows:

i. The public, government, and private investors are among the stakeholders involved in PPPs, and each has distinct goals and objectives (Dyeyeva and Khmurova, 2018). The goals of the government are to gain political clout, promote economic expansion, and upgrade infrastructure. The goals of private investors are to reduce risks and maximize rewards. Tender-awarded companies strive to supply services, keep costs down, and fulfill deadlines. On the other hand, the public wants better infrastructure without having to pay too much.

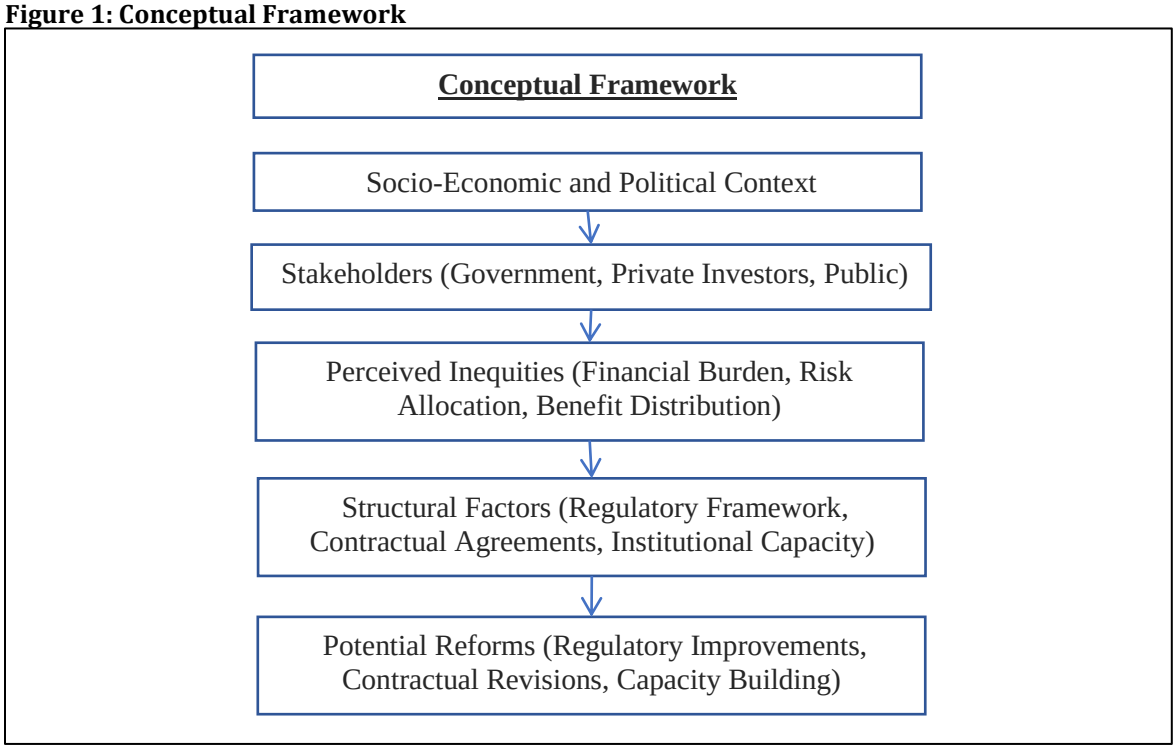
ii. Financial burden, risk allocation, and benefit distribution are all perceived as unfair in PPP frameworks, favoring private investors at the expense of the general public (He, Shi, and Li, 2021). High fees and costs, an unequal risk distribution for the project, and disproportionate rewards that benefit private investors are some examples of these imbalances.

iii. Public-private partnership (PPP) agreements are shaped and affected by structural elements (Brogaard, 2021). These elements include the contractual agreements, which show the bargaining power of private investors, and the regulatory environment, which might not include provisions for justice and transparency. Furthermore, the ability of government agencies to efficiently manage and supervise PPP projects is referred to as institutional capacity.

iv. According to Shen et al. (2016), reforms that have the potential to be implemented are meant to rectify perceived injustices and enhance the efficacy and fairness of PPPs. These include: strengthening capability, amending contracts, and streamlining regulations. Enhancement of regulations guarantees openness, responsibility, and fair risk distribution. While capacity building improves government entities' ability to successfully oversee and enforce PPP projects, contractual modifications create balanced agreements.

v. The socioeconomic and political environment of Zimbabwe influences how these elements interact. The success and fairness of PPPs are influenced by various factors, including social expectations, political dynamics, and economic instability.

Figure 1: Conceptual Framework



Empirical Studies

Together, these empirical studies show how PPP frameworks are unfair and how changes are necessary to guarantee more equitable results in Zimbabwe.

The usefulness of PPPs in infrastructure projects in several African nations, including Zimbabwe, has been examined by Mutambatsere (2017). The analysis draws attention to the operational and financial advantages of PPPs, but it also exposes the disparities in risk-sharing and public financial obligations. According to Mutambara, PPPs frequently lead to higher service prices and cost overruns, which disproportionately impact the populace. Stronger regulatory frameworks are necessary to safeguard the public interest, as highlighted. The study offers a general picture, but it falls short of providing a concentrated, in-depth investigation of Zimbabwe-specific stakeholder perspectives, especially qualitative information from local officials and impacted populations.

In contrast, Vallé and Stucchi's (2024) study analyses the PPP frameworks in Zimbabwe and Nigeria,

highlighting issues that both countries face as well as possible changes. It highlights the differences between the gains made by the public sector and the rewards reaped by private investors. Public displeasure is captured in the study's substantial revelations regarding PPP agreements' accountability and transparency. The study calls for increased public involvement in PPP project design and implementation. Although the comparison method is useful, the study just briefly explores the subjective experiences and views of specific Zimbabwean stakeholders.

Nkomo and Nhema (2015) examine the financial aspects of PPPs in Zimbabwe, examining the economic ramifications and the difficulties in obtaining long-term funding for infrastructure projects. According to Nkomo and Nhema (2015), there is a mismatch between the interests of the general public and private investors' profit goals, which results in unfair outcomes. Better risk management techniques and financial changes are recommended by the report. The study focuses on financial opportunities and problems, but it does not examine stakeholder perspectives or provide qualitative information on perceived injustices.

Ittmann's (2017) analysis highlights concerns about justice and fairness and offers insights into the perspectives of many stakeholders involved in PPPs within the transportation industry. The study discovers that private investors frequently put profit ahead of the interests of the general public, making stakeholders—especially the public—feel excluded from the decision-making process. The study recommends enhancing transparency and boosting stakeholder participation. While providing insightful qualitative data on attitudes, the study only looks at the transportation industry; it leaves out other critical infrastructure sectors like electricity and healthcare.

Chilunjika (2023) assesses the total effect of PPPs, taking into account both achievements and shortcomings on the development of Zimbabwe's infrastructure. The report emphasizes that although PPPs have helped to enhance infrastructure, the gains have not been properly shared, with the general population frequently paying more and having less access to services. It suggests stronger regulatory control and extensive policy changes. The assessment is quantitative and lacks a comprehensive qualitative examination of the viewpoints of stakeholders or the particular injustices encountered by the general population.

Public-Private-Partnerships with the Zimbabwean Context

Public-Private Partnerships (PPPs) have emerged as a strategic approach to infrastructure development in Zimbabwe, aiming to bridge the funding gap and enhance service delivery. Despite their potential benefits, PPPs have raised concerns regarding inequities, accountability, and sustainability. Zimbabwe's PPP landscape is characterized by inadequate regulatory frameworks, limited institutional capacity, and insufficient stakeholder engagement (Ncube, 2019; Chirisa et al., 2019). The country's PPP policy framework, established in 2011, lacks clarity and coherence, leading to inconsistencies in implementation (Mushanyuri, 2018). Researchers emphasize the need for robust legal frameworks to ensure accountability and transparency (Chirisa et al., 2019; Ncube, 2019). For instance, a study by Bandauko et al. (2020) highlighted the significance of community participation to ensure project sustainability.

Zimbabwe's infrastructure sector faces significant challenges, including aging infrastructure, inadequate funding, and inefficient management (Mhlanga et al., 2020). PPPs have been proposed as a solution, particularly in the transportation, energy, and water sectors (Moyo et al., 2020). However, existing research primarily focuses on transportation infrastructure, neglecting other critical sectors (Gukurume, 2017). A study by Mushanyuri (2018) explored PPPs in Zimbabwe's water sector, revealing issues with project implementation and management. The Zimbabwean government has initiated efforts to promote PPPs, including establishing the Zimbabwe Investment and Development Agency (ZIDA) and the Public-Private Partnership Unit (PPPU) (Republic of Zimbabwe, 2021). Researchers emphasize the importance of effective institutional frameworks in facilitating successful PPPs (Ncube, 2019; Chirisa et al., 2019). Community engagement and participation are crucial in ensuring project acceptance and sustainability (Bandauko et al., 2020; Gukurume, 2017).

To address perceived inequities, Zimbabwe requires tailored PPP approaches prioritizing transparency, accountability, and community engagement (Ncube, 2019). Collaborative research between academics, policymakers, and practitioners can inform evidence-based reforms. Zimbabwe's National Development Strategy 1 (2021) emphasizes infrastructure development through PPPs, which underscores the research's

significance. Effective PPP implementation necessitates robust monitoring and evaluation frameworks (Chirisa, 2020). Zimbabwe lacks standardized monitoring and evaluation frameworks, thereby hindering the assessment of PPP effectiveness (Mhlanga et al., 2020). Researchers recommend developing context-specific monitoring frameworks to ensure PPP projects align with national development objectives.

Zimbabwe's socio-economic context presents unique challenges for PPP implementation. Economic instability, political uncertainty, and corruption pose significant risks (Mushanyuri, 2018). Researchers emphasize the need for PPP frameworks to address these contextual factors (Ncube, 2019). Future research should explore strategies mitigating these risks which, ensure that PPPs contribute meaningfully to Zimbabwe's development.

Research Gaps

Although the first study offers a comprehensive overview, it falls short of providing a targeted, in-depth investigation of Zimbabwe-specific stakeholder viewpoints, especially the qualitative information that local officials and impacted communities would need to contribute. This makes it harder to understand how various groups view and interact with PPP initiatives locally. The second study, while taking a comparative approach, falls short in exploring the qualitative experiences and perspectives of specific stakeholders in Zimbabwe, which are essential for placing PPP consequences in context. The third study covers financial issues, but it falls short of capturing the entire spectrum of socioeconomic effects by omitting a convincing investigation of stakeholder perspectives and qualitative data on perceived disparities. Furthermore, the fourth study only looks at the transportation sector, it ignores other important infrastructure sectors like electricity and healthcare, which are equally important for a comprehensive evaluation of the societal effects of PPPs. Last but not least, Chilunjika's quantitative evaluation method ignores the complex qualitative analysis required to comprehend stakeholder viewpoints and particular injustices faced by the general public, thus limiting the breadth of understanding regarding the human and community aspects of PPP implementations.

The existing literature on Public-Private Partnerships (PPPs) in Zimbabwe's infrastructure development highlights significant gaps, necessitating further research. Despite Zimbabwe's reliance on PPPs, studies focusing exclusively on the Zimbabwean context are scarce (Chirisa et al., 2019; Mushanyuri, 2018). This analysis identifies key research gaps. Institutional Frameworks and Policy: Research on Zimbabwe's PPP policy framework reveals inconsistencies and inadequacies (Ncube, 2019; Chirisa et al., 2019). Gaps exist in understanding institutional capacity, regulatory environments, and stakeholder engagement (Mhlanga et al., 2020). Studies have not adequately explored Zimbabwe's Public-Private Partnership Unit (PPPU) and Zimbabwe Investment and Development Agency (ZIDA) roles (Republic of Zimbabwe, 2021). Future research should investigate the effectiveness of existing PPP institutional frameworks. Sector-Specific Research: Existing research primarily focuses on transportation infrastructure (Mhlanga et al., 2020). Other critical sectors, such as healthcare (Moyo et al., 2020), energy, and water (Mushanyuri, 2018), require attention. Sector-specific studies can identify unique challenges and opportunities. Research gaps exist regarding PPPs in Zimbabwe's social infrastructure, including education and housing. Community Engagement and Participation: Community engagement is crucial for PPP project acceptance and sustainability (Bandauko et al., 2020; Gukurume, 2017).

However, research on community participation mechanisms and effectiveness in Zimbabwean PPPs is limited. Studies should explore community engagement strategies, benefits, and challenges. Monitoring and Evaluation Frameworks: Zimbabwe lacks standardized monitoring and evaluation frameworks for PPPs (Chirisa, 2020). Research gaps exist regarding performance metrics, evaluation methodologies, and impact assessments. Developing context-specific monitoring frameworks can ensure PPP alignment with national development objectives. Socio-Economic Context: Zimbabwe's socio-economic context presents unique challenges, including economic instability, political uncertainty, and corruption (Mushanyuri, 2018). Research should investigate strategies for mitigating these risks. Exploring contextual factors' impact on PPP effectiveness can inform policy reforms.

3. Research Methodology

By offering in-depth qualitative insights into the experiences and viewpoints of many stakeholders, this research seeks to close the above-mentioned gaps and contribute to the development of more fair and efficient PPP frameworks.

Research Design

This study adopts an exploratory and descriptive research design to examine perceived injustices and possible changes to Zimbabwe's PPPs for infrastructure development. The intricacies and nuances of the diverse viewpoints of PPP stakeholders are well captured by this design which facilitates a comprehension of the obstacles and prospects for change.

Research Approach

The study uses a qualitative research methodology, which Denny and Weckesser (2022) say is suitable for examining stakeholders' experiences, views, and insights. This methodology enables a comprehensive analysis of the subjective elements of PPPs, encompassing the varying perspectives of stakeholders about disparities and the possible modifications they deem imperative. The richness of stakeholder perspectives, which is crucial for this study, can best be captured through qualitative methodologies (Denny and Weckesser, 2022).

Research Population

Various stakeholders involved in Zimbabwe's PPPs for infrastructure development were included in this study. Key government representatives shared their knowledge of regulatory obstacles, policy frameworks, and government viewpoints on PPP efficacy and equity. Their views on partnership structures, risk assessments, and motivations were presumably understood by private investors. Three companies that submitted bids for PPP projects also provided valuable insights into the phenomena under study. Three members of the general public were also interviewed to learn more about the expectations, worries, and societal impact of PPPs. The participant selection process aimed to guarantee diverse viewpoints, enhancing the authenticity and dependability of the results. Twelve participants were categorized into four roles: Government Officials (GO), responsible for policy formulation and implementation; Private Investors (PI), providing financial expertise; Company Representatives (CT), overseeing project execution; and General Public (GP) members, affected by PPP projects. This strategic purposive sampling approach ensured representation from various sectors, including transportation, energy, and healthcare, and geographic representation from urban and rural areas. By selecting participants with direct PPP experience, the study gathered rich, qualitative data, providing nuanced insights into Zimbabwe's PPP landscape.

Data Collection Methods

This study employed a mixed-methods approach, combining semi-structured interviews and focus groups to gather comprehensive data (Denny & Weckesser, 2022). Semi-structured interviews were conducted with key stakeholders, including public officials, business investors, and community leaders. These interviews ensured coverage of essential topics while allowing flexibility to explore specific issues in-depth. Open-ended questions encouraged participants to share experiences, perceptions, and insights, providing rich qualitative data. Interviews lasted approximately 60 minutes were audio-recorded, and transcribed verbatim.

Focus groups comprising community members facilitated collaborative exploration of shared concerns and experiences related to Public-Private Partnerships (PPPs). Moderated discussions encouraged active participation, fostering dynamic interactions among participants. Focus groups consisted of 8-12 participants, lasted 90 minutes, and were audio-recorded. Trained facilitators ensured open-ended questioning and active listening. Data collection continued until saturation was achieved, where no new themes emerged. This mixed-methods approach provided a nuanced understanding of stakeholder perspectives, enhancing validity and reliability.

Sampling Strategy

A purposive sampling technique was employed to select participants with extensive expertise and experience in Zimbabwe's Public-Private Partnerships (PPPs). This strategic approach ensured the selection of information-rich cases thereby optimizing data quality. Participants included public servants directly involved

in PPP projects, private sector executives managing PPP initiatives, and local leaders impacted by PPP projects. Criteria for selection comprised: (1) minimum 2 years experience in PPP-related roles; (2) direct involvement in PPP project planning, implementation, or evaluation; and (3) representation from diverse sectors (e.g., transportation, energy, healthcare).

Data Analysis Techniques

Thematic analysis, a qualitative research methodology, was employed to identify, examine, and synthesize patterns within the collected data (Kiger & Varpio, 2020). This approach enabled the extraction of rich insights from stakeholder perspectives on perceived injustices and potential solutions. The analysis commenced with coding, where raw data was systematically categorized to reveal emergent themes and sub-themes. This iterative process involved continually refining and revising themes as new data emerged, ensuring a comprehensive understanding.

To facilitate meticulous data administration and analysis, NVivo software was utilized, providing a systematic framework for organizing and synthesizing findings. Coding processes involved assigning descriptive labels to segments of text, enabling pattern identification. Themes were subsequently grouped into categories, revealing relationships between perceived injustices and proposed solutions. Data interpretation focused on contextualizing themes within Zimbabwe's socio-economic landscape, considering factors influencing PPP effectiveness. By integrating empirical evidence with theoretical frameworks, the analysis provided nuanced insights into addressing inequities in Zimbabwe's PPP frameworks, informing evidence-based policy recommendations.

Procedures

A multi-phase approach was used to address the research questions. First, a review of the literature was done to place the study in the perspective of previous research. After that, focus groups and semi-structured interviews were held to gather primary data. To find important themes about perceived injustices and possible reforms, the data were transcribed and then thematically analyzed. Conclusions were drawn based on the findings and recommendations were informed by comparing the findings with the literature to establish similarities and differences. Throughout the research procedure, ethical principles such as informed consent and confidentiality were closely followed.

4. Findings of the Study

The research findings are presented in this section, using text and tables to highlight important information on examining and comprehending the apparent injustices in Zimbabwe's current PPP arrangements.

Demographics of Research Participants

The following data in Table 1 describes the characteristics of the participants involved in the research:

Table 1: Demographics of Research Participants

Code	Role	Age	Gender	PPPs Experience (years)
GO1	Government Official	45	Male	10
GO2	Government Official	52	Female	15
GO3	Government Official	38	Male	8
PI1	Private Investor	50	Female	20
PI2	Private Investor	42	Male	12
PI3	Private Investor	36	Female	7
CT1	Company Representative	48	Male	14
CT2	Company Representative	40	Female	10
CT3	Company Representative	35	Male	5
GP1	General Public	30	Female	2

GP2	General Public	25	Male	1
GP3	General Public	28	Female	3
Total				**107**

This dataset includes 12 groups of participants categorized by their roles: Government Officials (GO), Private Investors (PI), Company Representatives (CT), and members of the General Public (GP). The participants' ages ranged from 25 to 52 years, reflecting a broad representation of different age groups. Their experience with Public-Private Partnerships (PPPs) varies from 1 to 20 years, providing a spectrum of insights from both novices and seasoned professionals. Government Officials and Private Investors generally have more years of experience compared to Company Representatives and the General Public. This diverse dataset facilitates a comprehensive analysis of perspectives on PPPs across different roles, ages, genders, and experience levels.

The findings reveal significant disparities in Public-Private Partnership (PPP) experience among stakeholders ranging from 1 to 20 years, providing a spectrum of insights from both novices and seasoned professionals. Government Officials (GO) and Private Investors (PI) possess substantially more experience (10-20 years) compared to Company Representatives (CT) and the General Public (GP) (1-7 years) (GO1, GO2, PI1, PI2). This means Government Officials and Private Investors generally have more years of experience compared to Company Representatives and the General Public. This experience gap underscores perceived inequities in PPP decision-making processes, echoing concerns raised by scholars (Chirisa et al., 2019; Mushanyuri, 2018). For instance, GO1 emphasized the importance of community engagement, while GP1 highlighted limited access to information. These divergent perspectives suggest that PPP reforms should prioritize stakeholder capacity-building and inclusive decision-making (Ncube, 2019). This diverse dataset facilitates a comprehensive analysis of perspectives on PPPs across different roles, ages, genders, and experience levels.

The findings also indicate gender disparities in PPP experience, with female participants (GO2, PI1, CT2, GP1) generally having fewer years of experience. This echoes concerns raised by researchers regarding gender inequities in infrastructure development (Gukurume, 2017; Moyo et al., 2020). To address this, reforms should prioritize gender-sensitive capacity building and inclusive decision-making processes. Zimbabwe's National Development Strategy 1 (2021) emphasizes gender mainstreaming in development projects. Effective implementation of such strategies can enhance PPP equity and socio-economic impacts (Chirisa et al., 2019; Ncube, 2019).

Perceived Inequities in Current PPP Structures in Zimbabwe

The thematic analysis tables below synthesize perspectives from diverse stakeholders in Zimbabwe's PPP sector, revealing widespread concerns about inequities in benefit distribution and risk allocation. Government officials, private investors, companies awarded tenders, and the general public highlighted disparities in accessing PPP opportunities, influenced by factors such as gender, organizational size, and socioeconomic status. These insights underscore the complexity of challenges within current PPP structures and emphasize the need for targeted reforms to enhance fairness and transparency in future projects.

Table 2: Inequities in Current PPP Structures in Zimbabwe

Super-ordinate Theme	Subordinate Themes	Description of Theme	Quotations
Inequitable Benefit Distribution	Unequal distribution of economic benefits	Government officials perceive that PPP projects often result in unequal distribution of economic gains, favoring private partners over public interests.	"Private investors seem to reap substantial profits from PPP projects while public benefits are less evident." (Government Officials)

	Limited access to decision-making	Officials feel marginalized in key decision-making processes, leading to unequal power over project outcomes.	"Decisions regarding PPP project priorities are often made without adequate consultation with government stakeholders." (Government Officials)
Access and Opportunity	Access to project information	Private investors express concerns over limited access to comprehensive project details, affecting their ability to make informed investment decisions.	"Critical project information such as financial projections and risks are often not disclosed adequately." (Private Investors)
	Barriers to entry	Investors perceive bureaucratic hurdles and opaque tender processes as barriers that favor established firms, limiting fair competition.	"The tender process seems to favor companies with political connections and large financial reserves." (Private Investors)
Transparency	Lack of transparency	Companies note a lack of transparency in contract negotiations and project execution, leading to suspicions of favoritism and corruption.	"The awarding of tenders often lacks clarity, making it difficult to ascertain if decisions are based on merit." (Company Given a Tender)
	Accountability	Companies perceive a lack of accountability in PPP projects, with delays and cost overruns often blamed on unclear responsibilities.	"When issues arise, there is often a blame game between public and private partners, delaying project progress." (Company Given a Tender)
Social Equity	Unequal service delivery	The public identifies disparities in service quality across regions, with PPP projects benefiting urban areas more than rural communities.	"Infrastructure improvements from PPPs seem to bypass rural areas where they are most needed." (General Public)
	Affordability	Concerns are raised about the affordability of services provided through PPPs, often leading to the exclusion of low-income households.	"The cost of accessing newly privatized services is beyond the reach of many ordinary citizens." (General Public)

The thematic analysis highlights significant concerns about the unequal distribution of benefits and risks in Zimbabwe's Public-Private Partnerships (PPPs). Stakeholders from the government, private sector, businesses, and the public point to disparities in access to PPP opportunities, influenced by factors such as gender, company size, and socioeconomic status (Chirisa et al., 2019; Mushanyuri, 2018). These concerns align with findings in the literature which show that economic benefits in PPPs often favor private investors (Eberhard et al., 2019). For example, government officials feel that while private investors enjoy significant profits, the public benefits are less clear. This reflects Ncube's (2019) concerns about weak regulatory frameworks that enable unfair benefit distribution. On the other hand, some studies argue that PPPs can foster economic growth and infrastructure development (Moyo et al., 2020). Nevertheless, Zimbabwe's situation requires reforms specifically designed to address these inequalities.

The analysis also brings attention to social equity issues, such as unequal service delivery and affordability challenges (Gukurume, 2017). The general public observes that infrastructure projects tend to favor urban

areas, leaving rural communities underdeveloped. This mirrors findings in Mushanyuri's (2018) research on Zimbabwe's water sector, which highlights disparities in service distribution. Literature suggests that these inequalities can be addressed by more inclusive decision-making (Chirisa et al., 2019) and greater community engagement (Bandauko et al., 2020). Zimbabwe's National Development Strategy 1 (2021) emphasizes the need for inclusive economic growth. To address these issues effectively, reforms could focus on building stakeholder capacity, ensuring transparency in decision-making, and conducting social impact assessments (Ncube, 2019). Case studies from South Africa's renewable energy IPP procurement program show the positive outcomes of successful stakeholder collaboration and fair benefit distribution (Eberhard et al., 2019).

Table 3: Perceptions of Benefit and Risk Distribution Disparities in Access to PPP Opportunities

Super-ordinate Theme	Subordinate Themes	Description of Theme	Quotations
Perceptions of Benefit and Risk Distribution	Economic Benefits	Officials perceive economic benefits from PPPs tend to favor private partners over public interests.	"Private investors often enjoy higher profit margins, while public benefits remain uncertain." Government Officials
	Risk allocation	Risks are disproportionately allocated to the government, potentially straining public finances.	"Governments bear most of the financial risks, which can strain public finances when projects face setbacks." Government Officials
	Profitability	PPPs offer potentially higher returns due to guaranteed revenue streams and government-backed contracts.	"Investors see PPPs as lucrative due to guaranteed revenue streams and government-backed contracts." Private Investors
	Risk-sharing agreements	Risk-sharing agreements in PPP contracts mitigate financial exposure compared to solely public-funded projects.	"Shared risks with public entities make PPPs more attractive despite initial investment challenges." Private Investors
	Contractual Obligations	Profitability hinges on favorable contract terms negotiated with public entities.	"Profitability hinges on favorable contract clauses such as payment schedules and performance incentives." Company Given a Tender
	Risk mitigation strategies	Companies employ diverse risk mitigation strategies to ensure financial stability throughout the project lifecycle.	"Effective risk management includes contingency plans for potential delays and cost overruns." Company Given a Tender
	Service Quality	Disparities in service quality across different communities affect public satisfaction with PPP projects.	"Urban areas often receive better-maintained infrastructure compared to rural regions under PPP schemes." General Public
	Affordability	Rising costs of privatized services pose financial challenges for low-income households.	"Rising costs of privatized services pose financial challenges for households already struggling with basic living expenses." General Public
Disparities in Access to PPP Opportunities	Socio-economic Factors	Gender disparities exist in accessing PPP opportunities, with fewer women in decision-making roles.	"Women are underrepresented in leadership positions within PPP project teams." Government Officials

	Age and organizational capacity	Emerging professionals and smaller organizations face barriers in competing for PPP tenders.	"Smaller firms often struggle to meet the financial and technical requirements set by PPP project specifications." Government Officials
	Financial Resources	Access to capital remains a critical barrier for smaller firms and start-ups.	"Start-ups struggle to secure financing for upfront project costs required in PPP bids." Private Investors
	Market knowledge	Companies with prior experience and market knowledge have a competitive advantage in winning PPP tenders.	"Experienced firms leverage industry contacts and insights to navigate complex tender processes effectively." Private Investors
	Size and Capability	Larger firms have an advantage in securing PPP contracts due to their financial capacity and project execution capabilities.	"Larger firms can absorb higher upfront costs and have established track records in delivering large-scale infrastructure projects." Company Given a Tender
	Technological expertise	Firms with advanced technological capabilities are better positioned to meet PPP project requirements and innovate within project frameworks.	"Technological advancements play a crucial role in optimizing project performance and attracting future PPP opportunities." Company Given a Tender
	Socioeconomic Factors	Socioeconomic status influences access to PPP benefits, with wealthier individuals having greater access to quality services.	"Low-income communities often face barriers in accessing services upgraded through PPP investments." General Public
	Geographic location	Urban centers receive more attention in PPP investments, limiting rural communities access to essential infrastructure improvements.	"Rural areas struggle to attract PPP investments despite pressing infrastructure needs." General Public

Stakeholder Perspectives on Key Challenges and Concerns in Existing PPP Agreements

This thematic analysis table provides a structured overview of the main challenges and concerns associated with existing PPP agreements in Zimbabwe, as perceived by different stakeholders. Each theme is supported by relevant quotations that illustrate the perspectives and experiences of government officials, private investors, companies awarded tenders for PPP projects, and the general public.

Table 4: Thematic Analysis of Challenges and Concerns in PPP Agreements: Stakeholder Perspectives

Super-ordinate Theme	Subordinate Themes	Description of Theme	Quotations
Challenges in PPP Implementation	Operational Challenges	Challenges related to project delays, cost overruns, and technical complexities in PPP execution.	"One of the main challenges we face is the lengthy approval processes which delay project timelines significantly." - Government Official

	Financial Challenges	Issues concerning funding gaps, budget constraints, and financial viability of PPP projects.	"Securing adequate financing remains a persistent challenge, often leading to compromises in project quality." - Private Investor
	Legal and Regulatory Challenges	Difficulties associated with navigating complex legal frameworks and inconsistent regulatory practices.	"The regulatory environment lacks clarity, leading to disputes and delays in project implementation." - Company Representative
Fairness and Transparency Concerns	Transparency in Decision-Making	Concerns regarding the lack of openness and accountability in decision-making processes related to PPPs.	"Transparency is crucial; decisions on project allocations should be more inclusive and publicly accessible." - General Public Participant
	Equity in Risk Sharing	Issues related to unequal distribution of risks between public and private sectors, often favor private investors.	"The risk-sharing agreements heavily favor private investors, exposing the public to excessive financial liabilities." - Government Official
	Contractual Terms and Conditions	Criticisms about the fairness and clarity of contractual terms, including procurement practices and contract renegotiations.	"Contract terms are often skewed, with frequent amendments that disadvantage local businesses." - Company Representative

Challenges in PPP Implementation and Socio-Economic Impacts

Stakeholders have highlighted issues about the challenges involved in implementing PPPs, such as operational, financial, legal, and regulatory complexities, which align with findings in the literature on the difficulties faced by developing countries (Akintoye et al., 2020; Osei-Kyei et al., 2020). Government officials have highlighted the delays caused by lengthy approval processes, while private investors point to financing constraints, both of which highlight the need for more efficient regulatory frameworks and innovative financing solutions (Ahadzi et al., 2020). Effective reforms could include building stakeholder capacity, ensuring transparent decision-making, and conducting social impact assessments (Tchouamou Njoya et al., 2020; Ansah et al., 2020).

Fairness, Transparency, and Equity Concerns

Furthermore, the research findings raise concerns about fairness, transparency, and equity in PPP agreements, aligning with research that highlights the importance of inclusive decision-making and community involvement (Kwak et al., 2020; Sharma et al., 2020). Stakeholders have expressed concerns about the unequal distribution of risks and contractual terms that disadvantage local businesses, underscoring the need for more equitable PPP frameworks (Osei-Kyei et al., 2020; Alfen et al., 2020). To address these issues, Zimbabwe's PPP reforms should focus on transparency, accountability, and socio-economic equity; incorporating stakeholder forums, capacity-building initiatives, and social impact assessments.

Impact of PPPs on Financial Well-being and Development Prospects of Zimbabwean Citizens

The following table allows for a more detailed analysis of the impacts of PPP projects on financial well-being, development prospects, and various other dimensions relevant to Zimbabwean citizens and stakeholders.

Table 5: Impact of PPP Projects on Financial Well-being and Development Prospects in Zimbabwe

Super-ordinate theme	Subordinate themes	Description of theme	Quotations
Impact of PPP Projects on Financial Well-being and Development Prospects in Zimbabwe	Financial obligations and economic opportunities for local communities	Examining how PPP projects impact local finances and economic prospects.	"PPP projects have increased local employment and income levels, benefiting our community." - Local Resident
		Assessing any additional financial burdens imposed on local governments.	"The maintenance costs of the new infrastructure are straining our municipal budget." - Government Official
	Socio-economic impacts on marginalized groups	Analyzing whether PPP projects have addressed or exacerbated inequalities.	"The new housing project under PPP has improved living conditions for low-income families." - Social Worker
	Environmental sustainability of infrastructure developments	Evaluating the ecological impact of PPP-funded projects.	"The new renewable energy plant has reduced our carbon footprint, promoting sustainable development." - Environmental Activist
	Public perception & community engagement	Exploring how PPP projects are perceived and engaged with by the community.	"There was insufficient public consultation regarding the new development, leading to community discontent." - Community Leader
	Long-term sustainability & maintenance of infrastructure	Assessing the sustainability of PPP projects beyond initial construction.	"Ensuring adequate funding for maintenance is crucial to the longevity of these infrastructure projects." - Infrastructure Planner

Financial Well-being and Socio-Economic Impacts

The findings reveal a mixed impact of Public-Private Partnerships (PPPs) on Zimbabwe's financial well-being and development prospects. While some PPP projects have contributed to higher local employment and income (Manyika et al., 2018), they have also placed additional financial strain on local governments (Kwak et al., 2018). The socio-economic effects on marginalized groups are varied, with some projects helping to reduce inequalities (UNDP, 2020), while others may have worsened them (World Bank, 2018). Research suggests that targeted interventions are necessary to ensure that PPPs benefit underserved communities (OECD, 2019). Case studies from South Africa's renewable energy IPP procurement program highlight successful community involvement and fair distribution of benefits (Eberhard et al., 2019).

Environmental Sustainability and Long-term Maintenance

The findings also raise concerns about the environmental sustainability and long-term upkeep of infrastructure funded through PPPs. Stakeholders stress the importance of considering ecological factors (UN Environment, 2020) and ensuring sufficient funding for ongoing maintenance (Asian Development Bank, 2019). Research highlights the need for a holistic approach that addresses both socio-economic and environmental impacts (World Health Organization, 2019). To achieve sustainable development, PPP reforms should prioritize transparency, accountability, and active community engagement (Transparency International, 2020). Thus, Zimbabwe's PPP framework must include environmental impact assessments and strategies for long-term maintenance.

Potential Reforms and Strategies for Restructuring PPPs

This structured approach examines reforms and strategies for restructuring PPPs in Zimbabwe, emphasizing fairness, transparency, and public benefit. It integrates perspectives and recommendations from diverse

stakeholders involved in PPP projects. The strategic focus is on maximizing public value, strengthening oversight, and ensuring financial sustainability, aiming to enhance the contribution of PPPs to national development objectives while protecting public interests and resources.

Table 6: Reforms and strategies for restructuring PPPs in Zimbabwe

Super-ordinate theme	Subordinate themes	Description of theme	Quotations
Reforms and Strategies for Restructuring PPPs in Zimbabwe	Equity in PPP agreements	Discussing necessary reforms to ensure equitable distribution of risks and benefits.	"We need clearer guidelines on risk allocation to avoid disproportionate burdens on public finances." - Government Official
	Transparency and accountability mechanisms	Suggesting strategies to enhance project oversight and accountability.	"Regular audits and public reporting are crucial to maintaining trust and ensuring PPP funds are used effectively." – Auditor
	Stakeholder participation and engagement	Exploring ways to increase public and stakeholder involvement in PPP decision-making.	"Consultative forums should be mandatory to gather community input and address concerns early in the project cycle." - Community Representative
Restructuring PPPs for Government and Public Benefit in Zimbabwe	Maximizing public value and benefits	Discussing ways to ensure PPP projects deliver substantial public goods and services.	"PPP agreements should prioritize projects that directly improve public infrastructure and services, such as healthcare and education." - Government Official
	Enhancing government oversight and control	Exploring measures to strengthen regulatory frameworks and improve project monitoring.	"The government should have greater involvement in project planning and implementation to safeguard public interests." - Policy Analyst
	Ensuring financial sustainability	Analyzing methods to mitigate financial risks and ensure long-term project viability.	"PPP contracts should include provisions for lifecycle cost assessments and funding mechanisms for maintenance." - Financial Advisor

Restructuring Public-Private Partnerships (PPPs)

Restructuring Public-Private Partnerships (PPPs) in Zimbabwe requires a strong focus on equity, transparency, and accountability. Clear guidelines on risk allocation are essential to prevent undue financial strain on public resources. Regular audits, public reporting, and consultative forums can help ensure community concerns are addressed early in the project lifecycle while promoting openness and trust. Research highlights the importance of robust transparency and accountability measures in building confidence and ensuring funds are used effectively (Kwak et al., 2018; OECD, 2019). A notable example is South Africa's renewable energy IPP procurement program, which showcases the benefits of effective stakeholder collaboration and fair distribution of outcomes (Eberhard et al., 2019).

Maximising public value and benefits

To ensure maximum public value and benefit, PPP agreements should focus on projects that improve essential infrastructure and services, such as healthcare and education. Strengthening government oversight through robust regulatory frameworks and thorough project monitoring is crucial (Manyika et al., 2018; UNDP, 2020). Including lifecycle cost assessments and dedicated funding mechanisms for maintenance in PPP contracts is key to maintaining financial sustainability. Examples from Zimbabwe's health sector show how well-structured PPPs can enhance service delivery and outcomes (MEFMI, 2022). Reforms must carefully balance socio-economic and environmental factors, always prioritizing public interests and resources (World Bank, 2018; Transparency International, 2020).

Recommendations for Creating Balanced and Equitable PPP Frameworks

This thematic analysis table offers structured recommendations from diverse stakeholders for creating more balanced and equitable PPP frameworks in Zimbabwe. It focuses on policy improvements and stakeholder actions to enhance public benefits and equity, aiming to foster better outcomes and accountability in PPP projects. By incorporating perspectives from government officials, private investors, companies awarded tenders, and the general public, the table provides a comprehensive view that promotes transparency, fairness, and greater public benefit in future PPP projects.

Table 7: Recommendations for Creating Balanced and Equitable PPP Frameworks in Zimbabwe

Super-ordinate theme	Subordinate themes	Description of theme	Quotations
Recommendations for Creating Balanced and Equitable PPP Frameworks in Zimbabwe	Policy recommendations for policymakers	Suggestions to policymakers for improving fairness and effectiveness of PPP agreements.	"Policymakers should prioritize clear and balanced risk allocation in PPP contracts to avoid undue financial burdens on the public sector." - Government Official
	Measures for stakeholders to enhance public benefits and equity	Strategies for stakeholders to maximize public benefits and minimize inequities in PPP projects.	"Private investors should commit to transparent project planning and robust community engagement to ensure local needs are met." - Private Investor
	Perspectives from companies given tenders	Insights and opinions from companies involved in PPP projects on improving PPP frameworks.	"As a company involved in PPPs, we believe in stronger regulatory oversight and fairer bidding processes to foster competition and drive down costs." - Company Representative
	Perspectives from the general public	Insights and opinions from the general public on improving PPP frameworks.	"The public expects PPP projects to deliver tangible benefits like improved services and infrastructure without compromising affordability and accessibility." - Concerned Citizen

Balanced PPP Frameworks and Socio-Economic Impacts

Stakeholders agree on the importance of creating balanced and fair Public-Private Partnership (PPP) frameworks in Zimbabwe, with a focus on clear risk-sharing, transparency, and active community involvement (Kwak et al., 2018; OECD, 2019). Policymakers are urged to design PPP contracts that protect public interests, while private investors are expected to prioritize transparent project planning and meaningful community engagement (Manyika et al., 2018). Businesses involved in PPPs emphasize the need for stronger regulatory oversight and more equitable bidding processes to encourage healthy competition (UNDP, 2020). Research highlights the role of well-structured PPP frameworks in delivering socio-economic benefits, citing successful projects from South Africa's renewable energy sector as examples (Eberhard et al., 2019). Case studies from Zimbabwe's health sector also demonstrate how equitable PPPs can enhance service delivery and improve outcomes (MEFMI, 2022).

Stakeholder Perspectives and Accountability

Stakeholders from various backgrounds agree on the importance of transparency, fairness, and public benefit in PPP projects. Government officials, private investors, businesses, and the public all highlight the need for strong accountability mechanisms, active community engagement, and effective regulatory oversight (Transparency International, 2020). For PPPs to succeed, frameworks must include comprehensive lifecycle cost assessments, reliable funding strategies, and thorough monitoring systems (World Bank, 2018). The

research underscores the importance of stakeholders' involvement throughout the process, with examples from African infrastructure projects demonstrating the impact of inclusive engagement (AfDB, 2020). As Zimbabwe advances its PPP reforms, it must emphasize inclusivity, transparency, and accountability to ensure the greatest benefit for the public.

Discussion of Results

This section explains the findings of this study which sought to investigate and comprehend the perceived injustices in Zimbabwe's current PPP systems while highlighting significant accomplishments.

Demographics of Research Participants:

The dataset comprises 12 participants from diverse backgrounds, aged 25-52, with equal gender distribution, and varying experience levels with Public-Private Partnerships (PPPs). The demographic diversity ensures a comprehensive analysis of PPP perspectives across different roles and experience levels. This echoes Siemiatycki's (2019) observation that women and racial minorities are significantly underrepresented in senior leadership roles in the PPP industry worldwide thereby affecting project management outcomes.

Perceived Inequities in Current PPP Structures in Zimbabwe

Stakeholders identified disparities in accessing PPP opportunities influenced by gender, organizational size, and socioeconomic status. Key themes included unequal economic benefit distribution favoring private partners, limited decision-making access for government officials, transparency and accountability issues in contract negotiations, and social equity concerns such as service quality disparities. These insights underscore the complexity of challenges within current PPP structures which calls for reforms to enhance fairness, transparency, and inclusivity in future projects. This is supported by Krawiec (2016) who noted that the perception of women's statutory place within organizations has been influenced by gender bias, which has led to discrimination

Stakeholder Perspectives on Key Challenges and Concerns in Existing PPP Agreements

The research findings pointed out that operational challenges such as project delays and technical complexities, financial issues including funding gaps and budget constraints, and legal and regulatory hurdles characterized by complex frameworks and inconsistent practices. Fairness and transparency concerns emerged regarding decision-making transparency, equity in risk sharing between sectors, and criticisms of contractual terms and procurement practices. Stakeholders emphasized the need for improved governance and regulatory clarity to mitigate these issues effectively. This was similar to Jayasuriya, Zhang, and Yang (2019) who stated that poor stakeholder management, complexity of risk management models, project delivery time and cost overruns, inadequate consideration of whole life-cycle aspects, and over-reliance on Public Sector Comparator are key challenges in PPPs.

Impact of PPPs on Financial Well-being and Development Prospects

The impact of PPP projects on various dimensions crucial to Zimbabwean citizens and stakeholders included positive impacts which included increased local economic opportunities and improved infrastructure. This resonates with Chilunjika (2023) who noted that PPP arrangements in Zimbabwe led to faster completion of trunk roads, lower project lifecycle costs, better risk allocation, improved service quality, and additional revenue streams. However, concerns were raised about financial burdens on local governments, socio-economic inequalities, and environmental sustainability. Public perception and community engagement issues, such as insufficient consultation and long-term infrastructure maintenance, were also highlighted, suggesting a need for comprehensive planning and community involvement in PPP projects.

Potential Reforms and Strategies for Restructuring PPPs

The research also focused on reforms and strategies to restructure PPPs in Zimbabwe for enhanced fairness, transparency, and public benefit. It synthesized recommendations from stakeholders for equitable risk distribution, stronger accountability mechanisms, and increased stakeholder participation in decision-making. This was similar to Aimone and Pan (2020) who highlighted that stakeholders should hold trustees accountable for risky decisions based on outcomes and the degree to which their choices align with their own choices in similar situations. The strategic restructuring aims to maximize public value by prioritizing projects that

improve infrastructure and services while ensuring financial sustainability through rigorous oversight and life cycle cost assessments.

Recommendations for Creating Balanced and Equitable PPP Frameworks

Recommendations from stakeholders to create more balanced and equitable PPP frameworks in Zimbabwe included the need for clear and balanced risk allocation, transparent project planning, fair bidding processes, and prioritizing projects that deliver tangible benefits to communities. This resonates with Edson and Gideon (2021) who postulated that reworking the legislative framework, harnessing the demographic dividend, and ensuring community participation are key recommendations for creating more balanced and equitable PPP frameworks in Zimbabwe. Stakeholders emphasized the importance of regulatory oversight, community engagement, and affordability in ensuring PPP projects meet public needs effectively. These recommendations collectively aim to foster transparency, fairness, and greater public benefit in future PPP endeavors in Zimbabwe.

5. Conclusion and Recommendations

Conclusion

The thorough examination of Zimbabwe's PPP industry leads to a number of important findings and suggestions that may be used to solve the problems found and improve the efficacy of PPP initiatives in the future. First of all, it is clear that disparities in risk and benefit distribution provide major obstacles to attaining balanced results in PPPs. Stakeholders have drawn attention to differences in access to PPP opportunities caused by factors such as gender, organizational size, and socioeconomic level. These stakeholders include government officials, private investors, businesses, and the general public. Policymakers should give top priority to changes that guarantee open decision-making procedures and fair sharing of risks and rewards to lessen these disparities. As suggested by government authorities, this involves creating more precise standards for risk allocation to avoid placing an excessive financial load on the public sector. Furthermore, there is a need to increase stakeholder involvement through consultative forums

Recommendations

The stakeholder proposals highlight how urgently better governance and regulatory frameworks are needed to solve the practical, economical, and legal issues related to PPP agreements in Zimbabwe. Stronger accountability measures, such as frequent audits and open reporting, are supported by stakeholders to guarantee the effective use of PPP money and guard against instances of corruption or favoritism in project execution. Furthermore, increasing openness in contract negotiations and procurement procedures is crucial to fostering investor trust and reducing unfair practices. Businesses that participate in PPPs emphasize the significance of equitable bidding procedures and regulatory supervision to foster competition, reduce project costs, improve the efficiency of infrastructure development for the benefit of taxpayers and guarantee PPP projects' long-term viability.

Recommended for Reforms

i. Developing clear guidelines for distributing risks between the public and private sectors ensures shared accountability and better management of complex projects. Risk allocation frameworks should be regularly reviewed and updated to reflect evolving circumstances and stakeholder needs.
ii. Online platforms can facilitate information sharing, provide regular updates, and foster stakeholder engagement while project management tools enable real-time tracking and collaboration. Transparency in decision-making can be enhanced through clear communication channels on these platforms.
iii. Electronic tendering systems help reduce corruption and promote competition by standardizing bidding documents and evaluation criteria. Independent review committees play a critical role in ensuring fair and objective bid evaluations.
iv. Projects should prioritize tangible community benefits, aligning their socio-economic impacts with national development goals. Community needs assessments can inform project design, and advisory boards can provide valuable feedback throughout the project lifecycle.
v. Institutions responsible for monitoring PPPs must be strengthened to enforce compliance with laws and regulations. Clear regulatory frameworks and regular audits ensure accountability and adherence to established standards.

vi. Public participation can be encouraged through public hearings, surveys, and capacity-building programs. Establishing community liaison officers and grievance mechanisms ensures effective communication and addresses local concerns.
vii. Conducting cost-benefit analyses and value-for-money assessments is crucial for evaluating the financial sustainability of projects. Sensitivity analyses can test project viability under different economic conditions, while contingency plans prepare for potential financial risks.
viii. Key performance indicators (KPIs) should be developed to measure success, with regular evaluation cycles and data analytics guiding decision-making and implementation improvements.
ix. Clear dispute resolution procedures, including mediation and arbitration, help address conflicts effectively. Independent dispute resolution bodies can oversee these processes to ensure fairness.
x. Comprehensive environmental and social impact assessments (EIAs and SIAs) must be conducted to identify potential risks. Environmental management plans and social mitigation strategies should align with international standards to ensure compliance.
xi. Training programs focusing on PPP management, procurement, and contract management can build capacity among public sector officials. Collaborating with international organizations allows for valuable knowledge sharing, while mentorship initiatives can pair experienced professionals with junior officials for hands-on learning.
xii. Stakeholder engagement can also be strengthened through workshops, seminars, and public awareness campaigns that highlight the benefits and risks of PPPs. Accessible online resources, such as guidelines and FAQs, can further enable stakeholders to understand and participate in these initiatives.

Policy Recommendations

i. Updating Laws to Meet Global Standards: Modernize existing legislation to align with international best practices, such as those outlined by the OECD or World Bank, to boost credibility and effectiveness. Establish a regular review process to ensure laws remain relevant and responsive to emerging challenges.
ii. Leveraging the Demographic Dividend: With 70% of Zimbabwe's population under the age of 35, there's immense potential to engage the youth in PPP projects. Focusing skills-building programs in areas like construction and technology helps to improve employability. Additionally, support youth-led entrepreneurial ventures through mentorship and funding opportunities.
iii. Building Institutional Capacity: Strengthen the public sector's ability to manage PPPs by offering specialized training programs. Create a dedicated PPP unit within the government to oversee project implementation and coordination. Partner with international organizations like the World Bank or IMF to gain technical expertise and share best practices.
iv. Offering Fiscal Incentives: Encourage private sector investment in PPP projects by introducing targeted tax breaks and subsidies, particularly for infrastructure development in underserved areas. Implement a viability gap funding mechanism to support economically sound projects that might otherwise struggle to get off the ground.
v. Encouraging Public-Private Collaboration: Promote strong partnerships between the public and private sectors by forming joint committees for planning and implementing projects. Draft cooperative agreements that foster knowledge sharing and resource pooling to maximize impact.
vi. Creating an Infrastructure Development Fund: Establish a dedicated fund to finance critical infrastructure projects, using contributions from both the public and private sectors. Allocate resources to high-priority areas like transportation, energy, and water systems, while ensuring the fund is managed transparently and held accountable.

Strategies for Improved Implementation

To implement reforms effectively and efficiently, the following strategies are envisaged to assist:

i. Phased Implementation: Start by piloting reforms in specific sectors such as transportation or energy. This allows policymakers to test and refine initiatives before rolling them out on a larger scale. By closely monitoring these pilot projects, challenges can be identified and addressed early, ensuring smoother nationwide implementation and long-term sustainability.
ii. Stakeholder Training: Hosting workshops, seminars, and conferences for policymakers, private investors, and community leaders can build the necessary knowledge and skills for managing reforms. Tailored training programs help meet the unique needs of different stakeholders, particularly in areas

like managing Public-Private Partnerships (PPPs). Encouraging peer-to-peer learning also fosters collaboration and the exchange of best practices.

iii. Monitoring and Evaluation: Clear performance metrics aligned with project goals are essential for tracking progress. Regular reviews—whether quarterly or annually—help measure success and highlight areas for improvement. Independent audits and evaluations promote transparency and accountability while leveraging data analytics can refine and optimize strategies over time.

Potential Challenges and Limitations

Policymakers face significant hurdles when attempting to implement successful reforms, and recognizing these challenges is critical for building resilience and navigating potential roadblocks. Some of the key issues include:

i. Resistance to Change: Opposition often arises from stakeholders with vested interests who fear losing power or resources. This resistance can make it difficult to build consensus and generate widespread support for reform efforts.

ii. Capacity Constraints: Limited resources—whether financial, human, or technological—can hamper progress. Gaps in infrastructure or expertise may leave governments struggling to meet the demands for reform, particularly in complex or underdeveloped systems.

iii. Corruption Risks: Corruption poses a serious threat to the integrity of reforms. Without strong safeguards, reforms can be undermined by malfeasance, eroding public trust and derailing progress.

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Institutional Environment and the Quest for Stable Exchange Rate in Nigeria

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Abstract: This research empirically investigates the influence of Nigeria's institutional environment on exchange rate stability using annual data from 1981 to 2023. The study uses co-integration analysis to find a co-movement between exchange rate volatility and the institutional environment measures (measured by political risk and the unpredictability of revenue sources), with the expansion of the financial sector and adjustments to exchange rate policy serving as control variables. Political risk and the unpredictability of revenue sources have a positive and substantial short- and long-term impact on Nigeria's exchange rate volatility. The results suggest that exchange rate policy only has a negative and significant impact on exchange rate volatility over the long period, while financial sector expansion has a positive but insignificant influence in both periods. The causation test reveals a unidirectional correlation between the volatility of revenue sources and the volatility of currency rates, even though there is a bidirectional association between exchange rate volatility and both political risk and revenue source volatility. This suggests that the institutional environment is endogenous to the volatility of Nigeria's currency rate. The findings suggest that restructuring Nigeria's political system and diversifying its economy away from its reliance on oil could stabilize currency rate volatility and mitigate the effects of demand fluctuations and global oil price fluctuations.

Keywords: *Exchange rate, Institution, Political risk, exchange rate policy and financial sector development*

1. Introduction

One significant macroeconomic factor that affects a nation's economy is the exchange rate. It is the rate at which one's currency gets converted to another. Wide-ranging effects on growth may result from an open economy in which the demand for foreign currency outpaces the supply of exchange rate and economic activity (Schnabl, 2007). Nigeria relies on imports of technology, raw materials, and other associated goods to support its economy; the strain on foreign exchange resulting from a lack of foreign earnings to meet demand has frequently caused exchange rate volatility. Like other economies throughout the world, Nigeria's economy has suffered over time from the impact of consistently fluctuating exchange rates when compared to more developed nations. The currency rate has frequently been volatile as a result of not having enough foreign revenues to meet demand. Emerging markets like Nigeria attach importance to exchange rates because they determine the degree of uncertainty that characterizes their markets and the necessity of lowering the expenses and hazards related to foreign exchange transactions. A stable exchange rate depends on the level of industrialization, which can accelerate structural change and economic diversification, among other things.

Despite the implementation of many exchange rate policy regimes in Nigeria with the expectation that the economy would respond favorably, the attempt to stabilize the country's economy through exchange rate stability has failed (International Monetary Fund, 2021; World Bank, 2023). In the 1990s, Nigeria, in particular and Africa in general, implemented policy reforms that tended to rely on only macroeconomic conditions and the exchange-rate regime chosen by them; this cannot be said to be the case with Nigeria.

Policy measures aimed at addressing the economic challenges in Nigeria have had limited success, as the exchange rate remains volatile and unresponsive to the policies. Notable examples include the Inter-Bank Foreign Exchange Market (IFEM), which opened on October 25, 1999; the Autonomous Foreign Exchange Market (AFEM), established in 1995; and the Structural Adjustment Program (SAP), which was started in 1986. To assist the Naira in achieving a fair exchange rate, the IFEM was designed. However, like the AFEM, the IFEM's operations were disrupted due to supply-side constraints, ongoing expansionary fiscal policies, and the persistent excess liquidity in the system. As a result, a policy change occurred on July 22, 2002, when foreign exchange demand pressures increased and external reserves continued to decline. The apex bank reintroduced the Dutch Auction System (DAS) to replace the IFEM. The goal was to establish a more realistic exchange rate

for the Naira, control excessive foreign exchange demand, preserve volatile external reserves, and stabilize the exchange rate (Imoisi, Uzomba & Olatunji, 2010).

The exchange rate unification reform, which was implemented recently in 2023, was to combine all exchange rates into a single market-determined exchange rate to facilitate price discovery and transparency in the foreign exchange market, among other reasons. Regretfully, it is challenging to pinpoint the precise effects of exchange rate unification because Nigeria did so during a period of high inflation, a significant budget and balance of payments deficit, high government borrowing, high energy prices as a result of the removal of fuel subsidies, low government revenue, and a shortage of foreign exchange (FX). The success of Nigeria's currency rate unification process could be impacted by these unfavorable economic realities. (Ozili, 2024)

In a well-functioning market economy, a flexible exchange rate system is ideal, as exchange rates typically fluctuate around an equilibrium value, with excessive volatility generally arising only from occasional business cycles. However, for a developing, oil-dependent, open economy like Nigeria, adopting a flexible exchange rate would lead to significant volatility in the exchange rate between the domestic currency and the internationally referenced U.S. dollar for several reasons. First, as an oil-dependent economy, Nigeria’s exchange rate is heavily influenced by global oil prices, which are determined externally. Factors such as OPEC's quota system, artificial controls on global oil prices, and competitive strategies during oil surpluses contribute to market inefficiencies that affect exchange rates. These dynamics would have substantial implications for Nigeria’s exchange rate. Second, as a small, open economy, Nigeria is a price taker in the international market and more likely to follow global market trends. This results in high exchange rate volatility. Thus, a flexible exchange rate system would be detrimental to Nigeria’s balance of payments. Finally, Nigeria’s status as a developing economy suggests it lacks the necessary collateral resources to control the shocks from a market-driven system, further exacerbating exchange rate volatility.

Stylized facts in Nigeria suggest that exchange rate stability appears to be less affected by increased macroeconomic stability. In 2014, Nigeria's economy grew to be the biggest in Africa and the 26th largest globally. It is currently the ninth-largest exporter worldwide. Nigeria has mostly fallen short of the expectations following the initial oil boom in the 1970s despite these enormous potentials. The nation has had difficulty meeting its macroeconomic objectives, which include raising living standards, lowering unemployment, and managing inflation. During the period under review, throughout the 1980s and until 2023, the value of the naira fluctuated. It fluctuated around N 0.61 to N 3.57 from 1980 to 1990, and from 1991 to 2000, it fluctuated around N 21.886 to N 65.047 against the US dollar. Between 2001 and 2010, it continues to fluctuate around N 118.97 to N 198.65. The intended outcome of the policy to salvage the situation was not achieved, as it continued to oscillate between 2011 and 2024 from N 157.5 to N 1,533. (CBN, 2023). Some economists and financial analysts have posited that exchange rate intervention has been underpricing (that is, undervaluing) or overpricing (that is, overvaluing) the domestic currency and that the efforts to correct these imbalances would even introduce more volatility.

The situation outlined above clearly highlights the need to assess how macroeconomic policies contribute to supporting and stabilizing the exchange rate. Specifically, it raises the issue of whether the macroeconomic environment, together with the reforms implemented in Nigeria, is sufficient to ensure exchange rate stability. To establish a macroeconomic policy framework that supports sustainable economic growth and diversification, Fischer (1993) outlined five essential prerequisites. These consist of a controllable balance of payments, a low and steady rate of inflation, a real exchange rate that is competitive and predictable, a fiscal policy that is steady and sustainable, and an appropriate real interest rate. Thus, attaining exchange rate stability requires a robust macroeconomic strategy in addition to other elements. We add the significance of the institutional environment to Fischer's (1993) criteria, recognizing that weak institutions frequently cause problems for emerging nations.

Prior research has mostly concentrated on the link between exchange rate swings and policy volatility, suggesting that a stable economic policy environment is necessary to sustain exchange rate stability. For example, Mirchandani (2013) used correlation analysis to examine macroeconomic factors affecting exchange rate volatility in India and discovered a close connection between inflation and currency rates. Ismaila (2016) investigated how exchange rate depreciation affected Nigeria's economy after the implementation of structural

adjustment programs (SAP) and discovered that net exports, total government spending, and the broad money supply all had a major long-term impact on real output. However, findings depict exchange rate depreciation did not significantly affect Nigeria's economic growth in either the short or long term and recommended that policymakers avoid relying too heavily on exchange rate depreciation as a growth strategy. Danmola (2013) investigated the influence of exchange rate volatility on Nigeria's macroeconomic variables using least squares and Granger causality tests, recommending the implementation of exchange rate controls after concluding that exchange rate volatility had a major, direct, and substantial impact on economic growth.

Several studies have explored the impact of the institutional environment on exchange rates, with evidence showing a positive connection between the institutional environment and the exchange rates of emerging economies. Studies supporting this positive correlation include those by Meftah and Nassour (2020), Adegboye, Osabohien, Olokoyo, Matthew, and Adediran (2020), Kechhagia and Metaxas (2020), Sakanko, Obilikwu, and David (2020), Yakubu (2019), Aziz (2017), Nguyen (2015), Chaib and Siham (2014), and Chau et al. (2014). However, Jurcic, Franc, and Barisic (2020) found proof of a negative relationship between the exchange rate shocks and the institutional environment. Another important factor influencing exchange rates is the export dynamics of a country, which has led to studies examining the effect of institutions on export performance. Research by Lin, Flachsbarth, and von Cramon-Taubadel (2018) and Chetthamrongchai, Jermsittiparsert, and Saengchai (2020), among others, found a positive relationship between institutional environment and exports in developing countries, while Mehrara and Keikha (2013) reported the opposite. Jama (2020) simply identified a relationship between the two variables. Additionally, Lin, Lin, Wang, and Wu (2021) examined the quality of exports and found that a stronger institutional environment enhances the quality of a country's export commodities.

Bouraouri and Hammami (2017) examined the relationship between currency rates and institutional quality, which is a measure of political instability, in five Arab Spring nations. From 1991 to 2009, using panel pool data (PPD). Their findings showed that political instability negatively affected both the value and volatility of the domestic currencies in these nations. Similarly, Culiuc and Kyobe (2017) examined the influence of institutions, measured by the Ease of Doing Business, on real exchange rates in several developing countries from 1990 to 2003, employing Structural Vector Autoregression (SVAR). They discovered a robust correlation between the real exchange rate and several measures of ease of doing business. In another study, Belke and Vogel (2015) explored the linkage between exchange rate regimes and institutions (represented by economic freedom) in selected sub-Saharan African countries from 1992 to 2011, using fully modified ordinary least squares. Their findings showed that external liberalization and exchange rate arrangements had a negative association, with more advantageous regulatory business environments positively affecting investment, financial, and labor market sectors.

This research contributes to the corpus of empirical research by examining how Nigeria's attempts to attain exchange rate stability are impacted by the institutional context. A key gap in previous research on Nigeria is the limited focus on how the institutional environment influences exchange rate stabilization efforts in Nigeria. Despite various policies and reforms designed to address structural weaknesses, these efforts have largely not succeeded. The institutional environment, which may act as a conduit for policies and reforms that result in naira stability, is probably being overlooked. This forms the foundation of the current study. Another notable gap in prior research is the failure to account for potential time series breaks in data, which could compromise the reliability of their conclusions. This study addresses that issue. While earlier studies on Nigeria have separately studied the effects of policy and institutions on exchange rates to assess their combined effect on exchange rate volatility, this article integrates both components into a single framework. The paper's structure after the introduction is as follows: Section 2 outlines the methodology; Section 3 presents and discusses the empirical data and the final section offers the conclusion.

2. Methodology

Data set and description of variables

The analysis utilizes annual data from 1981 to 2023; this period is significant as it brings to fruition the imperative of an investigation into the nature and dynamics of the institutional environment and exchange rate stability in Nigeria. Data were sourced from a variety of published sources. The residuals of a regression on the

nominal exchange rate in a univariate generalized autoregressive conditional heteroscedasticity (ARCH) model are used to calculate exchange rate volatility; the study employs a second-generation governance indicator for the institutional context, namely, the political risk index and revenue source volatility. Three key benefits come from using second-generation governance indicators: (1) they have operational significance. , (2) they are suitable for in-depth quantitative research, and (3) they are politically acceptable. The analysis utilizes data from the International Country Risk Guide (ICRG, 2023) and the Central Bank of Nigeria's (CBN, 2023) Statistical Bulletin. The choice to focus on the political risk index and revenue source volatility is founded on two primary factors in the study. First, it evaluates the ability and efficacy of social institutions, taking into account the accomplishments of government initiatives and the level of public policy satisfaction. Therefore, the institutional environment's ability to deliver essential public services is vital for a country's pursuit of its macroeconomic goals. Second, there is no doubt that the composite index of political risk index is imperious to economic outcomes, as demonstrated in prior empirical studies on Nigeria (Kimberly, 2014; Ayinde, 2020).

The control variables used in the study are changes in exchange rate policy and financial sector development. The choice of these two variables is premised on one main reason. First, it is instructive to note that the Nigerian economy has witnessed many exchange rate policies owing to the various systems adopted and the different foreign exchange rate market structures (Ayinde, 2020). It is not out of place that whenever the monetary authority adopts a different exchange rate policy, the foreign exchange rate market will be distorted, at least in the short run, and if this distortion persists, it will lead to naira volatility in tandem with the international reference currency. Second, financial sector development remains one of the collateral effects of growth development for every economy (Ehigiamusoe and Lean, 2019). The extent to which the financial sector is developed determines how financial products would be valued in terms of price and variety. In a well-developed financial sector, the price of financial products is appreciably low, and there are many varieties of financial products. The information was taken from the Central Bank of Nigeria's Annual Statistics (CBN, 2023).

Model specification and estimation procedure

Stemming from the theoretical framework, the model's functional form is specified as follows:

$$\Delta InERVOL_t = \beta_0 + \sum_{i=l}^{\rho} \Phi_1 \, \Delta lnERVOL_{t-1} + \sum_{i=0}^{\rho} \phi_1 \, \Delta lnPOLITR_{t-i} + + \sum_{i=0}^{\rho} \mathrm{d}_1 \, \Delta InRESV_{t-i} + \sum_{i=0}^{\rho} \delta_1 \, \Delta lnEXRP_{t-i} + \sum_{i=0}^{\rho} \delta_1 \, \Delta ln(FSD)_{t-i} + \gamma_5 ECT_{t-1} + \mu_t - -(1)$$

The control variable in Equation 1 above is proxied by changes in exchange rate policy (ΔEXRP) and the depth of financial sector development. $(\frac{M_2}{GDP})$. The measure of exchange rate volatility is the residual obtained from the GARCH (1, 1) estimation of a univariate autoregressive model of the nominal exchange rate. In a generic sense, a GARCH (1, 1) model is specified as;

$$y_t = \mu_t + u_t \qquad (2)$$

Where;

$$\mu_t = 0(cons\tan t)\,;\; u_t = \sigma_t \varepsilon_t$$

$$y_t = u_t = \sigma_t \varepsilon_t \qquad (3)$$

$$Var(y_t \mid y_{t-1}) = \sigma_t^2 = \alpha_1 + \alpha_2 y_{t-1}^2 + \beta_1 \sigma_{t-1}^2 ; \alpha_1 >= 0; \alpha_2 >= 0$$

$$\varepsilon_t \sim i.i.d(\mu = 0, \sigma^2 = 1) \qquad (4)$$

$$y_t = u_t = (\alpha_1 + \alpha_2 y_{t-1}^2)\varepsilon_t \qquad (5)$$

A GARCH (1, 1) model models the variance over time t using the values of previous squared observations and variances. Where α_1 Is the offset term that denotes the lowest which the variance can assume at any point in time; σ_{t-1}^2 Is the instantaneous variance at time t-1? The restrictions $\alpha_1 >= 0; \alpha_2 >= 0$ Are imposed to avoid

negative variance. The variance of the series at time t is predicted by the lag value of the variable. As is the case, the variance of the series is the focus for exchange rate volatility if we assume that the mean value equals zero.

$$exr_t = u_t = (\alpha_1 + \alpha_2 exr_{t-1}^2)\varepsilon_t \quad (6)$$

Exchange rate volatility is first extracted from a univariate generalized autoregressive conditional heteroscedasticity (GARCH) framework as the first stage in the two-step estimation process. A pre-estimation test is a necessary condition before estimating the model. This was done by carrying out a unit root test using two stationarity techniques, i.e. Ng and Perron (2001) and Kwiatkowski-Philips-Schmidt-Shin (1992) tests were considered for the purpose. Perron and Vogelsang (1992) and Zivot and Andrews (1992) focus on unit root tests with structural breaks, the decision to use these tests was driven by the specific challenges encountered in most time series data. Overall, the use of four-unit root tests aims to enhance robustness, facilitate comparison, and prevent potential spurious regression results. The method of analysis used is the Autoregressive Distributed Lag (ARDL) model because it delivers more robust results, especially with small datasets. Banerjee and associates (1993). The ARDL model can be linearly transformed into a dynamic model. The first step is to examine the co-movement between the variables. In doing this, a Wald test was conducted to determine whether co-movement exists. To determine the rate of adjustment and equilibrium, the long-term connection was estimated first, followed by the short-term coefficient using the ARDL specification's error correction representation.

The modified paired Granger causality test Precisely, the Toda and Yamamoto (1995) test is employed in this investigation. This framework is based on an enhanced VAR model and employs a modified Wald test statistic. The TY method is a modified VAR model applied within a multivariate context, accommodating series with different integration orders. The primary benefit of this causation approach is that, unlike traditional Granger causality, the TY framework provides greater power when handling series with varying integration levels (Lawal et al., 2023). This enhances the likelihood of accurate model specification and reduces the risk of spurious causality. The bivariate model is stated as follows:

$$y_{1t} = \alpha_0 + \sum_{i=1}^{k} \alpha_{1i} y_{1t-i} + \sum_{j=k+1}^{k+d_{\max}} \alpha_{2j} y_{1t-j} + \sum_{i=1}^{k} \delta_{1i} y_{2t-i} + \sum_{j=k+1}^{k+d_{\max}} \delta_{2j} y_{2t-j} + \upsilon_{1t}$$

$$y_{2t} = \beta_0 + \sum_{i=1}^{k} \beta_{1i} y_{1t-i} + \sum_{j=k+1}^{k+d_{\max}} \beta_{2j} y_{1t-j} + \sum_{i=1}^{k} \phi_{1i} y_{2t-i} + \sum_{j=k+1}^{k+d_{\max}} \phi_{2j} y_{2t-j} + \upsilon_{2t}$$

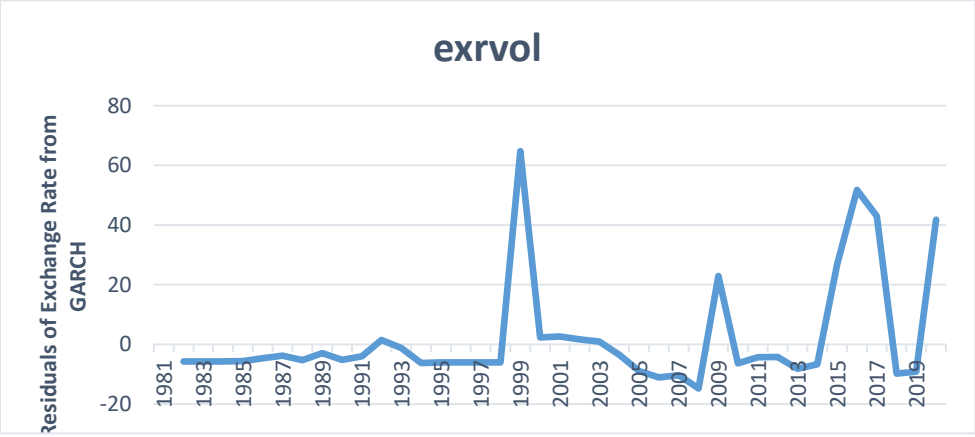
Where the ideal lag length is indicated by k, the maximum order of integration, or AIC and SIC, are among the common information factors that determine this. Once the orders of integration of each variable have been obtained, this will be ascertained.

3. Results and Discussion

The trend depicted in Figure 1 shows that exchange rates in Nigeria were relatively stable between the periods 1981 and 1986 and 1994 and 1998. The former period coincides with the period before the commencement of SAP in Nigeria, while the latter period relates to the time when the exchange rate was fixed. It was during the height of military incursion in Nigeria under General Sani Abacha. The general ruled Nigeria between 1993 and 1998. Aside from these two periods, however, indications of substantial fluctuations in currencies are seen in Nigeria in all other periods. Specifically, there was exchange rate volatility in the country somewhere between 1998 and 2000, 2008 and 2010, and 2014 and 2018 and since 2019. These periods are periods of high exchange rate spikes in Nigeria, and the exchange rate during these periods witnessed acute depreciation of the domestic currency. The period 1998 – 2000 birthed democratic dispensation in Nigeria; the period 2008 – 2010 signaled the era of the global economic cum financial crisis and the period between 2014 and 2018 witnessed another period of acute exchange rate depreciation in Nigeria. During this period, there was an economic recession and a stock market crash in Nigeria. Also, the COVID-19 pandemic has dire consequences on the stability of the exchange rate in Nigeria. Remarkably, only the period between 2004 and 2008 suggests that exchange in Nigeria witnessed acute appreciation. This period coincides with the period of banking sector reforms in the country. The bank recapitalization exercises that herald a series of mergers and acquisitions in Nigeria led to

the inflow of foreign capital. This led to an excessive supply of the foreign currency of the United States dollar over the demand. This leads to currency appreciation as the price (i.e., the exchange rate) of the domestic currency in terms of the foreign currency falls.

Figure 1: Exchange Rates Trend



The correlation matrix in Table 1 details the coefficients of correlation between the variables. The principal diagonal elements are the correlation coefficients of the variable on itself. These coefficients are unity (that is, 1). The upper triangular matrix and lower triangular matrix are the same, indicating both the direct and reverse causality among the variables. The correlation coefficients indicate that there is no issue with the series' collinearity or multicollinearity, as none of the correlation coefficients attain the 0.90 threshold. The correlation coefficient between revenue source volatility (RSV) and the growth of the financial sector is determined by the ratio of the gross domestic product to the broad money supply. (M2_GDP), is 0.83, this is still marginally less than the 0.90 threshold value for collinearity. This indicates that the correlation between these two respective variables is positively strong but could not warrant the problem of collinearity or multicollinearity since these coefficients are lesser than the 0.90 threshold value.

Table 1: Correlation Matrix

Variables	EXCERPT	EXRVOL	M2_GDP	POLIT_RISK	RESV
EXRP	1.00	0.10	0.17	-0.04	0.33
EXRVOL	0.10	1.00	0.28	0.09	0.27
M2_GDP	0.17	0.28	1.00	-0.16	0.83
POLIT_RISK	-0.04	0.09	-0.16	1.00	-0.22
RESV	0.33	0.27	0.83	-0.22	1.00

Sources: Author's Computation

The results from Ng and Perron, shown in Table 2 with trend and intercept, provide evidence that the variables display a heterogeneous order of integration; since none of the variables are integrated at order 2, it is logically reasonable to conclude that both results lead to the same outcome. Furthermore, Table 3 results show that for EXRVOL, POLITI-RISK, REVS, and M2_GDP, the break dates are generally stable, except for RESV and EXRVOL. For these variables, the break year is identified as 2013 with an intercept and 2010 for EXRVOL, while 1999 with an intercept and 2016 with both trend and intercept are reported for EXRVOL.

Table 2: Unit Root Test Result (with intercept and linear trend)

Variable	NG&PERRON	KPSS	order of int
EXRVOL	-8.1000	0.081	I (1)
EXRP	-5.2020	0.133**	I (0)
M2_GDP	-3.4111	0.133**	I (1)
POLIT_RISK	-8.9388	0.099	I (0)
RESV	1.5442	0.158**	I (1)

ΔEXRVOL	-17.001**	0.062	I (1)
ΔEXRP	-19.000**	0.045	I (1)
ΔM2_GDP	-14.4862*	0.059	I (1)
ΔPOLT_RISK	-13.8001*	0.079	I (1)
ΔRESV	-10.6397**	0.157	I (1)

Sources: Author's Computation

The outcomes of these tests at the unit root level show two essential implications for modeling. First, the mix of the I (0) and I (1) variables included within the same modeling framework supports the use of an autoregressive distributed lag (i.e., ARDL) model. Again, the presence of structural fractures lends credence to the fact that the link between exchange rate volatility and the institutional environment in Nigeria can also be investigated with the use of symmetric as well as linear models.

Table 3: Structural Break Unit Root Test

	Intercept		Intercept and trend	
Variable	**T-Statistics**	**Break Date**	**T- Statistics**	**Break Date**
EXRVOL	-5.2957*	1999	-5.5861*	2016
POLITE	-6.2171**	1999	-5.8087**	1999
RESV	-5.7643*	2013	-4.6365*	2010
FD	-5.4810**	2007	-5.4486*	2007
EXRP	-3.3752	2010	-3.6741*	2010

Sources: Author's Computation

Long run dynamics

In the long run, as detailed in Table 4, the exchange rate volatility at lag 1 indicates that the autoregressive components of the model are well suited with a -0.407 coefficient and corresponding probability values of 0.030. Even at the 5 percent level, this is noteworthy. The one-period lag effect of exchange rate volatility has a substantial detrimental impact on its present dynamics, according to economic intuition. The findings indicate that both the political risk factor and revenue sources, at their current levels, positively affect exchange rate volatility in Nigeria. Political risk has a 3.249 coefficient and 0.001 probability value, while the corresponding values for revenue source volatility are 8.511 and 0.000, respectively. This suggests that a unit increase in political risk results in a 3.249 unit increase in the exchange rate's volatility, while an increase in revenue source volatility leads to an 8.511 increase in exchange rate volatility. The implication is that the more the increases in these two components of the institutional environment, the more volatile the behavior exhibited by the exchange rate. These two variables aggravate the volatility of the exchange rate in Nigeria. These align with theoretical expositions and empirical evidence obtained from the literature. Evidence for this has been obtained for Nigeria to suggest that sound political culture is required to stabilize the exchange rate in Nigeria. Similarly, revenue source volatility should also be considered if the government intends to lessen exchange rate volatility in the country. This finding also aligns with logic and theoretical expositions. First, it is logical that revenue from oil is the mainstay of the Nigerian economy, and the revenues generated from the source are bound to be volatile as the sales of these oil products are traded at international prices, largely determined by the exchange rate. A preponderance of empirical evidence supports these findings of the effects of the institutional environment in determining the volatility of the exchange rate in Nigeria. These studies include Chau et al. (2014), Freeman et al. (2000), Asteriou and Sarantidis (2016), and Bouraouri and Hammami (2017), among others.

Table 4: Long-Run Result

Variables	Coefficients	T-statistics	Probability
C	-5.920	-2.494	0.030
Exrvol (-1)	-0.407	-2.472	0.031
Polit_risk	3.249	4.320	0.001
Resv	8.511	6.569	0.000
Exrp(-2)	-2.645	-2.853	0.016
M2_gdp	0.674	0.561	0.586
Dummy_exrvol	2.902	2.706	0.020

R^2= 0.951, Adjusted R^2, 0.843, F- Statist 8.85 (0.0000), DW: 2.315

According to estimations for the long term, exchange rate policy has a negative and substantial impact on Nigeria's exchange rate volatility. The exchange rate policy has a coefficient of -2.645, a -2.853 T-statistics value and a 0.016 probability value. Nonetheless, the higher the exchange rate policy, the lower the volatility of the exchange rate in the country. This finding is seriously circumspect, as it tends to suggest that policymakers are not doing enough to ensure that appropriate policy is in place for managing exchange rates toward stability. Heuristically, it is an indication that there is a need for more intentional and proactive policies of exchange rate management in Nigeria. However, the nation's currency rate volatility has been made worse by the degree of financial development, albeit insignificantly. This is evident in the coefficient of 0.674 and probability value of 0.586. The implication is that for the exchange rate to stabilize in Nigeria, there is a need for the financial sector to be developed to provide the needed collateral effects to stimulate investment and enhance growth altogether. Additionally, 2.902 T-statistics and 0.020 related probability values indicate that at the five percent significance level, the dummy variable that the model uses to reflect the structural break problem is significant. The adjusted coefficient of determination (adjusted R-squared) is 0.843. This indicates that the independent variables explained 84.3 percent movement, the remaining 15.7 percent could be explained by extraneous factors beyond the reach of this study. More so, Durbin-Watson statistics of 2.31 indicate that there is no autocorrelation problem in the estimation, as the DW statistics fall within the acceptable threshold of 1.6 – 2.4 for the absence of an autocorrelation problem. The F-statistics value of 8.85 and probability value of 0.000 imply that the model does not suffer any specification bias and or problem. This lends credence to the overall fitness of the model.

Short run dynamics

As seen in Table 5, in the short run, the error correction term (proxied as ECT) is properly signed with a negative value of -0.9113 for the coefficient, a T-statistics value of -11.189 and a corresponding probability value of 0.000. The -0.9113 coefficient of the ECT suggests that about 91% of disequilibrium is corrected in the current year. Hence, there would be a full recovery back to the equilibrium of the exchange rate in less than a year once affected by economic shock. This implies that about 91 percent adjustment to equilibrium is achieved during the recovery period of a year. Also, the lagged exchange rate volatility (proxied as it is) is significant, with a -0.394 coefficient and a 0.002 probability value. This short-term influence is consistent with the long-term, one-period-lag effects on the present exchange rate level. The conclusion is that if the exchange rate had been more volatile the year before, it would be less volatile this year. Additionally, Dummy Exrvol indicates that the coefficient of 2.902 is significant even at the 1 percent level, supporting the idea that structural breaks influence Nigeria's currency volatility. This verifies the ARDL with the structural break analysis technique.

Table 5: Short-run Result

Variables	Coefficients	T-statistics	Probability
D(exrvol(-1)	-0.394	-3.942	0.002
D(poli_risk(-1))	3.249	7.263	0.000
D(M2_gdp(-1))	-0.971	-1.512	0.159
D(resv(-1)	15.071	10.109	0.000
D(extra(-1))	9.533	2.119	0.058
Dummy_exrvol	2.902	7.083	0.000
ECT (-1)	-0.9113	-11.189	0.000

R^2= 0.966, Adjusted R^2=0.930, DW= 2.32,
Sources: Author's computation

When taking into account how the institutional environment affects short-term exchange rate volatility, the findings indicate that political risk and revenue source volatility are positive and impact positively. Specifically, the coefficient of political risk is 3.249 with a 7.263 T-statistics value and a 0.000 probability value. Revenue source volatility has a 15.071 coefficient with a 10.109 T-statistics value and a 0.000 probability value. Also, only the degree of development of the financial industry is insignificant of all the two control variables. In the short term, exchange rate policy has a positive and substantial influence on exchange rate volatility. The coefficient is 9.533 with a 2.119 T-statistics value and a 0.000 probability value. This suggests that a unit rise in exchange rate policy in the short run would aggravate domestic currency volatility. This contrasts sharply with the findings obtained in the long run, where more exchange rate policy would be needed to reduce its

volatility. The intuition from here is that exchange rate policy has a time-variant influence on the volatility of the exchange rate in the country.

The adjusted coefficient of determination of 0.930 reveals that 93% of the movement in exchange rate volatility is largely accounted for by the independent variables included in the model, with only 7 percent of the variations remaining unexplained. These unexplained variables are extraneous endogenous. The Durbin-Watson statistic of 2.32 suggests no autocorrelation problem, as it ranges between the expected thresholds of 1.60 and 2.40.

Causality Test Result

By the selection criteria, the initial lag length for estimation is set to 3, while the lag length used is 4. The results of the autocorrelation test, with a value of 46.4113 and a corresponding p-value of 0.3712, indicate no autocorrelation up to 4 lags. The general direction of the causal link between institutional indicators and exchange rate volatility is clarified by these findings, suggesting that institutional environment measures in Nigeria do not Granger cause exchange rate volatility. This hypothesis is tested at a 10 percent significance level. The findings of the causality test are presented in Panel C of Table 7.

Table 6: VAR Residual Serial Correlation LM –Test Results

Lags	LM-stat	Prob.
1	66.7421	0.4170
2	71.3381	0.4229
3	53.8213	0.5812
4	46.4113	0.3712

Source: Author's computation

As a consequence, the findings show which way institutional quality metrics and exchange rate volatility are causally related overall. According to the null hypothesis, Nigeria's institutional quality metrics do not contribute to the nation's exchange rate volatility.

Table 7: Causality Test

Panel C: Causality from other variables to EXRVOL

Dependent Variable: EXRVOL

Variables	Chi-Square	Prob. Values
POLITR	2.3189	0.5089
RESV	7.162	0.0669
FD	2.4215	0.4896
EXRP	1.8194	0.6107
ALL	27.0043	0.0789

Source: Author's computation

Revenue source volatility is the only individual institutional quality measure that significantly impacts Nigeria's exchange rate volatility at the 10 percent significance level, as shown in Panel C of Table 7 above. Nevertheless, collective Granger causality between institutional environment measures and exchange rate volatility in Nigeria cannot be precluded at the 10 percent level, as depicted by the 27.0043 chi-square value and the 0.0789 probability value.

Panel D: Causality from EXRVOL to other variables

Variables	Chi-Square	Prob. Values
POLITR	13.82544	0.0032
RESV	6.604382	0.0856
FD	2.208451	0.5303
EXRP	0.060161	0.9961

Source: Author's computation

The second set of causal relationships is shown in Panel D of Table 7; the findings show that at the five and ten percent significant levels, the null hypotheses cannot be disproved. These results are instructive because they demonstrate that only revenue source volatility and political risk cause exchange rate volatility. Overall, the results demonstrate a causal correlation in both directions between exchange rate volatility and the institutional environment. This may be seen in the results combining panels C and D of Table 7. It is obvious from the empirical result that the institutional environment variables are endogenous to exchange rate volatility in Nigeria.

4. Conclusion

This article's primary goal is to investigate the connection between Nigeria's institutional environment and exchange rate volatility. The analysis covers the years 1981–2023 using annual data. A two-step procedure was adopted in the estimation process. The findings from this study have some policy implications. First, the GARCH (1,1) estimation shows that the exchange rate is truly volatile in Nigeria. This indicates that the government should institute an exchange rate policy that will stabilize the exchange rate in Nigeria. This is necessary since Nigeria is a small, open, oil-dependent economy. Second, the results of the autoregressive distributed lag model demonstrate that the exchange rate's volatility exhibits a countercyclical behavior in the long-run situation in Nigeria. Third, an increase in these two components of the institutional environment (political risk and revenue sources volatility), the more volatile the behavior exhibited by the exchange rate in Nigeria. In line with this, development programs must incorporate institutional-stimulating measures that particularly address various dimensions of the institutional environment, especially political and economic institutions with and among various sectors of the economy. Suggesting that political restructuring, aimed at curbing arbitrary manipulation of the domestic currency's exchange rate and reducing its volatility, along with policies that foster financial sector development, are important policy recommendations.

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An assessment of the Altman Z Score on predicting corporate failure. A case of insolvent financial companies listed on the Zimbabwe Stock Exchange

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Abstract: The study explored the causes of corporate failure among financial institutions using the Altman Z-scores. Traditionally, most finance professionals and firms depend on ratio analysis to determine performance, but the application of models like the Altman Z-Scores has hardly been utilized to analyze firm performance and predict potential failure. The major objective of this study was to assess the level to which Altman Z-scores can be used in determining corporate failures a year or two years before insolvency. The research used a mixed methods approach in gathering data. Financial data from annual reports and statements were quantitatively analyzed to compute key financial ratios essential for deriving the Altman Z-Score. Qualitative methods were also employed to explore best financial practices that can mitigate corporate failure risks in Zimbabwean financial institutions. A total of 20 industry experts, including financial analysts, regulators, and financial institution executives, were purposively selected based on their qualifications and experience, for interviews to gather qualitative data. The findings of the study highlight the Altman Z-Score model's effectiveness in predicting financial distress well in advance while also highlighting governance, risk management, regulatory compliance, and operational efficiency as critical areas for mitigating corporate failure. The effectiveness of the Altman Z-Score model and its reliability in identifying at-risk companies both two years and one year before failure was confirmed and the findings give pointers to consider in developing policies that promote financial stability and resilience in the corporate sector.

Keywords: *Corporate failure, insolvent, Altman Z Score, financial banks, Zimbabwe Stock Exchange,*

1. Introduction

Corporate failure has been the major concern of many countries, and Zimbabwe has several financial institutions closing due to several reasons, chiefly poor corporate governance and poor risk management practices. There is also mention of poor level of capitalization as the major cause of company failure in the financial sector. The study was informed by the limited application and interrogation of models that are robust in predicting financial strain in financial institutions. Understanding the reasons behind corporate failure is paramount for stakeholders, including investors, management, regulators, and policymakers, who need to mitigate risks and safeguard economic stability. (Ahamed, 2021; Priyadi, 2021). Corporate failure in the financial sector is particularly concerning due to its potential to disrupt economies, given the interconnected nature of financial institutions. The ability to effectively analyze corporate financial performance and timely predict financial distress is very critical to inform the timely implementation of mitigatory interventions to avert institutional collapse (Molla, 2022; Priyadi, 2021). One of the predictive models is the Altman Z-Score, which has become eminent for its capacity to evaluate corporate health and predict insolvency risk. This study, therefore, focused on assessing the effectiveness of the Altman Z-Score model in predicting corporate failure, specifically targeting insolvent financial companies listed on the Zimbabwe Stock Exchange (ZSE). This focus is justified by the critical role financial institutions play in economic stability, making early prediction models essential for proactive risk management (Haider, 2019; Altman and Hotchkiss, 2019). The Altman Z-Score, developed by Edward Altman in 1968, utilizes various financial ratios from a firm's statement of financial position to produce a single score that communicates the firm's financial health. The Z-Score is used to categorize companies into three zones: safe, grey and distress zones.

Zimbabwe's financial sector has faced significant challenges over the past decades, with several high-profile bank failures. In addition, the Zimbabwean financial services sector has faced several macroeconomic challenges, including hyperinflation, currency volatility, and economic downturns. This has resulted in the insolvency and collapse of various financial institutions such as Kingdom Bank, Zimbabwe Allied Bank Group (ZABG), Interfin Bank, Trust Bank, Royal Bank of Zimbabwe, Renaissance Merchant Bank, Tetrad, and Century

Discount House, highlighting the sector's vulnerabilities (Ncube, 2014; Gumbo, 2016). These failures underscore the need for robust predictive tools to foresee and mitigate financial distress. Research on the local application of bankruptcy prediction models has indicated that while these models are generally effective, there is a notable gap in local knowledge and utilization (Ncube, 2014; Gumbo, 2016). The Altman Z Score presents an opportunity to evaluate the financial health of these institutions and understand their effectiveness within the unique context of the Zimbabwe Stock Exchange (ZSE). To this end, there is a need to adapt and apply proven predictive models like the Altman Z-Score to the Zimbabwean context, addressing local gaps in its understanding and utilization.

The Altman Z-Score has been applied to various economic sectors and different markets, signifying its adaptability and relevance to various industries. Its application to the financial services sector has, however, been limited, leaving a dearth of both theoretical and empirical literature on its application to this sector. This study, therefore, seeks to close this knowledge gap by contributing to the limited extant literature, theoretically and empirically, and also contributing to policy direction based on the findings of the study.

By exploring the relationship between the Altman Z Score and corporate insolvency in Zimbabwe, this study contributes to the understanding of financial distress prediction and its practical applications in emerging markets. It further creates scope for the timely detection of distress indicators that can become the basis for formulating and implementing mitigatory strategies to save financial institutions from collapse.

The structure of the paper comprises a theoretical framework and a review of extant literature review on the Altman Z Score and corporate failure prediction, an overview of the methodology used for data collection and analysis, and a presentation of findings highlighting the Z Score outcomes for the selected insolvent companies. This is followed by a discussion of the results in the context of Zimbabwe's economic environment, conclusions and recommendations for future research, policy and practice.

2. Theoretical Framework

The Agency Theory

The Agency Theory is a key component of corporate governance literature that explores the relationship between principals (such as shareholders) and agents (typically management) within organizations. It posits that conflicts of interest arise due to the divergence in goals between these parties, where agents may act in their self-interest rather than maximizing shareholder wealth (Meckling and Jensen, 1976). The theory suggests that agency problems occur when agents (management) prioritize personal goals or short-term gains over the long-term financial health of the organization (Eisenhardt, 1989).

In the context of financial distress, agency problems can manifest in several ways. For instance, managers might engage in risky investment strategies to boost short-term performance metrics or pursue mergers and acquisitions that benefit their prestige rather than the company's financial stability (Jiang et al., 2019). These actions can lead to increased leverage, operational inefficiencies, or inadequate risk management practices, ultimately contributing to financial distress (Xu, 2020).

The principal-agent relationship forms the core of the Agency Theory, where shareholders delegate decision-making authority to managers. This delegation creates a situation where managers may prioritize their interests, such as job security or compensation incentives, over shareholder wealth maximization. (Xu, 2020). Incentive mechanisms, such as executive compensation packages tied to short-term performance metrics, can exacerbate agency problems by encouraging managers to take excessive risks to achieve immediate financial gains. (Edmans, 2011).

Empirical studies have shown that poorly designed incentive structures can lead to adverse outcomes, including financial distress and even bankruptcy. For example, excessive use of debt to finance growth initiatives or to fund shareholder dividends can strain the financial resources of the firm, especially during economic downturns or industry-specific challenges (Hansen, 2018; Tien, 2020). Such actions reflect the agency conflict where managers prioritize their own compensation and career advancement over the long-term sustainability of the organization.

In the context of this study, whose thrust is aimed at assessing the effectiveness of the Altman Z-Score model in predicting corporate failure among Zimbabwean financial institutions, Agency Theory provides a crucial theoretical framework. It helps establish how agency problems between shareholders and management can influence financial decision-making, which may end up resulting in firm distress, especially if self-interest among the agents goes unchecked, to the detriment of the shareholders' wealth maximization objective and the general concern of the firm. By understanding these dynamics, the study can explore whether misaligned incentives and agency conflicts contribute to the failure of financial companies on the Zimbabwe Stock Exchange. Moreover, the Agency Theory underscores the importance of effective corporate governance mechanisms and incentive structures in mitigating agency problems. For instance, aligning executive compensation with long-term performance metrics and shareholder interests can incentivize managers to make decisions that enhance financial stability rather than short-term gains (Faleye, 2017).

The Signaling Theory

The Signaling theory posits that firms use various signals, such as financial ratios, to communicate their financial health and prospects to external stakeholders. In the context of financial distress prediction, the Altman Z-Score model utilizes five financial ratios to signal a firm's likelihood of bankruptcy. These ratios include Working Capital to Total Assets, Retained Earnings to Total Assets, Earnings Before Interest and Taxes to Total Assets, Market Value of Equity to Total Liabilities, and Sales to Total Assets (Altman, 1968). Each ratio serves as a signal of different aspects of a firm's financial health, reflecting liquidity, profitability, leverage, and operational efficiency (Hosaka, 2019; Sun, 2020; Shen, 2024).

Transparency plays a crucial role in the signaling theory by enhancing the credibility and reliability of these signals. When firms disclose accurate and timely financial information, it reduces information asymmetry between management and external stakeholders (Tsai et al., 2021). This transparency allows stakeholders to make informed decisions based on the signals provided by financial ratios like those in the Altman Z-Score model. However, in environments with higher information asymmetry, such as emerging markets or during financial crises, the effectiveness of these signals may be compromised. (Jones, 2017).

In this study's context, the rationale for applying the signaling theory lies in its ability to explain how financial ratios act as signals of a firm's financial health and potential distress. By evaluating the Altman Z-Score model within this framework, the study aims to assess the model's effectiveness in predicting corporate failure among financial companies listed on the Zimbabwe Stock Exchange (ZSE). The empirical validation of these ratios as signals of distress can provide valuable insights into their predictive power in a specific economic and regulatory environment, contributing to proactive risk management and regulatory oversight (Haider, 2019; Altman and Hotchkiss, 2019)

The Stakeholder Theory

The Stakeholder Theory suggests that organizations need to consider the interests and concerns of all stakeholders affected by their decisions and actions rather than solely focusing on maximizing shareholder wealth (Freeman, 1984). In the context of financial distress within companies listed on the ZSE, stakeholders such as employees, creditors, and shareholders are significantly impacted. For instance, employees face job insecurity and potential layoffs during financial crises, affecting their livelihoods and morale. Creditors, on the other hand, may experience delayed or reduced payments, impacting their financial stability and trust in the company. (Peetz, 2020). Shareholders face potential loss of investment value and diminished confidence in the company's ability to recover (Miller, 2021).

The application of Stakeholder Theory in mitigating financial distress involves recognizing and prioritizing the diverse interests of stakeholders to enhance corporate resilience. By adopting strategies that consider stakeholder interests, companies can foster trust, loyalty, and support during times of crisis. For instance, active communication with employees about financial challenges and transparent decision-making can help mitigate uncertainty and maintain morale (Schneider and Scherer, 2020). Similarly, negotiating repayment plans with creditors based on shared understanding and mutual benefit can preserve relationships and improve liquidity management (Bellovary et al., 2021). For shareholders, implementing strategies that demonstrate a commitment to long-term value creation and sustainability can rebuild confidence and attract investment (Shen et al., 2022).

The Stakeholder Theory also informs the development of corporate strategies aimed at enhancing resilience against financial distress. By prioritizing stakeholder interests, companies can align their strategic objectives with broader societal expectations and regulatory requirements (Shen et al., 2022). For instance, integrating environmental, social, and governance (ESG) criteria into corporate governance practices not only meets stakeholder demands but also mitigates risks associated with regulatory non-compliance and reputational damage. Moreover, fostering stakeholder engagement through participatory decision-making processes can lead to innovative solutions and adaptive responses to financial challenges (Schneider and Scherer, 2020).

In the context of this study, the Stakeholder Theory provides a holistic framework for understanding and addressing the multifaceted impacts of financial distress on various stakeholders within companies listed on the ZSE. By prioritizing stakeholder interests and adopting inclusive strategies, organizations can mitigate risks, enhance corporate resilience, and sustain long-term value creation. This approach not only aligns with ethical principles but also contributes to sustainable business practices and stakeholder trust in the face of economic uncertainties.

Empirical Studies

Mwangi, et al (2023) focused on Kenyan banks and identified the debt-to-equity ratio (DER) and asset turnover ratio (ATO) as pivotal indicators within the Altman Z-Score model. They found that higher DER was associated with increased bankruptcy risk ($r = 0.52$, $p < 0.05$), while lower ATO was linked to financial instability ($r = -0.48$, $p < 0.05$) among Kenyan banks. These statistical relationships highlighted the importance of leverage and operational efficiency in assessing the likelihood of corporate failure in developing economies.

Ncube and Ndlovu (2021) conducted a study on South African banks, revealing additional insights into the Altman Z-Score model's applicability. They reported that earnings before interest and taxes (EBIT) to total assets and market indicators such as the market value of equity to book value of total liabilities were robust predictors of bank failures. Specifically, EBIT/TA showed a strong negative correlation with bankruptcy probability ($r = -0.58$, $p < 0.05$), indicating that higher earnings relative to total assets reduced the likelihood of financial distress. Meanwhile, the market value of equity to book value of liabilities (MV/BVL) demonstrated a positive correlation with financial stability ($r = 0.50$, $p < 0.05$), suggesting that higher market valuation relative to liabilities was associated with lower bankruptcy risk.

Elia et al. (2021) carried out a study to prove the validity of the Altman Z"-score model to predict financial distress in Lebanese Alpha banks from 2009 to 2018. The study findings confirmed that most of the banks under study were in distress during the study period. The authors, therefore, recommended the adoption of the Z"-score model as an instrumental indicator for both external and internal application in the analysis of banks' financial statements by the likes of auditors, financial managers, investors, and lenders to inform decision-making and avert failure of these financial institutions from distress.

Setegn (2021) applied the Altman Z-Score model in analyzing the financial health of 14 Ethiopian Commercial Banks and the National Bank of Ethiopia. The findings indicate that, on average, the participating commercial banks were categorized under the 'Gray Zone' given that the average Z-Score was 1.47, which fell between 1.1 and 2.6 cut-off points. The author, therefore, recommended that banks adopt the consistent application of the Z-Score model to evaluate financial health and take corrective action in good time to avert potential collapse from distress.

In another study of the Ethiopian banks by Molla (2022) covering a period of 5 years (2017-2021), the findings also confirmed that Altma's Z-Score is an effective predictor of financial distress among financial firms. The main cause of financial distress was the banks' liquidity position. Thus, the researcher recommended that senior managers should work together with the board of directors to enhance the dividend policy and financial prudence practices of the banks.

Contrary to the above studies, in which the findings largely reflected the Z-Score as a reliable predictor of financial distress and potential insolvency, in a study by Gyawali (2023) involving 16 commercial banks in Nepal, the findings indicated that only 6 out of the 16 banks were under distress while the other 10 were in the 'undecided zone." It was, therefore, the author's conclusion that the Z-Score model was inconclusive and could

not be entirely relied on in predicting financial distress and potential insolvencies in Nepalese banks. These empirical studies largely demonstrate that there is scope to apply the Altman Z-Score in evaluating the financial health of financial services firms and predicting potential insolvency.

Causes of Insolvency in Financial Institutions

Various factors can contribute to the insolvency in financial institutions. An understanding of these factors is important for equipping bank managers with the requisite information to formulate and implement strategies that enhance a bank's financial soundness and avert failures that can emanate from distress. Some of the contributing factors to financial distress are briefly discussed below.

Poor Risk Management

Inadequate Assessment: The inability to adequately assess and manage risks associated with lending, investment, and operational activities can lead to significant losses, contributing to the bank's financial distress and ultimately insolvency if not detected and arrested in good time. In addition, the lack of diversification, which can result in over-exposure to specific sectors or asset classes, can significantly increase the bank's risk, particularly during times of economic turbulence, where firms in a certain industry may suffer losses and struggle with servicing their obligations to the banks. (Aloqab, 2018; Mishchenko, 2021).

Economic Factors

Sometimes, economies may face recessions that can cause a decline in demand for new loans and increase defaults on existing debts, resulting in high rates of non-performing loans (NPLs). High inflation can also erode the real value of assets and reduce profit margins, negatively impacting liquidity. These developments can contribute to financial distress among financial institutions. (Liou, 2007; Isayas, 2021).

Regulatory Challenges

Challenges associated with a weak Regulatory Framework leading to insufficient regulatory oversight can lead to risky practices and inadequate capital reserves. Conversely, a too stringent regulatory framework might also constrain the working environment, leading to structural bottlenecks hampering the free flow of liquidity within the financial services sector. Banks' failure to comply with regulatory provisions and guidelines can also result in penalties and increased scrutiny, negatively affecting operations. (Challoumis, 2024; Younas, 2021).

Management Risk

If institutional managers are not adequately qualified or inexperienced, there is a risk of poor decision-making. Such ineffective leadership and lack of strategic oversight and direction can lead to poor investment decisions and operational inefficiencies that may lead to loss of capital or negative return on investment. (Li, 2021). The lack of adequate controls may also lead to serious system vulnerabilities and the failure to detect fraud or any other irregular conduct by bank employees. In addition, mismanagement of resources can also drain financial resources, culminating in financial distress and insolvency (Li, 2021; Younas, 2021).

Liquidity Problems

If the bank management fails to effectively and efficiently manage its cash flows, the result could be insufficient liquidity to meet short-term obligations, which may ultimately lead to insolvency and bankruptcy. Sometimes, banks overly depend on short-term finance to fund medium to long-term positions, leading to the risk of creating vulnerabilities if there are significant changes to market conditions (Abdu, 2022; Chen, 2022).

Market Conditions

The operating environment can be volatile, uncertain, complex and ambiguous, leading to certain shocks and adverse market conditions that may lead to significant losses, particularly in trading and investment activities. Such changes and the resultant losses may lead to financial distress and insolvency. Where the industry is highly competitive, intense competition may exert significant pressure on banks to reduce their profit margins, making it difficult for institutions to maintain financial health (Aloqab, 2018; Molla, 2022).

Technological Challenges

With the advent of rapid technological advancement globally, cybersecurity threats are on the rise. The banks' increasing reliance on financial technology exposes institutions to cyber threats that can result in financial

losses through hacking, phishing, and other cyber-attacks on banks' systems. On the other hand, obsolete systems may hamper operational efficiency and adaptability to changing market conditions, leading to financial distress (Xu, 2020).

External Shocks

Other external shocks, such as political instability, geopolitical tensions, and natural disasters, can also negatively affect the banks' operations. Political unrest, for example, can disrupt the smooth operations of the financial services sector and erode investor confidence. Geopolitical tensions may also affect the flow of capital, leading to structural inefficiencies in the market. Natural disasters such as earthquakes or floods can physically damage infrastructure and disrupt business activities, directly affecting the banks and indirectly affecting their operations through the negative effects they may have on the bank's clients (Peetz, 2020).

Financial distress in financial institutions results from a myriad of both internal and external factors that have a complex interplay. Comprehending these factors is critical for formulating the requisite strategies and their effective implementation for mitigating associated risks and enhancing the resilience of the financial sector. Proactively addressing these factors can contribute to a more stable and secure financial environment, reducing the risk of financial distress and potential insolvency among financial institutions. The section below discusses some of the mitigatory strategies for addressing the above-mentioned causes of financial distress in financial institutions.

Mitigatory Strategies for Guarding Against Insolvency in Financial Institutions

To safeguard against distress and potential insolvency, financial institutions can formulate and implement various strategies that enhance their resilience and stability. Below are key mitigatory strategies:

Robust Risk Management Framework

Banks need to institute robust risk management systems and regularly evaluate and identify potential risks across all operations, including credit, market, operational, and liquidity risks. Early detection of risks creates scope for implementing mitigatory measures in good time before the risks are pronounced and adversely affect the bank's operations. In addition, banks have also been able to create diverse portfolios of products services and asset classes to spread risk across different asset classes, sectors, and geographic areas, reducing exposure to any single source of risk (Mishchenko, 2021).

Adequate Capital Buffers

There is a need for banks to maintain adequate capital reserves that are more than the minimum regulatory requirements to create the capacity to absorb potential shocks and their potential attendant losses. In addition, banks should regularly carry out stress tests to evaluate the extent to which capital levels would withstand adverse economic scenario (Antoun, 2021; Farooq, 2025).

Effective Liquidity Management

Effective management of the cash flow is very critical for ensuring that the bank can meet short-term obligations. This follows that banks should institute robust liquidity management strategies to ensure adequate cash flow at all times. In addition, there is also a need to establish diverse funding sources, including lines of credit and interbank loans, as a strategy to enhance liquidity resilience (Chen, 2022; Rafid, 2024).

Strong Governance and Leadership

Good corporate governance practices assist in ensuring that the bank is efficiently and effectively run, with minimal disruptions to the smooth flow of operations. There is, therefore, a need to ensure that the board is carrying out its fiduciary duty in providing adequate oversight and strategic direction and is actively involved in risk governance and strategic decision-making. Banks also need to foster a culture of accountability, transparency and integrity, where management is responsible for maintaining the financial health of the banks and their compliance with regulatory requirements (Isayas, 2021; Younas, 2021).

Compliance and Regulatory Adherence

It is incumbent upon banks to implement robust compliance programs to ensure adherence to laws and regulations, reducing the risk of penalties and operational disruptions. There is also a need to conduct regular

internal and external audits to proactively identify compliance issues and take corrective measures (Challoumis, 2024; Younas, 2021).

Investment in Technology and Cybersecurity

To enhance operational efficiency and reduce system vulnerabilities related to outdated systems, banks need to invest in modern technology solutions. Cybersecurity protocols also need to be strengthened to protect the banks against data breaches and financial fraud. (Kharisma, 2021; Yasir, 2022).

Enhanced Customer Relationships

Effective customer engagement and building strong relationships with customers assist banks in fostering loyalty and reducing the risk of sudden withdrawals or defaults. In addition, banks should also focus on customized financial products and services that meet the needs of diverse customer segments, improving satisfaction and customer retention (Kumar, 2022; Pambudi, 2021).

Market Intelligence and Adaptability

To keep abreast with market developments and economic indicators and anticipate changes that may affect the institution's stability, banks should continuously monitor market trends and be proactive in responding to market developments that may adversely affect their operations. Agility and flexibility in adapting to the dynamism of the market are thus crucial in responding to emerging risks (Isayas, 2021; Younas, 2021).

Crisis Management Planning

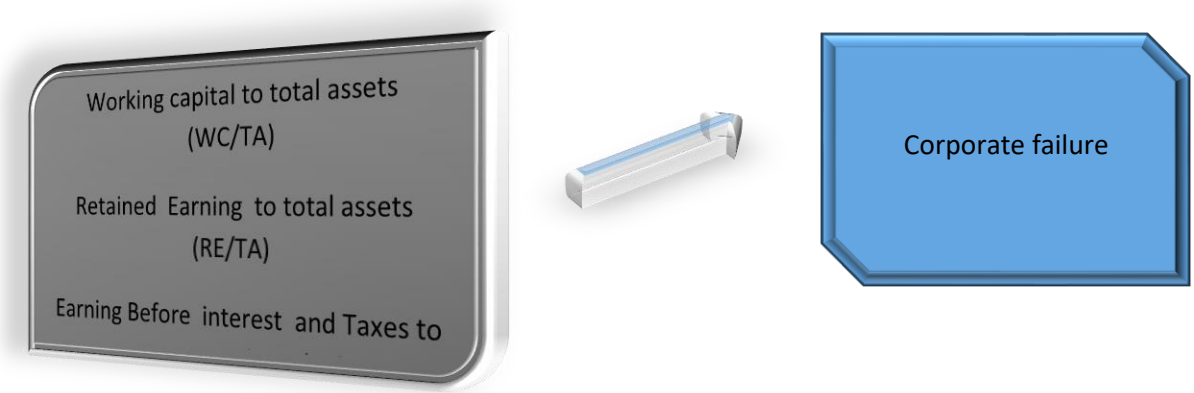
Given the volatility, uncertainty, complexity and ambiguity that characterize the operating environment, banks need to develop contingency plans and create comprehensive crisis response strategies that outline procedures for responding to financial distress. In addition, they could also conduct regular training and simulation exercises to prepare staff for crises, ensuring efficient and effective responses (Crespí-Cladera, 2021; Lone, 2022).

Through the astute formulation and effective implementation of these mitigatory strategies, financial institutions have scope to enhance their resilience against insolvency and build a more secure operational framework. Proactive measures in risk management, capital adequacy, liquidity planning, and governance are essential for navigating the complexities of the financial landscape and safeguarding the institution's long-term viability.

Conceptual framework

The conceptual framework for this study revolved around the evaluation of the Altman Z-Score model's effectiveness in predicting corporate failure among financial institutions listed on the Zimbabwe Stock Exchange (ZSE). The dependent variable in this framework is corporate failure; the independent variables entail key financial ratios and indicators derived from the Altman Z-Score model.

Fig 1: Visual depiction of the study's conceptual Framework (Source: Researcher's visualization)



The dependent variable for this study (Corporate Failure) entails an event where a financial institution becomes insolvent or faces severe financial distress leading to bankruptcy or liquidation. This outcome will be identified based on financial data and regulatory filings indicating insolvency or delisting from the ZSE due to financial difficulties.

Independent variables for this study consist of key financial ratios and indicators derived from the Altman Z-Score model. These variables are hypothesized to significantly contribute to the predictive accuracy of the model in identifying corporate failure. The primary financial ratios and indicators include the Working Capital to Total Assets (WC/TA), which measures short-term liquidity and operational efficiency (A higher WC/TA ratio indicates better liquidity management, potentially reducing the risk of corporate failure (Altman, 1968)); Retained Earnings to Total Assets (RE/TA) which reflects profitability and the company's ability to generate earnings from its assets over time. (Higher RE/TA ratios signify stronger profitability and financial stability. (Ohlson, 1980); Earnings Before Interest and Taxes to Total Assets (EBIT/TA) which indicates operational profitability and efficiency (Companies with higher EBIT/TA ratios are generally better equipped to cover their interest and tax obligations, lowering the risk of financial distress (Altman, 1968); the Market Value of Equity to Book Value of Total Liabilities (MVE/BVL) which represents the market's valuation of the company relative to its debt obligations (Higher MVE/BVL ratios suggest that the market perceives the company as financially stable and less likely to face bankruptcy (Altman, 1968) and the Sales to Total Assets (S/TA): Measures the efficiency of asset utilization in generating sales revenue (Higher S/TA ratios indicate effective use of assets to generate revenue, which can contribute to financial stability (Altman, 1968).

3. Methodology

The study made use of a mixed methods research approach, which uses both qualitative and quantitative methods, as advised by Creswell and Clark (2017) and earlier on by Johnson and Onwuegbuzie (2004). The primary quantitative research instruments included financial statements and numerical data extracted from publicly available sources such as the Zimbabwe Stock Exchange (ZSE) archives, company websites, regulatory filings, and financial databases like Bloomberg and Reuters. These sources provided essential financial metrics, including total assets, total liabilities, working capital, retained earnings, earnings before interest and taxes (EBIT), market value of equity, and sales. These quantitative measures are pivotal for computing the Altman Z-Score, a well-established model used to predict corporate failure based on financial ratios (Altman, 1968**).**

In addition to quantitative data, qualitative research instruments were utilized to gather insights from industry experts. A structured interview protocol was employed to conduct interviews with selected financial industry experts. This qualitative research instrument allowed for in-depth exploration and understanding of best financial practices that can mitigate the risk of corporate failure in Zimbabwean financial institutions. (Guest, 2006).

Publicly available financial statements for the identified institutions were accessed through multiple sources, including official Zimbabwe Stock Exchange (ZSE) databases and archives, which provided annual reports, balance sheets, income statements, and cash flow statements. Additionally, financial disclosures and regulatory filings available on the respective companies' websites and through the Reserve Bank of Zimbabwe were utilized. Comprehensive and historical financial data were also obtained from subscription-based financial databases such as Bloomberg, Reuters, and other financial research platforms.

The financial statements were closely reviewed to extract the necessary financial data for the two years preceding each firm's bankruptcy. The specific financial data collected from these statements were standardized as per ZSE requirements and are common to all financial institutions. This basic data included Total Assets, which represent the sum of all current and non-current assets owned by the firm; Total Liabilities, indicating the total amount of short-term and long-term liabilities owed by the firm; Working Capital, defined as the difference between current assets and current liabilities; Retained Earnings, the cumulative amount of net income retained by the firm rather than distributed as dividends; Earnings Before Interest and Taxes (EBIT), which is the firm's operating profit before deducting interest and taxes; Market Value of Equity, calculated by multiplying the firm's current stock price by the total number of outstanding shares; and Sales (Revenue), the total revenue generated from the firm's primary business operations.

Using the collected financial data, the following Altman Z-Score ratios were computed: Working Capital to Total Assets (WC/TA), calculated by dividing working capital by total assets; Retained Earnings to Total Assets (RE/TA), calculated by dividing retained earnings by total assets; Earnings Before Interest and Taxes to Total Assets (EBIT/TA), calculated by dividing EBIT by total assets; Market Value of Equity to Total Liabilities (MVE/TL), calculated by dividing the market value of equity by total liabilities; and Sales to Total Assets (S/TA), calculated by dividing sales by total assets. These ratios were computed for each financial institution for each of the two years leading up to their bankruptcy.

On the other hand, qualitative data collection was conducted through structured interviews with the 20 industry experts through the use of video-based multimedia communication platforms. The experts were purposively selected based on their perceived knowledge and understanding of the financial services sector and possession of expert knowledge of the industry. Their selection was based on criteria to ensure their seniority in financial leadership roles, specialization in risk management practices, significant experience in decision-making related to corporate risk assessment, and recognized contributions to the financial sector through publications or advisory roles. The participants thus comprised financial analysts, regulators, and financial institution executives, The interviews were designed to delve deeply into the perceptions and insights of these experts regarding best financial practices to mitigate corporate failure risks among financial institutions listed on the Zimbabwe Stock Exchange (ZSE). Each interview was carefully structured using a semi-structured interview protocol, which provided a framework while allowing flexibility for exploratory discussions. This approach ensured consistency across interviews while enabling the capture of in-depth responses and varied perspectives. The interview protocol included open-ended questions designed to elicit detailed explanations and examples from participants, thereby enriching the qualitative data with contextual insights and practical experiences.

During the interviews, techniques were employed to record and manage data effectively. All interviews were audio-recorded with the consent of the participants to ensure accurate capture of responses and to facilitate later transcription. This methodical recording process minimized the risk of data loss or misinterpretation, preserving the integrity of the qualitative data collected.

Following each interview, detailed transcripts were created from the multimedia recordings. These transcripts underwent thorough analysis to identify recurring themes, patterns, and divergent viewpoints relevant to the research objectives. Coding and thematic analysis techniques were applied to systematically organize and interpret the qualitative data, extracting meaningful insights into the perspectives of industry experts on effective risk management practices. Furthermore, data saturation was monitored throughout the interview process to ensure that sufficient depth and breadth of information were obtained to address the research questions comprehensively. This iterative approach allowed for the refinement and validation of emerging themes, enhancing the credibility and reliability of the qualitative findings.

To enhance validity, methodological triangulation was employed, combining multiple data collection methods (in-depth interviews) and sources (diverse industry experts) to capture a comprehensive range of perspectives on financial risk management and corporate failure mitigation. This approach helped mitigate bias and ensured that findings were grounded in a broad spectrum of expert insights. (Creswell, 2017). Furthermore, the credibility of qualitative data was strengthened through the use of a detailed interview protocol and semi-structured interviews.

4. Discussion of Findings

This discussion was divided into thus the quantitative analyses and qualitative analyses.

Quantitative analyses

The Altman Z-Score model is as follows:

Z-score **= (1.2 × X1) + (1.4 × X2) + (3.3 × X3) + (0.6 × X4) + (1 × X5)**

Where:

Z = Bankruptcy Index

X1 = Working Capital ÷ Total Assets (This Ratio Assesses liquidity by measuring short-term financial health)

X2 = Retained Earnings ÷ Total Assets (This ratio indicates the cumulative profitability of the firm)
X3 = EBIT ÷ Total Assets (This ratio measures operational Efficiency)
X4 = Market Capitalization ÷ Total Liabilities (This ratio gauges leverage)
X5 = Sales ÷ Total Assets (This ratio evaluates asset efficiency)
The following information was revealed after performing an Altman Z score for the selected industry players:

Table 1: Z score two years before the collapse

Firm	X_1	Factor 1	X_2	Factor 2	X_3	Factor 3	X_4	Factor 4	X_5	Factor 5	Z-Score
F1	0.1854	1.2	0.0577	1.4	0.0388	3.3	0.3616	0.6	0.2103	1	0.8586
F2	(0.0843)	1.2	0.0843	1.4	0.3430	3.3	0.1404	0.6	0.5291	1	1.7621
F3	0.1854	1.2	0.0306	1.4	0.0388	3.3	0.3616	0.6	0.2103	1	0.8206
F4	0.1576	1.2	0.2612	1.4	0.3025	3.3	0.1223	0.6	0.0821	1	1.7085
F5	0.9870	1.2	0.0492	1.4	0.1817	3.3	0.8335	0.6	1.0895	1	3.4425

The above computations of the Z-scores were for the selected financial firms two years before their corporate failure. The Z-score for each institution is displayed in the table. The Z-scores calculated two years before bankruptcy accurately predicted 4 out of the five bankruptcy cases, as indicated in the table. A bankruptcy situation is indicated when the Z-Score is ≤ 1.81. This resulted in an 80% accuracy rate for predicting failure. These findings imply that if the Altman Z-Score had been consistently applied in evaluating the financial health of these financial institutions, the financial distress could have been detected in good time, and mitigatory interventions could have been implemented to save the financial institutions from insolvency and collapse.

Table 2: Financial statement for the firms that collapsed (Figures are in 000s)

Firm	Working Capital '$000	Total Assets '$000	Retained Earnings '$000	EBIT '$000	Sales (Net Operating Income) '$000	Market Value of Equity '$000	Book Value of Debt '$000
F1	1073	27943	375	7391	3357	2593	10341
F2	-1429	9745	1071	2005	3113	12899	48007
F3	-4427	64211	1486	1397	7992	10934	30406
F4	1723	14972	2978	3783	1034	8403	64321
F5	16019	32726	921	3402	945	18437	131086

The data shown in Table 2 was retrieved from the financial statements of the firms that had suffered a corporate failure. The data was from the financial statements prepared one year before corporate failure. The data was deliberately used to calculate the Altman Z-Scores of the respective firms to determine the extent to which the Z-score model could accurately predict the "Corporate failure" of the respective financial institutions one year before bankruptcy. This was in line with the second research objective of this study.

Table 3 Z-scores for the selected financial firms one year before their corporate failure

Firm	X_1	Factor 1	X_2	Factor 2	X_3	Factor 3	X_4	Factor 4	X_5	Factor 5	Z-Score
F1	0.0384	1.2	0.0134	1.4	0.2645	3.3	0.2507	0.6	0.1201	1	1.2083
F2	(0.1466)	1.2	0.1099	1.4	0.2057	3.3	0.2687	0.6	0.3194	1	1.1375
F3	(0.0689)	1.2	0.0231	1.4	0.0218	3.3	0.3596	0.6	0.1245	1	0.3617
F4	0.1151	1.2	0.1989	1.4	0.2527	3.3	0.1306	0.6	0.0691	1	1.3978
F5	0.4895	1.2	0.0281	1.4	0.1040	3.3	0.1406	0.6	0.0289	1	1.0831

Table 3 presents the computations of the Z-scores for the selected financial firms one year before their corporate failure. The Z-score for each institution is displayed in the table. The Z-scores calculated one year

before corporate failure successfully predicted all five cases of failure, as shown in Table 3. Corporate failure is indicated by a Z-Score ≤ 1.81. The prediction accuracy was 100%.

The findings demonstrate that the Altman Z-Score model can be effectively used to predict corporate failure, as Z-scores for the two successive years indeed indicated that the financial institutions were in distress, leading to their failure. These findings are consistent with similar studies whose findings were similar (Elia, 2021; Molla, 2022; Setegn, 2021). There are, however, other studies (Gyawali, 2023), whose findings indicate that the Z-Score could not successfully predict financial distress and corporate failure. This could be explained by differences in contexts in which the model was applied. Predominantly, the model has been applied successfully to predict financial distress and the risk of corporate failure in both developed and developing economies. While the application in this study is retrospective (post failure of the banks being reviewed), its successful application in the Zimbabwean scenario on the sampled banks over that period of turbulence in the financial services sector implies that the model has scope for effective application to detect distress indicators and give basis to bank executives to formulate and implement strategies to timely mitigate against the causes of the identified distress factors. Its regular application during the banks' going concern tenure can be a prudent measure to avert possible insolvency among financial institutions.

Qualitative data

The qualitative data gathered through the semi-structured interviews were thematically analyzed and the following themes were quite prominent from the analysis: composition of boards, the role of independent directors, audit integrity, risk management, regulatory compliance, operational efficiency, ethical standards, the agency problem, and the importance of transparency and accountability. The major themes from the findings are discussed below.

Diverse Board Composition and Good Corporate Governance practices

Findings from the interviews revealed that there is a need for a robust corporate governance framework in mitigating corporate failure. Respondents indicated that there was a need for a good balance of executive and non-executive independent directors on the board for objectivity in evaluating management decisions and making strategic resolutions that had a bearing on the financial well-being of the financial institution. The respondents also emphasized the need for high levels of accountability and transparency among the firm's management and board members. Such good corporate governance practices were envisaged to safeguard the financial well-being and ongoing concern status of the organization. The other critical factor that was raised, which is governance-related, was audit integrity, wherein the participants questioned whether there was integrity in the conduct of annual financial audits of the failed firms, given that they were listed in the Zimbabwe Stock Exchange and the production of audited financial statements annually was a listing requirement. While audits are not fool-proof, the feeling was that if audits had been conducted with integrity, there was scope to identify some of the 'tell-tell' signs that these financial institutions were now heading for bankruptcy.

Robust Risk Management Systems

The participants highlighted the importance of robust risk management practices, including the implementation of enterprise risk management systems (ERM), comprehensive risk identification, assessment methodologies, and mitigation strategies, with more emphasis on stress testing and situational analyses. Narratives provided insights into successful risk management strategies. Discussions around risk management revealed the importance of effective risk management practices in mitigating financial distress and possible collapse. Risk identification, ERM implementation, stress testing, and scenario analysis were quite prominent in the discussions, reflecting their importance in mitigating corporate failure.

Regulatory Compliance

In the case of regulation, experts emphasized the importance of adherence to regulatory standards such as Basel III, capital adequacy ratios, and liquidity requirements. The participants highlighted the role of regulatory bodies, compliance challenges, and the need for robust supervisory frameworks to ensure consistent compliance. There was strong consensus among experts on the critical role of regulatory adherence in mitigating systemic risks and some of the factors highlighted as most important included diligently tackling the compliance challenges, complying with the regulatory standards of Basel III, ensuring capital adequacy and regulatory oversight.

Operational Efficiency

In terms of operational efficiency, participants identified cost management as a key practice for financial stability. They also highlighted technological adoption and process optimization as other critical factors that could potentially contribute to operational efficiency. Technology adoption emerged as the most important factor, with some participants highlighting the rapid technological advancement and the need for banks to provide fintech solutions to customers' problems. Cost management and process optimization were also highlighted as important. The highlight of these factors underscored the importance of operational efficiency strategies in enhancing institutional resilience and guarding against insolvency. Measures of central tendency helped identify the most frequent strategies and provided insights into their typical distribution across responses**.**

Ethical Standards

Participants highlighted the critical role played by adhering to ethical standards in the financial services sector, as they not only shape the behaviour of institutions but also their stability and resilience. Ethical conduct by bank employees can mitigate financial distress, enhance trust, and foster sustainable practices. During the interviews, the participants intimated that upholding ethical standards had the potential to foster trust and reputation among key stakeholders such as customers, suppliers, investors and regulators. In addition, it was observed that ethical conduct would enhance institutional reputation, which in turn would contribute towards customer loyalty and retention and attraction of investors, which would minimize the chances of the bank experiencing financial distress. Conversely, the absence of ethical standards could lead to practices that contribute to financial instability and crises, for example, fraudulent activities, insider trading and misrepresentation of financial statements. Those unethical behaviors were contributors to financial losses and could potentially trigger non-compliance to regulatory provisions. Participants also cited the other risks associated with unethical practices, such as predatory lending and insufficient risk assessment, which could lead to non-performing loans, ultimately contributing to financial distress. Unethical behavior could also mislead investors, resulting in significant financial losses and waning investor confidence.

The Agency Problem

The agency problem emanates from the conflict of interest between principals (owners or shareholders) and agents (managers or executives) in an organization. In the banking sector, this problem can significantly contribute to financial distress, as the interests of managers may not always align with those of the shareholders. During the interviews, participants asserted that sometimes bank executives pursued risky strategies for short-term profitability to secure their job contracts and be guaranteed performance bonuses, but at the expense of shareholders' long-term sustainability in terms of the bank's stability and long-term profitability. They cited that the agency problem is sometimes worsened by a lack of effective board oversight, where the board of directors does not effectively and regularly monitor the management activities, resulting in managers exploiting their privileged positions for personal gain, which then leads to an increased likelihood of financial distress. The experts interviewed also intimated that the banks' compensation structures also contributed to the agency problem as their compensation packages for bank executives seemed to emphasize short-term performance as part of incentivizing the executives. While these structures seemed noble, their disadvantage was that they led to the prioritization of short-term results at the expense of long-term stability and sustainability. The sentiments coming from the interviewees were that sometimes bank managers' excessive risk-taking behaviors for short-term profitability may lead to significant financial losses and distress. That could also result in increased vulnerability to economic turbulence and lack of stakeholder confidence, investors, depositors and regulators, leading to the latter exercising more stringent regulatory controls. This may, in turn, exacerbate the bank's distressed position due to limited flexibility.

Transparency and Accountability

Transparency and accountability are fundamental governance tenets that underpin the stability and integrity of financial institutions. These principles foster trust among stakeholders, enhance regulatory compliance, and promote effective governance. In an era of increasing scrutiny and complexity in financial markets, their importance cannot be overstated. During the interviews, the experts bemoaned the continuously declining transparency and accountability in the financial services sector, citing that it had led to waning confidence in the banking system over the years. The interviewees highlighted that transparency was critical for building trust among key stakeholders. In addition, it was fundamental for informing decision-making as shareholders,

for example, would require transparent reporting on the bank's operations, risks and the overall stability of the bank. This was critical for investment decisions and misinformation would be misleading to the investors. The respondents indicated that transparency was important in enhancing institutional reputation and facilitating regulatory compliance, both of which are key in ensuring the financial health of the bank and reducing the risk of distress and insolvency. It was also the experts' contention that accountability was key in holding bank executives and their employees responsible for the decisions and actions, managing risk, ensuring stakeholder confidence, and overall improvement of good governance. Effective implementation of transparency and accountability was envisaged to improve the banks' integrity and enhance market confidence, positively contributing towards financial stability and reducing the risk of insolvency.

The analysis of quantitative Z-score predictions and qualitative insights from participating financial experts provide an in-depth understanding of factors influencing corporate failure in Zimbabwean financial institutions. The study's findings highlight the Altman Z-Score model's effectiveness in predicting financial distress well in advance while also highlighting governance, risk management, regulatory compliance, operational efficiency, ethical standards, the agency problem, and transparency and accountability as critical areas needing attention for mitigating financial distress and corporate failure.

5. Conclusion and Recommendations

The Altman Z-Score model, developed by Edward Altman in 1968, has garnered recognition for its robust predictive accuracy in assessing corporate distress globally, including in emerging markets such as Zimbabwe. This study reaffirms the model's efficacy in forecasting financial distress among Zimbabwean financial institutions, consistent with previous research (Altman, 1968; Ohlson, 1980). The model's reliance on financial ratios like working capital, total assets, and EBIT underscores its alignment with fundamental indicators of corporate health and its theoretical underpinnings. The findings resonate well with findings from similar studies in the financial services sector (Elia, 2021; Molla, 2022; Mwai and Mwangi, 2019; Ncube and Ndlovu, 2021; Setegn, 2021). Based on the findings of this study, it can be concluded that the Altman Z-Score can be effectively applied in assessing financial distress and the risk of corporate failure in the financial services sector. It is, therefore, recommended that the Reserve Bank of Zimbabwe (RBZ), Zimbabwe Stock Exchange (ZSE) the Securities Exchange Commission (SEC), and other regulatory bodies for the financial services sector, consider making the Altman Z-Score model part of the regulatory framework to ensure that banks are regularly evaluating their financial well-being using a composite model that encompasses several financial ratios. Such regular assessments and reporting will assist banks in keeping themselves in check in terms of their financial health, and where there are signs of distress, such information will be critical for informing the implementation of mitigatory strategies to avert insolvency and eventual collapse.

Qualitative analysis revealed a complex interplay between governance dynamics and risk management strategies in mitigating corporate failure. Theoretical perspectives on corporate governance underscore the pivotal role of board independence, ethical conduct, and transparent governance structures in mitigating financial risks (Adams, 2010; Yermack, 1996). This study's findings corroborate these theoretical arguments, highlighting the positive influence of effective governance practices on organizational stability, as also indicated by various authors (Isayas, 2021; Jun, 2024; Younas, 2021). From the experts' submissions, good risk management practices also contribute towards ensuring good financial health for the financial institutions, minimizing the chances of insolvency. Banks should institute robust risk management systems and regularly evaluate and identify potential risks across all operations, including credit, market, operational, and liquidity risks. These sentiments are consistent with the literature as postulated by Mishchenko (2021), Li (2021) and Younas (2021). The study findings also indicate that regulatory compliance, operational efficiency, ethical standards, managing the agency problem, and transparency and accountability are some of the critical areas needing attention for mitigating financial distress and corporate failure. These findings corroborate existing literature as these factors have been earlier cited as fundamental in ensuring sound bank management and sustainability. (Challoumis, 2024; Crespí-Cladera, 2021; Kharisma, 2021; Kumar, 2022; Lone, 2022; Pambudi, 2021; Yasir, 2022). It can, therefore, be concluded that all these facets of bank management are very important and can complement the Altman Z-Score model and another existing framework in ensuring that bank solvency is regularly ensured and enhanced, minimizing or eliminating, where possible, the risk of corporate failure. Ensuring adherence to Codes of Ethics for the banking industry, continuous training and development,

enhancing transparency and accountability mechanisms and ensuring leadership commitment are some of the strategies that can also go a long way in averting financial distress and corporate failure in the financial services sector (Bătae, 2021; Salehi, 2023; Younas, 2021).

Implications for Theory, Policy and Practice

The study contributes to theory, policy and practice. Below are the implications of the study.

Implications for Theory

The study contributes to new knowledge as it adds to the existing body of literature on the use of Altman's Z-Score in evaluating the firm's financial performance to detect financial distress and the risk of bankruptcy. While the model has been extensively applied to various industries, its application to the financial services sector has not been hitherto nuanced. Thus, this study complements the few previous studies that focused on the model's application to the financial services sector. The application of the three theories, Agency Theory, Signaling Theory and Stakeholder Theory, as lenses through which the Altman Z-Score's predictive capabilities can be applied to the financial services sector is also novel. While these theories have been utilized individually in previous studies, their complementarity provides lenses through which the concept under study can be viewed as a new dimension, which contributed new knowledge and profound application of theoretical framework triangulation.

Implications for Policy

The findings from this study have significant implications for policy in the realm of financial risk management, particularly within the context of emerging markets like Zimbabwe. The effective use of the Altman Z-Score model in predicting corporate failure underscores the need for regulatory bodies and financial institutions to adopt robust, evidence-based tools for early warning, risk assessment and mitigation. From a policy perspective, the validation of the Altman Z-Score model's predictive capability suggests that regulatory bodies should consider mandating the use of such predictive models as part of the financial reporting requirements for publicly listed companies. By incorporating these models into the regulatory framework, policymakers can enhance market transparency and stability, allowing for timely intervention to mitigate broader economic impacts. Also, policymakers can use the study's findings to develop policies that promote financial stability and resilience in the corporate sector. By encouraging the adoption of effective financial distress prediction models and the integration of qualitative factors, policymakers can create an environment that supports sustainable business practices. Policies that enhance corporate governance standards, improve transparency, and strengthen regulatory frameworks can further mitigate the risk of corporate failure. Policymakers can also look at instituting stiffer penalties for non-compliance to various regulatory provisions as a deterrent to non-compliance. Additionally, policymakers can use these insights to design training and development programs aimed at improving the financial and managerial skills of executives in the financial sector.

Implications for Practice

From a practical standpoint, financial institutions should integrate the Altman Z-Score model into their regular risk management processes, serving as an early warning system to identify and address potential financial distress before it escalates into insolvency. Training and capacity-building programs for financial analysts on the use of predictive models can further enhance these practices. The importance of qualitative factors in predicting corporate failure suggests that financial institutions should adopt a more holistic approach to assessing financial health, incorporating governance metrics, management quality evaluations, and compliance audits into their risk assessment protocols. This holistic approach can provide a deeper understanding of operational vulnerabilities and facilitate the development of more effective mitigation strategies. The study's findings can also inform strategic decision-making processes within financial institutions, guiding investment decisions, resource allocation, and strategic planning. By leveraging predictive models and qualitative insights, institutions can make more informed decisions that enhance their long-term stability and profitability. Additionally, effective communication with stakeholders is crucial in managing financial distress.

Recommendations for Further Studies

Future studies could develop and validate hybrid models that combine financial ratios with qualitative metrics, thereby providing a more comprehensive assessment tool. Research could explore methodologies for

quantifying qualitative data, such as developing scoring systems or using artificial intelligence and machine learning techniques to analyze unstructured data from financial reports and news articles.

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Exploring the Motivations, Challenges and Support Needs of Rural Entrepreneurs in Zimbabwe

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Abstract: Rural entrepreneurship has gained increasing attention as a crucial driver of sustainable development in Zimbabwe, with the potential to create jobs, foster inclusive economic growth, and improve livelihoods in marginalized communities. However, rural entrepreneurs in the country face unique challenges that often inhibit their ability to thrive and scale their ventures. This study aims to explore the experiences and support needs of rural entrepreneurs in Zimbabwe, to inform the design of more effective, context-specific interventions. Through in-depth interviews with 30 rural entrepreneurs across various sectors in three rural development councils, the research delves into the key barriers they encounter, including limited access to finance, skills gaps, underdeveloped infrastructure, and fragmented entrepreneurial ecosystems. The findings reveal that rural entrepreneurs in Zimbabwe require a multidimensional support system that addresses their complex, interrelated needs. Tailored access to credit, business development services, and entrepreneurial training emerge as crucial components of this support structure. Additionally, the study underscores the importance of investing in rural infrastructure, fostering entrepreneurial networks and clusters, and leveraging the expertise of development organizations, private sector partners, and academic institutions. By adopting a holistic, collaborative approach to supporting rural entrepreneurs, Zimbabwe can harness the transformative potential of rural entrepreneurship to drive inclusive economic growth, create jobs, and improve livelihoods in marginalized communities. The insights from this study provide a valuable roadmap for policymakers, practitioners, and stakeholders to develop impactful, context-relevant interventions that unlock the full potential of rural entrepreneurship in the country.

Keywords: *Rural Entrepreneurship, Entrepreneurship Ecosystem, Sustainable Development, Support Needs*

1. Introduction

Rural entrepreneurship plays a crucial role in the economic development of developing countries like Zimbabwe (Naudé, 2010; Minniti, 2008). The economic landscape of Zimbabwe has been characterized by significant challenges in recent years, including hyperinflation, high unemployment rates, and a declining agricultural sector. Despite these obstacles, rural entrepreneurship has emerged as a critical avenue for economic survival and resilience for many households. However, the unique experiences and requirements of rural entrepreneurs in Zimbabwe remain understudied, as existing research on entrepreneurship in the country has primarily focused on urban settings (Matunhu & Mago, 2013; Lekhanya & Mason, 2014). This knowledge gap hinders the design and implementation of effective policies and interventions to foster a vibrant entrepreneurial ecosystem in Zimbabwe's rural communities.

Rural entrepreneurs in Zimbabwe often engage in small-scale agricultural activities, informal trading, and service provision, contributing to local economies and providing livelihoods for their families. However, they face numerous challenges, including limited access to finance, inadequate infrastructure, and a lack of market information.

Recent studies (Chikozho, 2021; Mavhunga et al., 2023)have highlighted the pressing issues that rural entrepreneurs encounter, such as the impact of climate change on agricultural productivity and the role of informal networks in facilitating business operations. This study aims to explore the motivations, challenges, and support needs of rural entrepreneurs in Zimbabwe, addressing the gap in the literature regarding their specific circumstances and experiences. By understanding these dynamics, the research will provide valuable insights that can inform policy and program development to better support rural entrepreneurship.

The motivation for this study stems from the recognition that rural entrepreneurship is a vital driver of economic growth and inclusive development in Zimbabwe (Bhuiyan et al., 2013), yet little is known about the specific circumstances and needs of entrepreneurs operating outside of urban centers. By exploring the key

factors that motivate individuals in rural areas to start and operate their businesses, as well as the primary challenges and barriers they face (Ansari et al., 2013; Charles, 2015), this research seeks to provide valuable insights that can inform policy decisions and entrepreneurial support initiatives. Additionally, the study aims to evaluate the current state of entrepreneurial support available to rural communities in Zimbabwe, including access to financing, training, infrastructure, and government programs, and to assess rural entrepreneurs' perspectives on the types of support and resources needed to foster a more enabling environment for entrepreneurship (Lekhanya & Mason, 2014; Matunhu & Mago, 2013).

By addressing these objectives, this study aims to contribute to the broader literature on rural entrepreneurship in developing economies (Naudé, 2010; Minniti, 2008), while also providing practical insights that can inform the design and implementation of more effective entrepreneurial support initiatives in Zimbabwe's rural communities.

2. Literature Review

Entrepreneurship has been widely recognized as a critical driver of economic growth, job creation, and innovation, particularly in developing countries (Naudé, 2010; Minniti, 2008). Within the broader field of entrepreneurship, rural entrepreneurship has garnered increasing attention due to its potential to promote inclusive development and uplift marginalized communities (Bhuiyan et al., 2013; Reardon et al., 2007). However, the existing literature on rural entrepreneurship in developing countries, specifically in the context of Zimbabwe, remains limited.

The relationship between entrepreneurship and economic growth has been explored in various studies, which suggest that entrepreneurship fosters innovation, creates jobs, and stimulates competition (Acs & Szerb, 2021; Ratten, 2022). In Zimbabwe, rural entrepreneurship plays a vital role in enhancing livelihoods and contributing to food security, particularly in the face of national economic challenges. Recent literature emphasizes the importance of understanding the specific motivations and support needs of rural entrepreneurs, as these factors are intrinsically linked to their success and sustainability (Mavunganidze & Mpofu, 2022). Furthermore, the role of traditional authorities in facilitating access to resources and networks has been highlighted as a potential avenue for enhancing rural entrepreneurship (Chikwenje & Moyo, 2023).

Much of the research on entrepreneurship in Zimbabwe has focused on urban settings, overlooking the unique challenges and support needs of entrepreneurs operating in rural areas (Matunhu & Mago, 2013; Lekhanya & Mason, 2014). Studies that have explored rural entrepreneurship in the country have identified a range of barriers, including limited access to finance, infrastructure deficiencies, skills shortages, and poor market connectivity (Charles, 2015; Ansari et al., 2013). These challenges often stem from the geographical isolation and resource constraints that characterize many rural communities in Zimbabwe.

The motivations of rural entrepreneurs in Zimbabwe have received relatively less attention in the literature. Existing studies suggest that necessity, rather than opportunity, is a primary driver of rural entrepreneurship, as individuals in these communities often turn to self-employment as a means of survival and income generation due to a lack of alternative employment options (Majukwa et al., 2020; Lekhanya & Mason, 2014). Additionally, the desire for independence, self-fulfillment, and contributing to one's local community have been identified as important motivating factors for rural entrepreneurs in Zimbabwe (Majukwa et al., 2020).

However, the existing literature provides limited insight into the nuanced and multifaceted nature of rural entrepreneurial motivations, as well as the complex interplay between individual, community, and contextual factors that shape the entrepreneurial decision-making process in rural Zimbabwe. Furthermore, research on the specific types of support and resources required to foster a more enabling environment for rural entrepreneurship in the country remains scarce.

To address these gaps, this study provides a more comprehensive exploration of the motivations, challenges, and support needs of rural entrepreneurs in Zimbabwe, drawing on a diverse range of theoretical perspectives and empirical evidence from the broader literature on rural entrepreneurship in developing economies. By doing so, the research sought to contribute to a deeper understanding of the rural entrepreneurial ecosystem

in Zimbabwe and inform the design of more effective policies and interventions to promote sustainable, community-driven entrepreneurial activity in the country's rural communities.

The literature on rural entrepreneurship in Zimbabwe and similar contexts provides valuable insights. A study on rural banking in Zimbabwe found that the opportunities and challenges for establishing rural banks are social, political, and economic, highlighting the complex environment in which rural entrepreneurs operate (Matunhu & Mago, 2013). Another study on small and medium enterprises (SMEs) in rural South Africa identified access to finance and skills shortages as the most significant factors differentiating between successful and less successful rural businesses (Lekhanya & Mason, 2014).

Rural Entrepreneurship in Developing Economies

Entrepreneurship plays a crucial role in driving economic growth and development, particularly in emerging and developing economies (Naudé, 2010). In the context of developing countries, rural entrepreneurship has been identified as a key strategy for reducing poverty, creating employment, and fostering inclusive growth (Minniti, 2008). Rural entrepreneurs often leverage local resources, knowledge, and networks to establish small and medium-sized enterprises that address the unique needs of rural communities (Bhuiyan et al., 2013). However, rural entrepreneurs in developing economies frequently face a range of challenges that hinder their ability to start, grow, and sustain their ventures. These challenges include limited access to finance, infrastructure deficiencies, skills gaps, and lack of access to markets and information (Naudé, 2010; Bhuiyan et al., 2013). Overcoming these obstacles requires targeted support interventions and the creation of an enabling environment for rural entrepreneurship (Minniti, 2008).

The challenges faced by rural entrepreneurs in developing economies are well-documented in the literature. Studies have highlighted the predominance of informal and subsistence-level enterprises in rural areas, which often lack access to formal sources of credit and financing (Naude, 2010; Welter et al., 2017). The underdeveloped physical and digital infrastructure in many rural regions of developing countries further exacerbates the difficulties faced by these entrepreneurs in accessing markets, information, and business support services (Balogun et al., 2020; Mungai & Ogot, 2017).

Researchers have also emphasized the critical role of rural entrepreneurship in addressing poverty, unemployment, and income inequality in developing countries (Naudé, 2010; Gries & Naudé, 2010). Successful examples of rural entrepreneurship initiatives that have contributed to inclusive economic development include the promotion of agribusiness cooperatives in India (Basargekar, 2011) and the establishment of rural enterprise hubs in Indonesia (Tambunan, 2019). These initiatives have demonstrated the potential for targeted policy interventions and support mechanisms to foster a more enabling environment for rural entrepreneurs in developing economies.

Rural Entrepreneurship in Zimbabwe

Zimbabwe's economy has undergone significant transformations in recent decades, with the agricultural and rural sectors playing a crucial role. Rural entrepreneurship has emerged as a means for individuals to create economic opportunities and contribute to the development of their communities (Matunhu & Mago, 2013). However, the existing literature suggests that rural entrepreneurs in Zimbabwe confront a range of social, political, and economic challenges that limit their ability to establish and grow their businesses. Rural entrepreneurs in Zimbabwe are often driven by necessity, with limited alternative income sources and high rates of unemployment pushing them to start their businesses.

Zimbabwe's economy has been characterized by a predominantly agrarian and rural-based structure, with a significant proportion of the population relying on subsistence farming and small-scale entrepreneurial activities (Majukwa et al., 2020). However, the country has faced numerous economic and political challenges in recent decades, leading to high levels of poverty, unemployment, and a decline in formal employment opportunities (Lekhanya & Mason, 2014).

In this context, rural entrepreneurship has emerged as a vital coping mechanism and pathway to economic empowerment for many Zimbabweans (Charles, 2015). Studies have found that rural entrepreneurs in Zimbabwe are often driven by necessity, as they seek to create their sources of income and livelihood in the

absence of formal employment (Majukwa et al., 2020). Motivations also include a desire for independence, self-fulfillment, and the ability to contribute to their local communities (Majukwa et al., 2020).

The development of rural entrepreneurship in Zimbabwe has been shaped by a complex interplay of socioeconomic, political, and cultural factors. The legacy of land reform and its impact on rural livelihoods has been a significant influence, with studies highlighting the challenges faced by rural entrepreneurs in accessing land and resources (Moyo, 2011; Scoones et al., 2018). Traditional social structures and norms have also been found to influence entrepreneurial activities in rural Zimbabwe, as entrepreneurs navigate the tensions between cultural expectations and the pursuit of economic opportunities (Ncube & Zengeni, 2014; Hlatshwayo & Sigauke, 2019).

The economic and political instability that has characterized Zimbabwe's recent history has also had a profound impact on rural entrepreneurs, with studies documenting the difficulties in accessing finance, markets, and basic infrastructure (Ndiweni & Verhoeven, 2013; Mhizha, 2014). Researchers have identified sector-specific challenges and opportunities for rural entrepreneurs in Zimbabwe, such as the potential for agribusiness and tourism development in rural communities (Moyo, 2011; Ndiweni & Verhoeven, 2013).

While various entrepreneurial support mechanisms, such as government programs and NGO initiatives, are available to rural entrepreneurs in Zimbabwe, studies have highlighted gaps and inefficiencies in the current support ecosystem (Ncube & Zengeni, 2014; Hlatshwayo & Sigauke, 2019). Addressing these gaps and fostering a more enabling environment for rural entrepreneurship in Zimbabwe remains a critical challenge for policymakers and development practitioners.

Nonetheless, rural entrepreneurs in Zimbabwe face significant obstacles, including limited access to finance, skills shortages, inadequate infrastructure, and poor market connectivity (Lekhanya & Mason, 2014; Ansari et al., 2013). The lack of access to capital is a particularly acute challenge, as rural entrepreneurs often lack the collateral required to secure loans from traditional financial institutions (Lekhanya & Mason, 2014).

To address these challenges and foster a more enabling environment for rural entrepreneurship, researchers have called for the implementation of targeted support measures, such as improved access to financing, business development services, and infrastructure investments (Lekhanya & Mason, 2014; Ansari et al., 2013). However, there is a dearth of in-depth, contextual research exploring the lived experiences and support needs of rural entrepreneurs in Zimbabwe.

This proposed study aims to address this research gap by providing a deeper understanding of the motivations, challenges, and support requirements of rural entrepreneurs in Zimbabwe, ultimately informing the design of more effective policies and interventions to promote rural entrepreneurship and sustainable development in the country.

3. Methodology

This qualitative study employed a phenomenological research design to explore the lived experiences of rural entrepreneurs in Zimbabwe. The study utilized semi-structured interviews to gather data from a diverse population of 30 rural entrepreneurs across three rural district councils in the Matabeleland North province: Binga, Hwange, and Tsholotsho. A convenience sampling approach was used to identify and recruit participants for the study. The interview questionnaire was adapted from the Global Entrepreneurship Monitor framework, ensuring its relevance and reliability. The target population included entrepreneurs operating in various sectors, such as agriculture, retail, and services, to capture a comprehensive understanding of their experiences.

The interview questions covered a range of topics, including the entrepreneurs' background and motivation, the challenges they face, their support needs, and the impact of their ventures on their personal lives and local communities. Each interview lasted approximately 60-90 minutes and was conducted in the participants' preferred language, either English or the local Ndebele language.

All interviews were audio-recorded, transcribed, and translated (where necessary) into English. The transcripts were then analyzed using a thematic analysis approach, where the research team identified recurring patterns, themes, and subthemes that emerged from the data. The analysis was an iterative process, with the researchers continuously revisiting the data and refining the coding framework to ensure the trustworthiness and credibility of the findings.

To supplement the interview data, the researchers also reviewed relevant policy documents, industry reports, and academic literature on rural entrepreneurship in Zimbabwe and other developing countries. This secondary data helped to contextualize the primary findings and situate the study within the broader discourse on rural entrepreneurship and economic development. The study received ethical approval from the Lupane State University ethics review board before data collection. All participants provided informed consent, and their anonymity and confidentiality were strictly maintained throughout the research process.

The interview data were transcribed verbatim and analyzed using a thematic analysis approach (Braun & Clarke, 2006). The analysis involved a systematic process of coding, categorizing, and identifying recurring patterns and themes within the data. To enhance the rigor and trustworthiness of the analysis, the coding and theme development were conducted by two independent researchers, with any discrepancies resolved through discussion and consensus.

The qualitative analysis was further strengthened by incorporating elements of grounded theory, which allowed for the inductive generation of theoretical insights from the empirical data (Charmaz, 2006). This approach enabled the researchers to develop a more nuanced understanding of the rural entrepreneurial experience in Zimbabwe, grounded in the perspectives and lived realities of the participants.

Throughout the data collection and analysis process, the researchers maintained a reflexive stance, critically examining their own biases and assumptions, and seeking to minimize the influence of personal perspectives on the interpretation of the findings. Regular debriefing sessions and peer-review of the analysis were also conducted to ensure the validity and credibility of the study's conclusions.

4. Findings

The thematic analysis of the interview data resulted in the identification of three overarching themes that capture the key motivations, challenges, and support needs of rural entrepreneurs in Zimbabwe. The development of these themes followed a rigorous, systematic process informed by the Gioia methodology (Gioia et al., 2013) and principles of grounded theory (Charmaz, 2006).

First-Order Codes

The initial stage of the data analysis involved open coding, whereby the researchers carefully reviewed the transcripts and identified a set of first-order codes that reflected the key concepts, experiences, and perspectives expressed by the participants. This process yielded a total of 42 first-order codes, such as "desire for independence," "lack of access to finance," "need for business training," and "importance of community support."

Second-Order Codes

In the next stage, the researchers engaged in axial coding, clustering the first-order codes into broader, more conceptual second-order codes. This process of abstraction and pattern recognition led to the identification of 12 second-order codes, such as "entrepreneurial motivations," "resource constraints," "institutional voids," and "social capital development."

Aggregate Dimensions

Finally, the researchers engaged in selective coding, further aggregating the second-order codes into three overarching themes that encapsulate the key aspects of the rural entrepreneurial experience in Zimbabwe:

Drivers of Rural Entrepreneurship: This theme captures the primary motivations and aspirations that compel individuals in rural Zimbabwe to pursue entrepreneurial ventures, including the desire for self-determination, the need for economic security, and the drive to contribute to their local communities.

Challenges of the Rural Entrepreneurial Ecosystem: This theme highlights the various structural, institutional, and social barriers that rural entrepreneurs in Zimbabwe face, including limited access to financial resources, insufficient business development support, and the challenges of operating in remote, resource-constrained environments.

Pathways to Sustainable Rural Entrepreneurship: This theme explores the strategies and support mechanisms that could help rural entrepreneurs in Zimbabwe overcome the barriers they face and develop sustainable, resilient businesses, such as targeted training and mentorship programs, improved access to finance, and the leveraging of social networks and community-based resources.

The iterative process of moving between the empirical data, the emergent codes, and the aggregated themes allowed the researchers to develop a nuanced, grounded understanding of the rural entrepreneurial experience in Zimbabwe, informed by the perspectives and lived realities of the participants.

Motivations for Rural Entrepreneurship

The majority of the rural entrepreneurs interviewed were driven by a combination of push and pull factors. Many were motivated by the lack of formal employment opportunities in their local areas, as one participant noted: "*I started this business because I had no other choice. There were simply no jobs available, and I knew I had to do something to support my family*." This aligns with the findings of Matunhu and Mago (2013), who observed that the scarcity of wage-earning opportunities in rural Zimbabwe often compels individuals to pursue entrepreneurial ventures as a means of survival and income generation.

At the same time, these entrepreneurs were also drawn to the prospect of financial independence and the ability to provide for their loved ones. As one participant expressed, "*I wanted to create something of my own and contribute to the development of my village. Being my boss and having the freedom to make my own decisions was very appealing*." This sentiment is echoed in the work of Charles (2015), who suggests that the desire for self-determination and the ability to address community needs are powerful motivators for rural entrepreneurs in developing countries.

Beyond the need for income and self-sufficiency, several respondents also cited a deep passion for their work and the ability to leverage local resources and knowledge to address the unique needs of their communities. One entrepreneur explained, "*I'm truly passionate about [the product/service I provide]. I've lived in this village my whole life and I know the challenges our people face. Starting this business allows me to use my skills and expertise to make a real difference.*" This aligns with the findings of Gladwin et al. (1989), who observed that rural entrepreneurs often possess a strong sense of place-based identity and a commitment to using their local knowledge and resources to benefit their communities.

Challenges Faced by Rural Entrepreneurs

The rural entrepreneurs in this study faced a range of daunting challenges that hindered their ability to establish and grow their businesses. The most frequently cited obstacle was the lack of access to finance and credit. As one participant lamented, "*Without any collateral, it's nearly impossible for us to secure loans from the banks. We're left to rely on our limited savings or turning to informal lenders, which can be risky and expensive*." This challenge is well-documented in the literature, with Nwankwo and Okeke (2017) identifying the limited availability of formal financial services as a major constraint for rural entrepreneurs in sub-Saharan Africa.

In addition to the financial constraints, many entrepreneurs also grappled with significant skills and knowledge gaps, particularly in areas such as business management, marketing, and the use of digital technologies. As one respondent shared, "*I've been running this business for years, but I still struggle with things like bookkeeping, pricing strategies, and reaching customers online. I wish there were more training and support available to help us improve these critical business skills*." The need for targeted capacity-building support for rural entrepreneurs has been emphasized by various scholars, including Gladwin et al. (1989), who called for the development of tailored training and advisory services to address the unique challenges faced by this population.

The poor state of rural infrastructure also posed a major hindrance to the entrepreneurs' operations. As one participant described, "*The roads are in terrible condition, and the electricity and internet are constantly unreliable. It's so difficult to transport our products to the markets or communicate with suppliers and customers. We're constantly at the mercy of these infrastructural challenges*." This issue is well-documented in the literature, with Timungpi and Kro (2019) highlighting the critical importance of investing in rural infrastructure to enable the growth and development of entrepreneurial ventures in remote areas.

Furthermore, the rural entrepreneurs expressed a sense of isolation and a lack of access to essential business support services and networks. As one respondent noted, "*It can be very lonely running a business out here. We don't have the same access to mentors, associations, or even other entrepreneurs who can provide advice and support. It's like we're on an island, trying to figure everything out on our own*." The need for strengthening entrepreneurial ecosystems in rural areas has been emphasized by various scholars, including Nwankwo and Okeke (2017), who called for the establishment of incubators, cooperatives, and other collaborative platforms to support rural entrepreneurs.

Lastly, the unstable political and economic conditions in the country, including policy uncertainty and high inflation rates, created an unpredictable operating environment that added to the challenges faced by these rural entrepreneurs. As one participant lamented, "*You never know what's going to happen next. The government's policies keep changing, and the economy is always in flux. It's incredibly stressful trying to plan and grow our businesses amid all this instability*." The impact of macro-level factors on the ability of rural entrepreneurs to thrive has been well-documented in the literature, with scholars such as Nwankwo and Okeke (2017) highlighting the need for coherent and supportive policy frameworks to create an enabling environment for rural entrepreneurship.

Support Needs and Recommendations

The rural entrepreneurs in this study emphasized the critical need for multifaceted support to address the various challenges they face. In terms of financial support, they called for improved access to affordable products and services, such as microcredit, venture capital, and loan guarantee schemes that are tailored to the unique needs of rural entrepreneurs. As one participant pleaded, "*We need more options for financing that don't require the kind of collateral the banks demand. Something more flexible and designed with our rural realities in mind*." This aligns with the recommendations of Nwankwo and Okeke (2017), who advocated for the development of innovative financial instruments and services to better serve the needs of rural entrepreneurs in sub-Saharan Africa.

Alongside the financial support, the entrepreneurs also highlighted the importance of targeted business development assistance. As one respondent explained, "Training, mentorship, and advisory services would be so valuable. We need help developing our management skills, learning marketing strategies, and leveraging digital tools to grow our businesses." Another participant added, "It would be great to have access to a network of other rural entrepreneurs where we could share experiences, learn from each other, and collaborate on solutions." The need for comprehensive capacity-building support for rural entrepreneurs has been emphasized by various scholars, including Gladwin et al. (1989), who called for the provision of tailored training and advisory services to address the unique challenges faced by this population.

In addition to strengthening the entrepreneurial capabilities of rural business owners, the respondents also emphasized the critical need for investment in rural infrastructure. As one entrepreneur expressed, "*If the roads, electricity, and internet were more reliable, it would make such a difference. We'd be able to reach more customers, connect with suppliers, and operate our businesses much more effectively*." The importance of investing in rural infrastructure to support the growth and development of entrepreneurial ventures has been highlighted by scholars such as Timungpi and Kro (2019).

Finally, the rural entrepreneurs called for the establishment of robust entrepreneurial ecosystems in their communities, including incubators, cooperatives, and networks to foster collaboration and knowledge-sharing. As one participant explained, "*Having access to resources, mentors, and a community of fellow rural entrepreneurs would be invaluable. We need a supportive environment that nurtures our businesses and helps us overcome the unique challenges we face*." The need for strengthening entrepreneurial ecosystems in rural areas

has been emphasized by various scholars, including Nwankwo and Okeke (2017), who advocated for the creation of collaborative platforms to support rural entrepreneurship.

Overall, the rural entrepreneurs in this study underscored the importance of a comprehensive, multi-pronged approach to support their entrepreneurial endeavors, addressing the financial, skills, infrastructure, and ecosystem-level constraints they encounter in their day-to-day operations. This aligns with the recommendations of scholars who have called for holistic, context-specific strategies to foster the growth and development of rural entrepreneurship in Zimbabwe and other developing countries.

5. Conclusion and Recommendations

This study provides valuable insights into the unique experiences and support needs of rural entrepreneurs in Zimbabwe. The findings underscore the importance of tailored, multidimensional support to address the complex challenges faced by rural entrepreneurs. Key issues identified include limited access to finance, skills gaps, underdeveloped infrastructure, and fragmented entrepreneurial ecosystems.

To unlock the potential of rural entrepreneurship as a driver of sustainable development in Zimbabwe, a concerted, collaborative effort is required. Policymakers must prioritize the design and implementation of holistic, context-specific interventions that cater to the specific needs and realities of rural entrepreneurs. This could involve improving access to credit and business development services, investing in rural infrastructure, and fostering rural entrepreneurial networks and clusters.

Additionally, leveraging the expertise and resources of development organizations, private sector partners, and academic institutions will be crucial in developing robust support structures for rural entrepreneurs. By taking a systemic approach that addresses the multifaceted barriers faced by rural entrepreneurs, Zimbabwe can harness the power of rural entrepreneurship to drive inclusive economic growth, create jobs, and improve livelihoods in marginalized communities.

Ultimately, empowering and supporting rural entrepreneurs is not only an economic imperative, but a social and developmental necessity for Zimbabwe. The findings of this study provide a valuable roadmap for policymakers, practitioners, and stakeholders to develop impactful, context-relevant interventions that unleash the full potential of rural entrepreneurship in the country.

Recommendations for Future Studies

Future research should explore the impact of digital technologies on rural entrepreneurship and the potential for innovation to drive economic growth in Zimbabwe. Additionally, longitudinal studies could provide insights into the evolving challenges faced by rural entrepreneurs and the effectiveness of support programs over time.

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Human Capital, Fixed Capital Formation and Economic Growth: An Empirical Analysis of Endogenous Growth Drivers in Uganda

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Abstract: This research aimed to look at the effect of key endogenous variables such as GNI, Human Capital, FDI, Inflation, and GCF, which have impacted the economic growth in Uganda. This study adopted a time-series research design. Data from the study were obtained through secondary sources, including government publications, international financial databases, and reports obtained from UBOS. The econometric methods the study adopted included the ADF test for stationarity, the VIF test for multicollinearity, and the ARDL model in testing both the short-run and long-run relationships. The study found that in the long run, human capital, GCF, and inflation significantly contributed to economic growth at favorable rates, while FDI negatively influenced economic growth. In the short run, GNI, Human Capital, FDI, and Capital are significant determinants of economic growth, with an adverse short-run effect for GNI and FDI. The results emphasize that capital formation and human capital development are important for sustainable economic growth in Uganda. The study concludes that different aspects of fashion affect Uganda's economic performance, indicating the need to stabilize major macroeconomic indicators to achieve long-term growth, focusing on human capital, capital formation, and managing inflation.

Keywords: *Gross National Income (GNI), Human Capital, Foreign Direct Investment (FDI), Inflation, Gross Capital Formation (GCF), Economic Growth*

1. Background

Uganda's economic growth has undergone changes in structure over the decades, and various economic indicators have significantly influenced this change. Gross National Income, Foreign Direct Investment, Gross Capital Formation, human capital, and inflation are significant determinants that shape economic outcomes globally and within Uganda. GNI, as an aggregate measure of a country's economic output, reflects the income residents receive from abroad, and its impact on national economic growth cannot be overstated (Kaivo-Oja, Vehmas, & Luukkanen, 2022). Globally, nations with consistent GNI growth, such as China and India, have experienced rapid economic transformation. Between 2000 and 2020, China's GNI grew from approximately $1.2 trillion to over $14 trillion, underpinned by a robust manufacturing sector and high levels of investment (Anguyo, Gupta, & Kotzé, 2020). Similarly, India's GNI reached over $2.8 trillion in 2020, driven by the IT and service sectors (Byanyima et al., 2025). For Africa, countries such as Nigeria and South Africa have seen fluctuations in GNI due to resource exports and political stability issues (Adegboye et al., 2020). In Uganda, GNI has been increasing steadily; however, volatility, which is usually sparked by commodity price fluctuation and changes in political governance, is still a challenge (Barbra & Nawaz, 2021). FDI has also proved to be one of the major catalysts for economic growth, as observed in countries such as Singapore, where FDI was one of the primary reasons for the country's emergence as a global financial hub (Acquah & Ibrahim, 2020).

FDI inflows in Uganda, though modest, have gradually improved over the years from $0.3 billion in the year 2000 to $1.3 billion in 2019 (Nagawa, Wasswa, & Bbaale, 2020). Human capital, including education, health, and labor force quality, has directly correlated with economic prosperity (Fukao, Makino, & Settsu, 2021). Countries like Japan, with a high human capital index, have maintained sustained economic development (Garza-Rodriguez et al., 2020). While African countries have utilized education and healthcare reforms, like Mauritius, to spur their growth, Uganda has worked hard in such sectors, especially at the grassroots level of education and healthcare. However, inflation in Uganda may hurt economic stability (Aghaei, Rezagholizadeh, & Bagheri, 2023). For example, the hyperinflation of Zimbabwe in the late 2000s, culminating in a peak of 79.6 billion percent in November 2008, has resulted in tremendous economic dislocation (Azam & Khan, 2022). In Uganda, however, inflation has continued to oscillate between 2% and 30% over the past two decades. However, it is now under firm control, especially with recently implemented appropriately targeted monetary policies (Anguyo, Gupta, & Kotzé, 2020).

The endogenous growth theory, which emphasizes the role of internal factors such as human capital development, technological advancement, and investment in fostering long-term economic growth, provides a theoretical foundation for this study (Cvetanović, Mitrović, & Jurakić, 2019). This theory posits that economic growth is primarily driven by endogenous variables rather than external factors, highlighting the importance of policies that stimulate investment in education, infrastructure, and innovation. The new growth theory emphasizes that Uganda should invest in developing human capital and innovation and provide a favorable investment climate. During the years, these endogenous factors determined economic growth in Uganda, with spells of growth followed by reversals due to exogenous shocks, such as changes in global commodity prices and regional conflicts (Akcigit & Ates, 2021). These dynamics have been reflected in Uganda's economic trajectory from the colonial era. The economy was highly agrarian during the colonial period, with GNI heavily dependent on exports of cash crops like coffee and tea. Following independence, Uganda endured periods of instability, such as military dictatorships and civil unrest, hampering economic growth (Chandra & Chandra, 2022). However, in the 1990s, Uganda implemented economic reforms that spurred growth, with GCF, led by infrastructure development and increased investment in human capital, contributing to GDP growth (Adaramola & Dada, 2020). Over the past 20 years, Uganda's economic growth rate has fluctuated, with real GDP growth averaging around 6% annually from 2000 to 2019 (Adegboye et al., 2020).

Uganda's GNI per capita has grown from about $300 in the early 2000s to approximately $800 in 2020. Human capital indicators, like primary school enrollment, have shown remarkable improvements, although challenges in quality education and health remain. FDI inflows have increased but are way below those of other developed African economies, given Uganda's rich natural resources. Inflation rates have varied significantly from a high of 30% in the early 2000s to more stable rates of about 3-4% in recent years, contributing to a more favorable investment climate (Anguyo, Gupta, & Kotzé, 2020). These trends reflect the complex interplay through which GNI, human capital, FDI, inflation, and GCF influence the growth of the Ugandan economy. This supports the relevance of such factors in the perusal of Uganda's development challenges and opportunities, as Asongu and Odhiambo (2020) discussed.

2. Literature Review and Hypothesis Development

Theoretical Literature Review

This study is guided by the Endogenous Growth Theory, developed by Paul Romer in 1986, as a response to the limitations of neoclassical growth theories, which emphasized exogenous technological progress (Chandra & Chandra, 2022). Romer's theory posits that economic growth is primarily driven by internal factors, such as human capital, knowledge accumulation, innovation, and investment in technology, rather than external forces (Akcigit & Ates, 2021). The new growth theory developed through time, adding to it the contributions of other economists like Lucas (1988), who emphasized human capital, and Aghion and Howitt (1992), who showed growth engendered by innovation through creative destruction. (Ping, Yashuai, & Susu, 2024). More recent extensions have included the interaction with institutional and environmental factors and, therefore, the importance of governance, entrepreneurship, and sustainable use of resources for growth. (Yuan & Zhang, 2024; Rijal, Idrus, & Ahmad, 2023).

Empirical applications of endogenous growth theory have shown the relevance of the theory in different contexts. For instance, Khan and Rehman (2021) applied the theory in Pakistan to study interrelationships among economic variables. They find human capital and technology as strong determinants of growth. Ziesemer (2020) investigates its validity in conditions of zero or negative population growth and finds innovation to be the critical determinant of economic performance. Parello (2022) highlighted the importance of the theory in understanding conditional and unconditional convergence in economies globally. Further, Díaz Rodríguez and Aroche Reyes (2020) utilized the theory in Mexico by developing artificial neural networks to outline how technological innovation affects labor productivity. Wijayanto (2019) also investigated its applicability to understanding long-term economic growth trends, especially the interaction between investment and productivity. Therefore, the study will agree with endogenous growth theory by estimating internal variables like GNI, human capital, FDI, GCF, and inflation as the causes of Ugandan economic growth. By focusing on these variables, the present study integrates insights from prior studies, such as the role of human capital put forward by Rijal, Idrus, and Ahmad 2023, and the importance of innovation and capital formation highlighted by Udeogu, Amakom, and Roy-Mukherjee 2021. This theory informs this study by

providing a framework to review how knowledge, investment, and institutional dynamics interact to foster economic growth within Uganda's context. This will also be informed by the present theoretical lens, underlining the endogenous drivers of growth that identify areas for policy intervention in further improving sustainable economic performance.

Empirical Literature Review

The effect of Gross National Income (GNI) on economic growth in Uganda

The effect that Gross National Income has on Uganda's economic growth can be evaluated from its functions in driving the economy. Firstly, GNI is a comprehensive measure of the total income generated by residents and businesses within and outside the country, making it a critical indicator of national economic health (Colomer Martín, 2019). A higher GNI reflects increased production activities, enhanced labor productivity, and better income distribution, collectively stimulating economic growth (Coscieme et al., 2020). Secondly, GNI directly influences aggregate demand by boosting consumer spending, investment levels, and government revenue through taxation (Xholo & Ncanywa, 2024). These elements are vital in driving infrastructural development and improving social services, further enhancing economic growth (Ozigbu, Nchom, & Ezekwe, 2021). Thirdly, GNI impacts the accumulation of savings and capital, as higher incomes enable households and businesses to invest more, fostering innovation and entrepreneurship (Ani & Onu, 2022). This creates a positive feedback loop, where higher investment levels fuel greater economic output (Nolan, 2020). Fourthly, an increase in GNI typically corresponds to improved living standards, as individuals can afford better healthcare, education, and other essentials, leading to a more skilled and productive workforce (Vezhnovets et al., 2021). Fifthly, GNI reflects the ability of a country to attract foreign direct investment (FDI), as a growing economy often signals stability and market potential to international investors (Ani & Onu, 2022). FDI inflows bring technology transfer, job creation, and market expansion, further enhancing economic growth (Ozigbu, Nchom, & Ezekwe, 2021). Additionally, GNI influences economic resilience by providing a cushion during external shocks, such as commodity price fluctuations or global economic downturns (Colomer Martín, 2019).

Countries with higher GNI can better withstand these shocks through diversified income sources and robust fiscal capacities (Kaivo-Oja, Vehmas, & Luukkanen, 2022). The role played by GNI in the economy is also evident from its contribution to debt sustainability in Uganda (Xholo & Ncanywa, 2024). Higher levels of GNI enhance the servicing capability of a country, improving its debt-servicing capability and reducing the fiscal burden so that more resources can be put toward development projects (Nolan, 2020). Furthermore, GNI growth promotes regional integration and trade by enabling Uganda to participate more competitively in regional and international markets (Coscieme et al., 2020). As the economy grows, trade relationships strengthen, leading to greater export diversification and reduced reliance on a few sectors (Vezhnovets et al., 2021). However, the effect of GNI on economic growth is not automatic or uniform; it depends on how income is distributed and utilized (Ani & Onu, 2022). Unequal income distribution or excessive reliance on a single sector, such as agriculture, can limit the broader economic benefits of GNI growth (Colomer Martín, 2019). For Uganda, where structural challenges persist, ensuring that GNI growth translates into inclusive development requires targeted policies to address inequality, enhance industrialization, and improve infrastructure (Ozigbu, Nchom, & Ezekwe, 2021). Thus, GNI remains a crucial determinant of economic growth in Uganda, shaping the country's development trajectory and its ability to achieve sustainable progress (Kaivo-Oja, Vehmas, & Luukkanen, 2022).

The effect of Human Capital on economic growth in Uganda

Human capital's impact on Uganda's economic growth is profound, as it is vital in driving productivity, innovation, and overall economic development. Human capital includes the workforce's education, skills, health, and experience, which directly influences the efficiency and output of economic activities (Prasetyo & Kistanti, 2020). Firstly, an educated and skilled workforce enhances labor productivity by improving the quality of goods and services, thereby boosting economic output (Aghaei, Rezagholizadeh, & Bagheri, 2023). For Uganda, where sectors like agriculture, services, and emerging industries dominate, investments in human capital are essential to transitioning from low-productivity to high-productivity economic activities (Garza-Rodriguez, Almeida-Velasco, Gonzalez-Morales, & Leal-Ornelas, 2020). Secondly, human capital promotes technological adoption and innovation. Workers with advanced skills and knowledge are more likely to engage in research and development activities or effectively utilize imported technologies, which are critical for Uganda's industrialization agenda (Fukao, Makino, & Settsu, 2021). Thirdly, human capital development improves entrepreneurship by equipping individuals with the capabilities to identify business opportunities,

access credit, and manage enterprises. This fosters a vibrant private sector, a key driver of economic growth (Prasetyo & Kistanti, 2020). Additionally, human capital contributes to economic growth through improvements in health outcomes. A healthier population has more excellent physical and cognitive abilities, which decreases absenteeism and increases productivity. In Uganda, addressing challenges such as malnutrition and disease prevalence is critical to maximizing the economic potential of its workforce (Ramli, Boutayeba, & Nezai, 2022).

Moreover, human capital can facilitate social mobility and income equality by bridging socio-economic gaps through better education and healthcare access. Such is the inclusive growth model, one in which economic development is both contributed to and benefited from by all sections of society (Han & Lee, 2020). Another important impact of human capital is on the dynamics of demography. Investments in education, particularly for women, lead to lower fertility rates and better family planning, which can help Uganda manage its high population growth and channel resources into productive sectors (Amna Intisar et al., 2020). Moreover, human capital development attracts foreign direct investment (FDI), as investors are drawn to countries with skilled labor pools capable of supporting advanced operations. For Uganda, enhancing human capital can make the country more competitive in attracting FDI to manufacturing, technology, and services (Sarwar, Khan, Sarwar, & Khan, 2021). Human capital also develops the institutions of a country by ensuring that there is a knowledgeable population that demands accountability from the government and proper resource utilization. According to Mabrouki (2023), despite its great benefits, human capital impacts Uganda's economic growth, constrained by limited access to quality education, poor health infrastructures, and unemployment among the youth. These, in turn, call for targeted policy actions, such as curriculum reforms aimed at aligning education with the labor market demand. The government must also invest more in health and education, coupled with efforts to ensure public-private partnerships. Kim (2021) states that human capital is embedded in productivity, equity, and long-term development processes. Fully developing and utilizing human capital will thus ensure that Uganda achieves its economic potential, hence its national development goals, as indicated by Abdeldayem, Aldululaimi, and Kharabsheh (2021).

The effect of Foreign Direct Investment (FDI) on economic growth in Uganda

FDI in Uganda plays an important role in economic growth since it is the channel through which crucial capital inflows, technology transfer, and employment opportunities are brought into the economy. For instance, Oyegoke and Aras (2021) pointed out that FDI provides the financial resources required to complement the shortfalls in domestic savings, enabling a country to finance large development projects in infrastructure, energy, and industrial parks. This capital infusion stimulates economic activity and supports long-term growth (Acquah & Ibrahim, 2020). Secondly, FDI promotes technological advancement by introducing new machinery, processes, and skills into the host economy. Multinational corporations often bring cutting-edge technologies and management practices that local firms can adopt, thereby enhancing productivity across various sectors in Uganda. This is particularly beneficial in transforming sectors like manufacturing, which require substantial investment to move from low-value to high-value production (Nguyen, 2022).

Additionally, FDI contributes to employment generation, both directly and indirectly. Directly, foreign firms create jobs in industries like agriculture, mining, telecommunications, and manufacturing. Indirectly, they support local businesses through supply chain linkages and demand for services such as transportation and logistics (Irakoze & Yu, 2020). Foreign investors' presence will also encourage the development of human capital through the training and upskilling of available local workers to increase their employability and productivity (Osei & Kim, 2020). FDI improves the country's balance of payments. By increasing exports through production for international markets, foreign investors help reduce trade deficits and stabilize the local currency, which is vital for Uganda's economic stability. This is according to Christopher (2022).

Foreign direct investment also acts as a catalyst for market expansion and economic diversification. Through investment in underdeveloped sectors like renewable energy, tourism, and information technology, foreign entities help reduce overdependence on traditional industries like agriculture in Uganda. This is what Barbra and Nawaz (2021) have stated. Furthermore, FDI strengthens institutional frameworks and governance. Foreign investors often demand transparency, efficiency, and regulatory consistency, which can lead to broader improvements in the business environment. For Uganda, this has implications for reducing corruption and

fostering accountability (Adegboye et al., 2020). However, the impact of FDI on economic growth is not without challenges.

One concern is the repatriation of profits, which can limit the net benefit to the host economy (Yimer, 2023). Another issue is the potential for FDI to crowd out local businesses, especially if foreign firms dominate markets or receive preferential treatment. Uganda must address these challenges by implementing policies that maximize the positive effects of FDI. For example, promoting joint ventures between foreign and local firms can ensure that technology and skills are transferred to domestic entities (Asongu & Odhiambo, 2020). Strengthening local content requirements can also ensure that Ugandan businesses and workers benefit from foreign investments (Asafo-Agyei & Kodongo, 2022). Additionally, aligning FDI inflows with national development priorities, such as industrialization and export diversification, can enhance their contribution to economic growth (Mohamed, 2023). Lastly, fostering a stable macroeconomic environment, improving infrastructure, and ensuring political stability are essential to attracting and retaining high-quality FDI (Acquah & Ibrahim, 2020). Overall, FDI remains a cornerstone of Uganda's economic growth strategy, with the potential to drive innovation, create jobs, and elevate the country's position in the global economy when strategically managed (Sarwar et al., 2021).

The effect of Gross Capital Formation (GCF) on economic growth in Uganda

Gross Capital Formation is a vital factor in Uganda's economic growth. It accumulates physical capital, which significantly improves productive capacity. Firstly, GCF reflects investments in infrastructure such as roads, bridges, energy plants, and communication networks. These investments are foundational for improving economic efficiency and reducing transaction costs, enabling businesses to operate more effectively (Pasara & Garidzirai, 2020). Improved infrastructure facilitates trade, both domestically and internationally, connecting rural producers to urban markets and global supply chains, according to Ntamwiza and Masengesho (2022). The GCF contributes to industrial development by financing the acquisition of machinery, equipment, and technology needed in manufacturing and production, thus increasing output, adding value, and increasing exports, contributing to Uganda's GDP growth, agreeing with Kong et al. (2020). Another crucial role of GCF is its contribution to agricultural transformation. For instance, in Uganda, where agriculture remains a critical sector of the economy, irrigation systems, storage facilities, and modern farming equipment are essential to enhance productivity (Maune & Matanda, 2022). GCF also supports urbanization by financing residential and commercial structures, which spur real estate and related sectors (Nyamute & Barasa, 2021). Moreover, Gross Capital Formation encourages employment by creating labor demand in the construction and engineering industries, among other investment-related sectors. Reducing unemployment rates increases household incomes, which increases consumer spending and, consequently, economic activities. According to Maune et al. (2023), GCF also increases the capacity for technological progress by facilitating research and development activities. Innovation investment will help shift Uganda from low productivity to more developed and competitive sectors (Qamruzzaman, 2024).

Additionally, GCF contributes to human capital development since its funding helps construct schools, hospitals, and vocational training centers. The result is an educated and healthy workforce (NDREGJONI & NDREGJONI, n2024). The sustained economic growth comes with improved human infrastructure and a well-developed workforce (Chibuzor & Eleh, 2023).

However, the impact of GCF on Uganda's economic growth is influenced by the efficiency of capital allocation. Mismanagement, corruption, and delays in project implementation can undermine the effectiveness of investments (Qamruzzaman, 2024). Similarly, the reliance on foreign aid or loans to finance capital formation may lead to debt sustainability challenges if not strategically managed (Mahdi, 2023). To maximize the benefits of GCF, Uganda must prioritize investments with high economic returns, such as those that enhance productivity and export capacity (Pasara & Garidzirai, 2020). Encouraging public-private partnerships can also leverage private-sector expertise and resources to supplement government-led initiatives (Maune & Matanda, 2022).

Furthermore, fostering a stable macroeconomic environment with low inflation and competitive interest rates can attract domestic and foreign investors to contribute to capital formation (Qamruzzaman, 2024). Another factor is the quality of governance and institutional frameworks in facilitating GCF. Effective policies and regulatory environments ensure that resources are allocated to projects that align with Uganda's national

development plans (Ntamwiza & Masengesho, 2022). For instance, investments in renewable energy projects support economic growth and address environmental sustainability goals (Nyamute & Barasa, 2021). Lastly, the long-term impact of GCF on economic growth is closely tied to its integration with human capital and technological development. Investments in physical assets must be complemented by efforts to build a skilled workforce capable of utilizing and maintaining these assets (Maune et al., 2023). In conclusion, GCF serves as a cornerstone of Uganda's economic development, with the potential to stimulate growth, reduce poverty, and transform the economy when strategically aligned with national priorities and supported by efficient governance (Kong et al., 2020).

The effect of Inflation on economic growth in Uganda

Inflation, while often considered a regular part of economic cycles, can have significant implications for economic growth in Uganda. Generally, moderate inflation is believed to encourage spending and investment, which can stimulate economic growth (Karki, Banjara, & Dumre, 2020). However, excessive or erratic inflation can disrupt economic stability, decrease purchasing power, and undermine confidence in the currency, leading to negative consequences for growth (Sanga, Kongolo, & Mnongya, 2022). In Uganda, inflation has historically been driven by factors such as food price fluctuations, exchange rate volatility, and energy costs, which can have immediate and far-reaching economic impacts (Yemba, Kitenge, & Woodburne, 2020). Inflation erodes the real value of money, making goods and services more expensive for consumers and negatively affecting living standards (Mandeya & Ho, 2021). For Ugandan households, particularly those in rural areas, price increases for basic goods like food and fuel can lead to reduced consumption and savings, limiting their capacity to contribute to economic growth (Sanga, Kongolo, & Mnongya, 2023). Higher living costs also exacerbate income inequality, as poorer households, who spend a more significant proportion of their income on essentials, are disproportionately affected by inflationary pressures (Adaramola & Dada, 2020).

Exacerbating this problem is the decline in real wages because of rising prices, which ultimately contributes to lower consumer confidence and reduced demand for goods and services. According to Khan & Hanif 2020, inflation impacts the cost of inputs such as raw materials, labor, and capital used by businesses in production. When inflation is high, production costs may rise for firms; this will reduce profit margins or increase the price of products, thus reducing demand for goods and services. This, according to Sanga, Kongolo, and Mnongya (2022), may make it hard for businesses to compete in domestic and international markets when they cannot adjust to these price changes. In addition, inflation makes the business environment uncertain due to the inability of companies to plan long-term investments, hence scaring away foreign and domestic investments needed for economic growth and development (Mandeya & Sin-Yu, 2022). Inflation influences the financial sector, especially interest rates. Many central banks, such as Uganda's Bank of Uganda, increase interest rates to reduce inflation (Doan Van, 2020). However, higher interest rates make borrowing more expensive, which can limit access to credit for businesses and consumers (Huseynli, 2022). This reduction in credit availability can negatively affect investment in both the private and public sectors. For example, businesses may delay or cancel expansion plans, and households may reduce spending on durable goods like housing and vehicles (NGOC, 2020). The resulting slowdown in investment and consumption can hinder overall economic growth (Dinh, 2020).

However, inflation's effect on economic growth is not always adverse. Moderate inflation, often within a target range, can encourage consumption and investment as individuals and businesses seek to spend money before prices rise (Karki, Banjara, & Dumre, 2020). Additionally, inflation can help reduce the real debt burden, particularly for the government, which benefits from the reduced value of its outstanding debt in real terms (Azam & Khan, 2022). This can give the government more fiscal space to increase public spending on infrastructure and social services, potentially stimulating economic growth (Sanga, Kongolo, & Mnongya, 2023). In Uganda, inflation also interacts with the country's monetary policy framework, impacting domestic and international economic conditions (Opeyemi, 2020). For instance, inflationary pressures often arise from external shocks, such as rising global oil prices or food shortages. These external factors can complicate Uganda's efforts to maintain price stability, as domestic inflation becomes linked to global economic trends over which the country has little control (Uddin & Rahman, 2023). Therefore, Uganda's central bank must carefully manage inflationary expectations and coordinate monetary and fiscal policies to maintain economic stability (Khan & Hanif, 2020). The relationship between inflation and economic growth in Uganda is complex, with positive and negative effects depending on the inflation rate and underlying causes (Sanga, Kongolo, &

Mnongya, 2022). The key is maintaining inflation within a manageable range that supports growth while avoiding the negative consequences of hyperinflation or deflation (Mandeya & Ho, 2021). Uganda's economic growth prospects depend on its ability to control inflation through prudent fiscal and monetary policies while addressing structural factors such as food security, exchange rate stability, and energy prices (Karki, Banjara, & Dumre, 2020). Inflation targeting as a policy framework can help anchor expectations, promoting economic stability and confidence in the currency, which are essential for long-term growth (Sanga, Kongolo, & Mnongya, 2023).

3. Methodology

This study adopts a quantitative research approach to examine the relationship between key economic indicators and Uganda's economic growth, with a specific focus on Gross National Income (GNI), inflation, Foreign Direct Investment (FDI), human capital, and Gross Capital Formation (GCF) (World Bank, 2023; IMF, 2023). The study utilizes a time-series research design, analyzing data spanning several years to assess long-term and short-term dynamics (Kaggwa & Tumusiime, 2022). Data was collected from secondary sources, primarily government publications, international financial databases, and reports from the Uganda Bureau of Statistics (UBOS) (UBOS, 2023; UNCTAD, 2023). The data collection instruments included official economic reports and statistical databases (AfDB, 2023). To ensure the reliability and accuracy of the findings, various econometric techniques were employed, including the Augmented Dickey-Fuller (ADF) test for stationarity, the Variance Inflation Factor (VIF) test for multicollinearity, and the Autoregressive Distributed Lag (ARDL) model for analyzing long-run and short-run relationships (Pesaran et al., 2023; Gujarati & Porter, 2023). The ARDL model helped determine the impact of variables such as human capital, FDI, inflation, and capital formation on economic growth, while diagnostic tests ensured the robustness of the results by checking for multicollinearity and stationarity (Kumar & Nsubuga, 2023; EViews Manual, 2023).

4. Study Findings

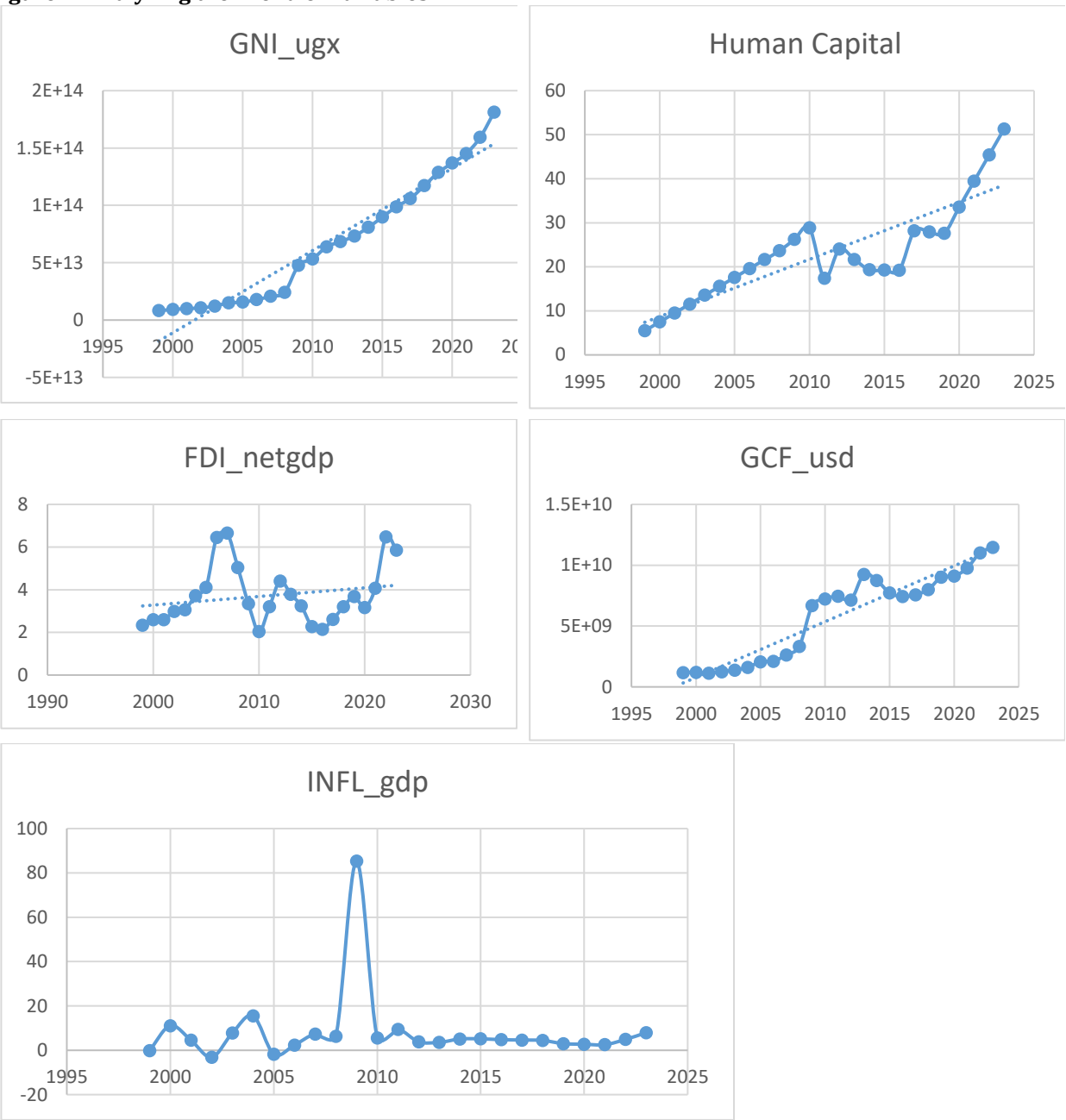
Table 1: Data observation across the study period

Stats	GNI	Human Capital	FDI	GCF	Inflation
Mean	6.77E+13	22.98774	3.724424	5.82E+09	8.12942
Sd	5.43E+13	11.04539	1.385351	3.56E+09	16.54449
Min	8.15E+12	5.465001	2.039005	1.13E+09	-3.16956
Max	1.81E+14	51.30781	6.656597	1.15E+10	85.35327

The dataset presents a statistical summary of the study's key economic indicators, including Gross National Income (GNI), Human Capital, Foreign Direct Investment (FDI), Gross Capital Formation (GCF), and Inflation. The mean values reflect moderate levels of economic performance, with GNI averaging 67.7 trillion UGX and Human Capital at 22.99, indicating steady but variable economic and social development. However, the high standard deviations highlight significant economic volatility, particularly for GNI (54.3 trillion UGX) and Inflation (16.54). The wide range of values, such as GNI spanning from 8.15 trillion UGX to 181 trillion UGX, and Inflation fluctuating between -3.17% and 85.35%, underscores periods of both growth and instability, suggesting that Uganda's economy is susceptible to internal and external shocks.

The significant variability and wide ranges in these indicators suggest possible non-normal distribution of variables like GNI, Inflation, and GCF, a potential indicator of the presence of outliers. The study variables were therefore log-transformed

Figure 1: Analyzing the Trend of Variables



The overall trends in Uganda's economic indicators reveal sustained long-term growth punctuated by significant volatility, particularly in inflation and foreign direct investment. The upward trajectories of GNI, human capital, and gross capital formation suggest structural improvements in the economy over time, while the cyclical fluctuations in FDI and the sharp spike in inflation highlight the susceptibility of Uganda's economy to external shocks and domestic policy changes. The presence of trends, especially upward linear or exponential patterns in variables like GNI and GCF, necessitates testing for unit roots with a trend option to determine the stationarity of these series. Non-stationary time series with trends can produce spurious regression results, leading to unreliable inferences in econometric models. Including a trend component allows researchers to capture the deterministic trends observed in the data, ensuring robust and accurate analysis of long-run relationships among the economic variables.

Stationarity checks for study variables

The stationarity tests were carried out using the ADF test. The trend option was considered since the variables show trends.

Table 2: Variables stationarity at levels

Variable	Test Statistic z(t)	Critical Value (5%)	P-Value	Conclusion
GNI	-1.170	-3.600	0.9165	-
Human Capital	-2.198	-3.600	0.4908	-
FDI	-2.355	-3.600	0.4037	-
GCF	-1.270	-3.600	0.8952	-
Inflation	-5.238	-3.600	0.0001	I (0)

The results demonstrate that GNI, Human Capital, FDI, and GCF are non-stationary, confirming that they possess a unit root and require differencing to achieve stationarity, classifying them as integrated of order I (1). Conversely, Inflation is stationary at its level form, making it integrated of order I (0) and ready for direct use in analysis.

Table 3: Variables stationarity at first difference

Variable	Test Statistic z(t)	Critical Value (5%)	P-Value	Conclusion
GNI	-4.418	-3.000	0.0003	I (1)
Human Capital	-5.489	-3.000	0.0000	I (1)
FDI	-3.548	-3.000	0.0068	I (1)
GCF	-3.754	-3.000	0.0034	I (1)

The results indicate that GNI, Human Capital, FDI, and GCF achieve stationarity upon first differencing, classifying them as integrated of order I(1). These findings highlight the necessity of differencing these variables before employing them in time-series models to ensure robustness and avoid spurious regression issues in econometric analysis.

Table 4: **Testing for multicollinearity**

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Human Capital	5.86	2.42	0.1708	0.8292
FDI	1.84	1.36	0.543	0.457
GCF	4.68	2.16	0.2137	0.7863
Inflation	1.1	1.05	0.909	0.091
Mean VIF	3.37			

The results indicate the absence of severe multicollinearity, as all Variance Inflation Factor (VIF) values are well below the commonly accepted threshold of 10. This demonstrates that none of the variables exhibits excessively high multicollinearity. Similarly, the tolerance values, which are inversely related to VIF, confirm that the variables maintain adequate levels of independence.

Table 5: ARDL model

Variable	Coef.	Std. Err.	t	P>|t|	95% Conf. Interval Lower & Upper	
Long Run						
ECT	-0.3744375	0.0552899	-6.77	0.000	-0.4916469	-0.257228
Human Capital	0.8586368	0.1722001	4.99	0.000	0.4935889	1.223685
FDI	-0.5668895	0.13171	-4.3	0.001	-0.8461023	-0.2876767

Capital	0.808976	0.083809	9.65	0.000	0.631309	0.9866431
Inflation	0.097988	0.0438758	2.23	0.04	0.0049755	0.1910005
Short Run						
GNI	-0.5462186	0.1307831	-4.18	0.001	-0.8234664	-0.2689707
Human Capital	0.3215058	0.0786392	4.09	0.001	0.154798	0.4882135
FDI	-0.2122647	0.0584251	-3.63	0.002	-0.3361204	-0.0884089
Capital	0.3029109	0.0594313	5.1	0.000	0.1769221	0.4288997
Inflation	0.0366904	0.0127309	2.88	0.011	0.0097021	0.0636787
Constant	4.414974	0.7678755	5.75	0.000	2.787151	6.042797

The results present the long-run and short-run relationships for various variables, highlighting their coefficients, statistical significance, and confidence intervals. The Error Correction Term (ECT) in the long-run model is negative and statistically significant, indicating that deviations from the long-run equilibrium are corrected relatively quickly, supporting a stable long-run relationship among the variables.

Human Capital has a positive and statistically significant coefficient in the long run, suggesting a substantial contribution to the dependent variable. Foreign Direct Investment (FDI) has a negative and significant coefficient, implying a reduction in the dependent variable as FDI increases. Capital also exhibits a significant positive effect, while Inflation shows a more negligible, yet statistically significant, positive influence. These results highlight the distinct roles of these variables in shaping the long-run dynamics.

GNI is negatively and significantly associated with the dependent variable in the short run, suggesting a short-term adverse effect. Human Capital remains positive and significant, consistent with its long-run effect, though its magnitude is minor. Similarly, FDI has a negative and significant impact, but its effect is less pronounced compared to the long run. Capital continues to exert a positive and significant influence, though the coefficient is smaller in the short run. Inflation also has a positive and statistically significant effect, consistent with its long-run behavior, but the magnitude is reduced.

Discussion

A study analyzed Uganda's GNI and Human Capital and Foreign Direct Investment (FDI) and Gross Capital Formation (GCF) and Inflation data in a particular period. The results from descriptive statistics revealed a moderate economic performance of 67.7 trillion UGX GNI and 22.99 Human Capital scores, showing continued socio-economic development. The large standard deviations of GNI and Inflation values indicate major fluctuations that are caused by economic disruptions and world market changes (Adaramola & Dada, 2020; Anguyo et al., 2020). Log transformations were necessary to normalize the data because GNI (8.15 to 181 trillion UGX) and Inflation (-3.17% to 85.35%) had significant variations.

The trend analysis showed a positive trend for GNI and Human Capital and GCF, indicating long-term growth. FDI and Inflation followed a cyclical pattern, which shows Uganda's exposure to external factors, including investment movements and market price changes (Asongu & Odhiambo, 2020; Adegboye et al., 2020). The results demonstrate the necessity to implement strategies to handle external disruptions. The Augmented Dickey-Fuller (ADF) tests showed that GNI, Human Capital, FDI, and GCF had non-stationary properties at the level but became stationary after the first difference and Inflation was already stationary at the level. The results from Asafo-Agyei and Kodongo (2022) and Barbra and Nawaz (2021) support the use of transformation to prevent spurious regression due to alignment with their findings. The VIF results confirmed no multicollinearity issues, which supports the reliability of the model estimates (Aghaei et al., 2023).

Human Capital, together with GCF and Inflation, proved to be positive factors for economic development, while FDI produced negative results according to the ARDL model in the long run. The findings indicate that local investments and moderate levels of inflation boost economic growth, but foreign direct investments can create negative effects when there are no adequate institutional systems (Acquah & Ibrahim, 2020; Anguyo et al., 2020). The variables displayed statistical significance in the short run, but the overall effects remained

relatively small. Human Capital, GCF, and Inflation demonstrated positive effects, but GNI produced negative effects. The study supports Azam and Khan (2022), who discovered that short-term inflation effects on growth are complex. The economy showed resilience through the negative and significant Error Correction Term, which demonstrated its ability to restore long-run equilibrium after short-term disturbances (Huseynli, 2022).

5. Conclusion and Recommendations

The research demonstrates that Gross National Income (GNI), human capital development, foreign direct investment (FDI), capital formation, and inflation strongly affect the economic performance of Uganda. The economic growth of Uganda benefits from GNI, human capital, capital formation, and inflation in both short-term and long-term periods, yet FDI shows opposite effects. The observed high volatility in specific indicators demonstrates that macroeconomic stability is critical for sustainable growth. The validity of econometric results depends on the absence of non-stationary variables, and the model's reliability increases because of the absence of multicollinearity. The substantial error correction mechanism shows that Uganda's economy can recover from brief disturbances before reaching equilibrium.

Recommendations

The government should implement policies that develop human capital and domestic investment while maintaining stable inflation rates to achieve economic stability and sustainability. The attraction and regulation of foreign direct investment should be carefully considered to avoid disrupting the natural functioning of the domestic economy. Monitoring macroeconomic indicators should be improved to detect and control volatility, while economic analysis requires correct data stationarity treatment for making accurate predictions and designing policies.

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Macro-Financial Determinants of Electricity Power Loss in Uganda

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Abstract: This study examined the macro-financial determinants of electricity power loss in Uganda, with objectives that looked at GDP per capita, inflation, lending rates, the real effective exchange rate, and energy investment in electricity power loss. This study adopted a time series quantitative methodology. The secondary data was collected from reliable sources such as the World Bank, the Bank of Uganda, and the Electricity Regulatory Authority, spanning 20 years. The research applied a VAR model to analyze the short-run dynamics of the variables under consideration. The data were first cleaned to handle heteroscedasticity issues and missing values. The study found some of Uganda's most significant determinants of electricity losses to be macro-financial factors such as inflation, GDP per capita differences, and energy investment. Inflation volatility increased power losses, as did differences in GDP per capita, while low investment in energy translated to inefficiency within the electricity sector. Lending rates inhibited the infrastructural development of energy and, hence, power distribution and transmission efficiency. Therefore, the study concludes that addressing these macro-financial factors- inflation control, efficient energy investment, and economic policies- minimizes losses of electricity power in Uganda. This study suggests focusing on inflation stabilization, attracting investment in the energy sector, controlling the lending rate, and upgrading energy infrastructure management for better efficiency in the overall Ugandan electricity system. In addition, addressing issues of exchange rates and modern energy distribution technologies is central to minimizing losses and promoting an efficient energy sector.

Keywords: *Electricity power loss, GDP per capita, inflation, lending rates, real effective exchange rate, energy investment*.

1. Background to the Study

Effective electricity power loss management creates economic stability and growth in a nation. As noted by the International Energy Agency (2024), an efficient and continuous electricity supply has been linked with economic growth, whereby, on an increased scale, industry, agriculture, and services have ensured higher productivity. According to the World Bank (2020), reliable electricity is essential to boost productivity and jobs and increase living standards. A stable power supply facilitates the operation of industries and innovations, facilitating economic growth. World Bank 2020. On the other hand, electricity power loss is considered a significant challenge in attaining a reliable power system; this refers to the difference between the amount of electricity produced and that delivered to the consumer. Sadovskaia et al. 2019. The International Energy Agency (2023) explains that globally, the power loss rate ranges from 8% to 15%, while in developing countries, it is higher because of poor infrastructure and inefficiencies in the electricity grid. International Energy Agency, 2023.

The situation is even more dire in Africa, with some regions reporting power losses exceeding 20% due to outdated transmission lines, high rates of non-technical losses like theft, and other technical inefficiencies (African Climate Foundation, 2022). Power losses have been a longstanding issue in Uganda, ranging from 15% to 25% in recent years (Wabukala et al., 2022). These losses are attributed to a combination of technical inefficiencies in transmission and distribution networks and non-technical factors such as power theft and poor management of the electricity grid (Wabukala et al., 2022). From 2020 to 2024, global electricity production has shown a steady increase. According to the International Energy Agency (2023), 2020 global electricity production was about 25,000 terawatt-hours (TWh), increasing to about 26,000 TWh in 2021 and 27,000 TWh in 2022. In 2023, it indicated a 2.6% growth, aligning with historical trends; similar growth was evident in 2024 (Memarzadeh et al., 2025). In Africa, electricity production has grown similarly, increasing from 1,200 TWh in 2020 to about 1,250 TWh in 2021 and 1,300 TWh in 2022. The African Climate Foundation (2022) postulates that the regional electricity demand will continue to grow at an annual growth rate of 4%, with renewable energy meeting about two-thirds of this demand. In the same trend, the electricity generation in Uganda increased from 5,000 GWh in 2020 to an estimated 6,000 GWh in 2022, according to Iddi et al. (2024), according

to the Uganda Electricity Regulatory Authority. (2024), the installed capacity for Uganda stood at over 2,000 MW as of 2024 and is anticipated to increase even more in the coming years. However, this recent progress has been overshadowed by the challenge of power loss, which is considered a detraction from the potential benefit of improved generation. The causes of these losses include outdated infrastructure, high illegal connection rates, and inefficiencies in transmission and distribution systems that cause power losses and make the delivery of electricity to consumers inefficient (Wabukala et al., 2022).

GDP per capita, inflation, lending rates, the real effective exchange rate, and energy investment are some of the key macro-financial determinants of electricity power loss. According to the International Energy Agency (2024), GDP per capita is a critical factor in shaping the trend of energy consumption. With increased income levels, the demand for energy goes up, although whether this demand can be satisfied is determined by the efficiency of the energy sector in a country. In Uganda, one of the significant factors that has limited the development of the energy infrastructure to minimize power losses is low GDP per capita. The restricted economic capacity lowers the ability of the country to invest in renovating transmission and distribution networks, leading to higher technical losses (Simionescu et al., 2019). Inflation is also important in the electricity sector, as increases may translate to an increase in tariffs, reducing affordability and dissuading consumers from paying for energy use. According to Bednář et al. (2022), in the case of an inflationary spiral, the cost of electricity reduces consumers' ability to access reasonably affordable power and, even more importantly, increases power theft and non-payment issues. The following important macro-financial determinant for energy investment is the rate of lending. According to Dokas et al. (2022), high lending rates deter domestic and foreign investments in energy infrastructure, which is crucial for reducing technical losses and enhancing power delivery efficiency.

Furthermore, volatility in the real effective exchange rate can raise the price of imported energy infrastructure, such as transformers and other necessary equipment. This to Stern et al. (2019, this can increase the cost of upgrading obsolete power systems. Therefore, the ultimate goal of minimizing power losses in developing countries such as Uganda is retarded. Finally, energy investment is an important determinant indicating the electricity supply's efficiency. As noted by Wabukala et al. (2022), inadequate investment in Uganda's energy sector has contributed to the persistence of inefficiencies in the grid, hence continuing to cause power losses. According to the exogenous growth model, these factors constitute the overall performance of Uganda's electricity sector. Given this context, integrated policy intervention at both the financial and infrastructural levels is pertinent in reducing power loss and making the sector sustainable.

2. Literature Review

Theoretical Literature

Exogenous growth model

The theoretical underpinning for this study emanates from the exogenous growth model, first postulated by Robert Solow in 1956. This model postulates that long-run economic growth depends on exogenous variables such as technological progress, capital accumulation, and labor growth (Pérez & Ortega, 2021). According to the Exogenous Growth Model, these external variables, especially technological changes, are the major causes of economic growth as they enhance productivity and output. Atangana & Goufo, 2022. In this context, the Exogenous Growth Model has been used in this study to establish how the macro-financial factors of GDP per capita, inflation, real effective exchange rate, lending rate, and energy investment affect electricity power loss in Uganda. For example, GDP per capita, which reflects a country's standard of living, can influence energy demand and, consequently, the efficiency of electricity transmission and distribution (Islam & Islam, 2021).

Inflation affects the cost of energy production, which can lead to inefficiencies and power losses if not properly managed (Olivares et al., 2023). The real effective exchange rate impacts the cost of imported technologies and infrastructure, significantly improving the electricity grid's reliability and reducing power losses (Hassan et al., 2021). Lending rates also influence investments in the energy sector, as high lending rates can deter energy infrastructure development, leading to more frequent power losses (Islam & Islam, 2021). As a key driver of infrastructure development, energy investment is directly linked to reducing technical and non-technical losses in the power sector (Wabukala et al., 2022). While the Exogenous Growth Model focuses on the role of external factors in economic growth, a limitation is its assumption that external factors drive technological

advancements without considering the impact of domestic policies (Hassan et al., 2021). This study mitigates this limitation by incorporating factors such as government policies, energy investments, and domestic efforts to improve electricity infrastructure; hence, analyzing the loss of electricity power in Uganda becomes more comprehensive (Wabukala et al., 2022).

Empirical literature review

The relationship between GDP per capita and electricity power loss

The relationship between GDP per capita and electricity power loss is complex, involving economic growth, energy consumption, and infrastructure development. With countries experiencing an increase in GDP per capita, electricity demand usually rises to reflect a more improved standard of living, higher rates of industrialization, and an increased population relying on energy services (Kabeyi & Olanrewaju, 2021). However, this increase in electricity demand often exposes weaknesses in the electricity grid, potentially leading to higher power losses, especially in developing countries with outdated infrastructure (Wabukala et al., 2023). Therefore, increasing per capita GDP would nullify any economic benefits within a country since the inefficiency of the electric sector would augment the losses experienced through poor management, inadequate technology, and even the lack of investment in electricity infrastructure (Abbasi et al., 2021). According to Tudor and Sova (2021), economic growth might have driven the rise in energy consumption. However, reductions in electricity power loss for a country depend mainly on the efficiency of its energy infrastructure, which usually falls behind the high economic growth rates. Sometimes, greater GDP per capita corresponds with an expansion in the industrial sectors that are highly energy-intensive, further putting stress on existing energy systems (Szustak et al., 2021). This strain often leads to technical losses due to inefficient transmission and distribution networks.

In contrast, non-technical losses, such as theft, can be very high and elevate the overall power loss figures (Wabukala et al., 2023). Moreover, Chen et al. (2023) reveal that countries with high GDP per capita are more likely to face power outages, as conventional energy systems cannot cope with the rapidly growing demand for energy and cause disruptions potentially harmful to national economic growth. However, when GDP per capita increases, governments can make more substantial investments in energy infrastructure to reduce these losses and provide better grid stability, as discussed by Das & McFarlane (2022). With a solid energy sector, reliable electricity would further allow continuous economic growth through further enhancement in GDP per capita, forming a self-reinforcing cycle (Wang et al., 2022). Failure in electricity power loss may cause inefficiencies in hindering economic growth; thus, proper alignment of energy policy to objectives set for economic development should be addressed to not waste energy in producing inefficiency instead of driving forward the economic front (Abbasi et al., 2021). This thus portrays an almost intricately related condition between GDP per capita and electricity power loss, where focused investments and reforms must complement adequate energy infrastructure to avoid undermining economic growth benefits (Szustak et al., 2021).

The relationship between Inflation and electricity power loss

The relationship between inflation and loss of electricity power is complex because inflation may affect electricity consumption, energy prices, or the efficiency of the energy systems. Inflation is usually sustained by an increase in the general price level of goods and services that often increases the prices of electricity, thus affecting its demand and the way supply is managed (Bednář et al., 2022). With increased inflation, the price of electricity also tends to increase, creating economic burdens for consumers and industries, especially in developing countries, as stated by Adi et al. (2022). This increased energy cost may lead to lower energy consumption and hence impact the overall electricity demand and utilities' capacity to manage power loss effectively, according to Steinberg et al. (2023). Higher electricity prices, driven by inflation, may also cause consumers to adopt energy-saving behaviors, which can inadvertently reduce utility revenue, limiting their ability to invest in infrastructure and maintenance, thus exacerbating power losses (Roeger & Welfens, 2022).

Additionally, inflation can impact the ability of governments and energy providers to fund necessary upgrades to energy infrastructure, as rising costs often constrain public spending (Abdallah & Kpodar, 2023). The relationship between inflation and power loss is also influenced by the macroeconomic environment, where inflationary pressures can reduce the purchasing power of both consumers and energy companies, preventing the replacement of outdated transmission and distribution infrastructure that contributes to power loss (Magweva & Sibanda, 2020). Inflation can sometimes worsen technical inefficiencies in the electricity sector, as

companies may delay investments in modernizing grid systems due to the high costs associated with inflationary pressures (Razavi & Fleury, 2019). Furthermore, inflation might raise the operating costs of an energy company to the point of forcing it to increase prices further or reduce the quality of the service. It may lead to frequent power outages and higher technical losses (Shapiro, 2022). Therefore, uncontrolled or high inflation could bring about a snowballing effect whereby the increased cost of electricity leads to less investment in energy infrastructure and, eventually, to increased power loss due to Gutium (2019. This issue is particularly evident in developing countries, where inflationary spirals can severely affect the quality of electricity supply, as seen in countries with high energy inefficiencies (Razavi & Fleury, 2019).

Additionally, inflation affects the fuel cost used in electricity generation, influencing the overall cost of electricity production and delivery (Eickmeier & Hofmann, 2022). As fuel prices increase, energy providers may pass on the cost to consumers, exacerbating inflation further and creating a situation where the economic burden of higher electricity prices makes it more difficult for consumers to pay their bills, leading to increased instances of non-technical losses such as theft or illegal connections (Abdallah & Kpodar, 2023). It becomes a vicious circle because inflation and loss of power feed into each other, especially in developing countries where infrastructure is largely old and inadequate to handle increased demand and higher costs (Magweva & Sibanda, 2020). Overall, inflation plays a crucial role in shaping the dynamics of electricity power loss, as it impacts not only consumers' economic conditions but also energy providers' capacity to maintain and upgrade their systems to reduce inefficiencies and losses (Ridzuan et al., 2020).

The relationship between the Lending rate and electricity power loss

The relationship between lending rates and electricity power loss is complex and influenced by various macroeconomic and sectoral dynamics. Lending rate, being the cost of borrowing both for businesses and individuals, may significantly affect the electricity providers' capacity to invest in infrastructure, thus reducing power losses. When lending rates are high, energy companies face increased financing costs for infrastructure projects, which can delay or limit investments in modernizing grid systems and reducing technical losses (Si et al., 2021). This can also exacerbate inefficiencies in electricity transmission and distribution, as outdated infrastructure is more prone to power loss, leading to higher operational costs (Ridzuan et al., 2020). Similarly, high lending rates can discourage private investment in the energy sector, particularly in developing countries, where capital for electricity grid upgrades is already limited (Obafemi, 2021). The higher cost of borrowing can further restrict the ability of energy firms to implement technologies that could improve the efficiency of electricity delivery and reduce losses (Grant et al., 2023). In this respect, increased interest rates could result in higher electricity prices because utility firms pass on the increase in their borrowing costs to the people; thus, electricity consumption is reduced, or non-technical losses like theft may increase (Abu-Rayash & Dincer, 2020). This is especially the case in terms of deregulation, where liberalization of lending rates may lead to financial instability within energy firms, making it more difficult for them to maintain and upgrade essential infrastructure (Si et al., 2021). The high lending rates further contribute to a tight credit environment that may prohibit consumers from financing energy-efficient appliances or renewable energy solutions, adding to electricity power losses (Coskun & Korn, 2021).

Furthermore, the broader economic environment plays a critical role, as high lending rates can suppress overall economic growth, leading to lower electricity consumption and further exacerbating the inefficiency of energy distribution networks (Deryugina et al., 2020). As energy providers face more financial constraints, they may focus on short-term survival rather than long-term improvements, thus increasing the likelihood of technical and non-technical electricity losses (Sam, McNown, & Goh, 2019). Thus, lending rates indirectly affect electricity power loss by influencing the financial viability of energy companies and consumer behavior, with high rates contributing to increased power inefficiencies across the sector (Ridzuan et al., 2020).

The relationship between the real effective exchange rate (REER) and electricity power loss

The REER and electricity power loss are related in their macroeconomic and sectoral determinants, which interact in shaping the efficiency of energy markets. The REER plays a crucial role in determining the competitiveness of a country's energy sector, as fluctuations in exchange rates can directly impact the cost of importing energy, energy technologies, and raw materials necessary for power generation (Patel et al., 2019). A real exchange rate depreciation is usually associated with increased costs of imported energy resources, higher overall costs of generating and transmitting electricity, and, thus, the price of electricity to consumers

(Edwards, 2019). This, in turn, may lead to higher energy consumption costs and the potential for inefficiencies in electricity distribution, especially if energy companies cannot absorb the rising costs (Paudel et al., 2020). Moreover, a weaker exchange rate may prompt governments to raise electricity tariffs to cover higher import costs, exacerbating electricity theft and non-payment of electricity bills, ultimately increasing power loss (Saqib et al., 2021).

On the other hand, appreciation of the exchange rate might decrease the price of energy importation; hence, companies have a better financial record, enabling them to reinvest in modernizing infrastructure to reduce technical losses. According to Dornbusch (2019), the relationship between REER and electricity power loss becomes more complex because of the interlinkages of the exchange rate and the world energy market, remarkably, the oil price. Fluctuations in oil prices, often tied to exchange rate movements, can significantly impact the cost of electricity generation, especially in oil-dependent economies, which may increase electricity losses (Beckmann et al., 2020). Moreover, foreign exchange regimes also influence the impact of the REER on the energy sector, as more volatile exchange rates often lead to more significant uncertainty in energy markets and can deter long-term investment in energy infrastructure (Saqib et al., 2021). A stable REER, in contrast, can encourage investment in energy efficiency improvements and infrastructure upgrades that can reduce the loss of power.

Furthermore, the REER may affect even the availability of financing for energy projects, whereby countries with favorable exchange rates find it easier to attract foreign capital to improve energy infrastructure, hence reducing power loss (Kumar, 2019). However, a strong REER can minimize the cost of energy in emerging economies, further aiding access to improved energy security by reducing theft cases and overall power losses within the networks (Abdin & Mérida, 2019). In sum, REER can impact power losses in electricity supply due to three pathways of effects: imported energy price channels, invested capital and infrastructural spending channels, and the overall general state of the economy.

The relationship between Energy investment and electricity power loss

The relationship between energy investment and electricity power loss is important in knowing the efficiency level of energy systems and their resultant capacity to reduce losses. Energy investment improves energy infrastructure by enhancing grid reliability and capacity, directly reducing electricity power losses (Özdemir et al., 2020). These have been identified to contribute towards a resilient and diversified energy supply, which can help decrease power outages and transmission losses (Lehtola & Zahedi, 2019). Further, targeted investment in energy storage technologies, which would further the intermittent renewable sources, can reduce losses associated with fluctuations in supply by offering stabilizing influences on grid performance (Bigerna et al., 2019). In emerging economies such as Uganda, investments in renewable energy and power sector reforms have enhanced electricity generation capacity, reducing the strain on the grid and mitigating power losses (Probst et al., 2021).

Energy investment also encourages the modernization of transmission and distribution infrastructure, which is crucial for minimizing technical losses, especially in developing regions where the grid is often outdated and inefficient (Godinho & Eberhard, 2019). Moreover, the implementation of advanced technologies such as smart grids, which are supported by energy investments, helps to monitor and control power flows, identify loss points, and optimize energy distribution (Sridharan et al., 2020). Investment in energy efficiency measures, alongside renewable energy deployment, not only improves the sustainability of power systems but also reduces the operational costs that contribute to excessive energy losses (Maulidia et al., 2019). The impact of energy investments on reducing power losses is further amplified by the commitment to long-term energy planning and policy reforms, which ensure that investments are directed towards sustainable and efficient energy systems (Trotter et al., 2019). However, against all the positive impacts of energy investment, inhibitors to electricity security include inadequacies within the regulatory frameworks and financial constraints, which restrict or affect investment efforts in minimizing power losses: Wabukala et al., 2022. As seen in Uganda, for instance, overcoming these barriers requires coordinated efforts from both the public and private sectors to maximize the benefits of energy investments in enhancing grid reliability and reducing power losses (Migisha et al., 2024).

3. Methodology

The methodology of this study was designed to comprehensively examine the macro-financial determinants of electricity power losses in Uganda using a quantitative approach. A time series analysis framework was employed, which allowed for exploring trends and relationships between macro-financial variables and electricity power losses over 20 years (Dokas et al., 2022). Secondary data were collected from reliable sources, including the World Bank, the Bank of Uganda, the Electricity Regulatory Authority, and national statistics (World Bank, 2024). The dependent variable, electricity power losses, was measured as a percentage of total power generated (Murshed and Ozturk, 2023). In contrast, the independent variables included the GDP growth rate, inflation rate, exchange rate fluctuations, public and private energy investments, electricity tariffs, and energy subsidies (Durani et al., 2024). To ensure the stationarity of the time series data, the study conducted Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests, as non-stationary data could have led to unreliable results (Musbah, Aly, and Little, 2023). Johansen's cointegration test was used to identify long-term relationships between the variables, while the Error Correction Model (ECM) captured short-term dynamics in alignment with long-term equilibrium (Laksono, 2024). Granger Causality tests assessed the directional causality between the macro-financial variables and electricity power losses (Dokas et al., 2022). To ensure the robustness of the results, the study performed tests for autocorrelation (Durbin-Watson test), heteroscedasticity (Breusch-Pagan test), and multicollinearity (Variance Inflation Factor) (Ohaegbulem and Iheaka, 2024). Descriptive statistics, such as mean, standard deviation, and range, summarized the dataset, while trend analysis and multiple regression models estimated the relationships between the variables. The model fit was evaluated using R-squared, adjusted R-squared, and F-statistics. The data analysis was conducted using econometric software, specifically STATA, and proper attribution of data sources was maintained to adhere to ethical standards.

Table 1: Data characteristics and data management

Variables	Obs	Mean	Std. Dev.	Min	Max
eloss	33	28.38485	7.967713	16.4	39
gdppercapita	33	1395595	1200120	100793.6	3761142
inflationg	33	10.17962	16.43445	-3.16956	85.35327
lending_rate	33	21.85455	4.301169	18.2	39.1
realeffec	33	113.4229	20.52619	92.12739	179.9531
investment	13	1.22E+08	2.29E+08	18100000	8.72E+08

The summary statistics highlight significant variability across key macro-financial factors in Uganda. *Electricity loss, measured as a percentage difference between the amount of electricity bought and sold,* demonstrates moderate variation with a mean of 28.38 (SD = 7.97), while *GDP per capita* reveals substantial inequality, ranging from UGX 100,793.6 to UGX 3,761,142 (mean = UGX 1,395,595, SD = UGX 1,200,120). *Inflation* shows marked volatility (mean = 10.18, SD = 16.43), with values ranging from deflationary levels (-3.17) to 85.35, reflecting macroeconomic instability. Relatively stable measures include the *lending rate* (mean = 21.85, SD = 4.30) and the *real effective exchange rate* (mean = 113.42, SD = 20.53). However, *investment* data (mean = UGX 122 million, SD = UGX 229 million) shows extreme disparities, with a range from UGX 18.1 million to UGX 872 million.

These variations underscore the need for this study to better understand the relationships among these variables and their implications for electricity efficiency in Uganda. The substantial heteroscedasticity observed, particularly in variables like *GDP per capita*, *inflation*, and *investment*, necessitated the application of log transformations to normalize distributions and reduce skewness, enabling more robust statistical analysis and interpretation. Similarly, the variable energy investment, which had many missing observations, was linearly interpolated to fill in the missing observations. This allowed analysis to proceed.

Table 2: Collinearity Diagnostics

Variables	VIF	SQRT VIF	Tolerance	R-Squared
GDPPC	3.57	1.89	0.2805	0.7195
INFL	1.33	1.15	0.7498	0.2502
LR	1.55	1.24	0.6457	0.3543
REER	3.38	1.84	0.2961	0.7039
ENERGY_INV	4.21	2.05	0.2376	0.7624
Mean VIF	2.81			

The collinearity diagnostics reveal that all variables have a Variance Inflation Factor (VIF) below the commonly accepted threshold of 10, indicating no severe multicollinearity issues in the dataset. ENERGY_INV exhibits the highest VIF (4.21), suggesting moderate collinearity, while INFL has the lowest VIF (1.33), indicating minimal multicollinearity. The mean VIF is 2.81, further supporting the absence of problematic multicollinearity. Overall, the results suggest that the study variables can be included together in the same model with no immediate need for corrective measures regarding collinearity.

Variable Stationarity and Cointegration

Variables were found to exhibit mixed orders of integration. A cointegration test was carried out among the non-stationary series and no cointegration was found using the Johansen cointegration test.

Model Estimation

The study proceeded to estimate a VAR model with differenced variables, based on the following justifications. Although variables exhibited mixed orders of integration, there was no evidence of cointegration among the non-stationary series. A VAR model with differenced variables is efficient in that it allows interpretation of the short-run dynamics of such variables.

4. Results

Table 3: VAR Model

D_ELOSS						
ELOSS						
LD.	.7611035	.0977812	7.78	0.000	.5694559	.9527511
L2D.	.5739792	.1178662	4.87	0.000	.3429657	.8049926
L3D.	-.4332212	.1463151	-2.96	0.003	-.7199934	-.1464489
L4D.	.523297	.0665513	7.86	0.000	.3928588	.6537351
GDPPC						
LD.	-.2648018	.1059047	-2.50	0.012	-.4723712	-.0572325
L2D.	.9340965	.138901	6.72	0.000	.6618555	1.206338
L3D.	.1999771	.0824711	2.42	0.015	.0383366	.3616176
L4D.	.2199378	.1128796	1.95	0.051	-.0013021	.4411777
INFL						
L1.	.0745311	.0166324	4.48	0.000	.0419321	.1071301
L2.	-.1282401	.0224702	-5.71	0.000	-.1722809	-.0841992
L3.	-.0255869	.0081997	-3.12	0.002	-.0416581	-.0095157
L4.	-.0093454	.0124621	-0.75	0.453	-.0337707	.0150799
LR						
L1.	-1.129187	.1637375	-6.90	0.000	-1.450107	-.8082673
L2.	1.882869	.2360365	7.98	0.000	1.420246	2.345492
L3.	-.5170106	.1594004	-3.24	0.001	-.8294297	-.2045915
L4.	.6542883	.0743839	8.80	0.000	.5084986	.8000779
REER						
LD.	.569573	.1857928	3.07	0.002	.2054258	.9337202
L2D.	-.908702	.1541798	-5.89	0.000	-1.210889	-.6065152
L3D.	.3649806	.1354452	2.69	0.007	.0995129	.6304483
L4D.	.0515963	.1299939	0.40	0.691	-.203187	.3063797

Discussion

The results of this study provided significant information about the macro-financial determinants of electricity power loss in Uganda, concerning the relationship between GDP per capita, inflation, lending rate, REER, and energy investment. These results bring about an understanding of the complex dynamics that affect electricity efficiency in the country and are fairly consistent with prior studies in different contexts.

Electricity Loss and Macroeconomic Indicators

The analysis showed that Uganda's average value of electricity loss stood at a moderate value of 28.38% with a significant variation = 7.97. This moderate variation means that while the loss of electricity is a significant issue, it does not occur uniformly across the country. Previous studies, such as that of Adams et al. (2020), identified similar patterns in South Africa, where electricity transmission and distribution losses were influenced by economic growth. The authors attributed such high levels of electricity loss to infrastructural inefficiencies and the general state of the economy. Our findings support this hypothesis, as Uganda's electricity distribution may be exacerbated by general macroeconomic instability and energy infrastructure inefficiencies..

GDP per Capita and Electricity Power Loss

The study found that GDP per capita in Uganda exhibited substantial inequality, with a mean of UGX 1,395,595 (SD = 1,200,120). This highlights significant economic disparities across the country. Previous studies, like those by Simionescu et al. (2019), have suggested that higher GDP per capita is generally associated with improved energy efficiency. However, the vast disparities in Uganda's GDP suggest that economic growth might not necessarily translate into reduced electricity power loss due to other systemic issues, such as inefficient infrastructure or the challenges posed by energy theft. Therefore, while economic growth plays a role, it is not the sole determinant of electricity loss.

Inflation and Electricity Power Loss

The observed inflation rate in Uganda was quite volatile, with a mean of 10.18 and a standard deviation of 16.43, depicting macroeconomic instability. This is supported by the findings of Bednář et al. (2022), who observed that in an emerging economy, inflationary tendencies are likely to translate into increased energy costs and inefficiency in electricity use. High inflation in Uganda could increase the operational cost for companies selling electricity and thus lead to an increase in power losses. Besides, inflation may discourage investors from investing in energy infrastructure, as stated by Saqib et al. (2021), where high inflationary pressures reduced investment in the energy sector, further worsening the technical efficiency of electricity distribution.

Lending Rate and Electricity Power Loss

The study also realized a relatively stable lending rate with a mean of 21.85 and a standard deviation of 4.30, which was associated with energy sector investments. High lending rates usually raise the cost of borrowing, with the effect of reducing the ability of energy companies to invest in much-needed infrastructure upgrades. This finding is in tandem with Si et al. (2021), who, while noting that high interest rates in developing countries discouraged investments in energy infrastructure, leading to operational inefficiencies and higher electricity losses, called for the need to ensure low interest rates. Therefore, Uganda's lending rate tends to limit energy investments and could worsen the situation in terms of loss of electricity.

Real Effective Exchange Rate (REER) and Electricity Power Loss

The study found that in the case of Uganda, the REER has a significant relationship with electricity power loss. The mean and SD for the REER in Uganda were 113.42 and 20.53, respectively. A high REER may indicate the appreciation of a country's currency against its trading partners, hence increasing access to imported energy technologies by reducing their cost. However, REER volatility creates uncertainty in energy prices and hence affects investment in energy infrastructure. This dynamic is further justified by the results of Beckmann et al. (2020), who noticed that the changes in the exchange rate have considerable consequences for energy pricing, which influences the cost of electricity and, thus, the efficiency of power transmission and distribution.

Energy Investment and Electricity Power Loss

Energy investment showed a very wide variation, with an average of UGX 122 million and a very high SD (SD = UGX 229 million). This huge variation in the energy investment depicts that some regions or companies might invest hugely in their energy infrastructure, while others have not put much in place. This result aligns with the

study of Probst et al. (2021), which explained that the continuous inefficiency within the power sector has been due to inadequate investment in energy infrastructure within Uganda. Inconsistencies in the investment of energy can, therefore, be directly attributed to the high level of electricity power loss observed in Uganda.

Collinearity and Statistical Considerations

The collinearity diagnostics indicated no severe multicollinearity issues in the dataset, with all Variance Inflation Factors (VIFs) being below the commonly accepted threshold of 10. This finding is consistent with the study of Ridzuan et al. (2020), who found no major multicollinearity problems in their energy consumption models in Malaysia. The absence of multicollinearity ensures that the variables can be included in the same model without the need for corrective measures, thereby supporting the robustness of the analysis.

Model Estimation and Short-Run Dynamics

As the orders of integration for the variables were mixed and no cointegration was found, the Vector Autoregressive model was estimated with the differences of the variables. This is supported by Abdallah and Kpodar (2023) through the use of VAR models that study dynamic relationships among macroeconomic variables in investigations of inflation and energy prices. The estimation of this model allowed the interpretation of the short-run dynamics, crucial to understanding how these macro-financial determinants interact in the energy sector in Uganda, given the absence of any long-run equilibrium relationships.

5. Conclusion and Recommendations

In conclusion, this study provides valuable insights into the macro-financial determinants of electricity power loss in Uganda. The high contribution from changes in GDP per capita, inflation, the lending rate, the real effective exchange rate, and energy investment to alterations in electricity power loss could be emphasized from the findings. Having established mixed integration orders, a VAR model with differenced variables was estimated to analyze the short-run dynamics. Strong results of the VIF below indicate the absence of severe multicollinearity, hence strengthening the robustness of the model. The study stresses that addressing macro-financial factors-in particular, inflation and energy investment through policies-will minimize electricity power losses, hence increasing the general efficiency in the energy sector in Uganda. These results also contribute to the knowledge on the complex interaction between economic variables and the efficiency of electricity, which might inform future strategies in reforming and investing in the energy sector.

Recommendations

Results from this study have indicated that macro-financial variables such as inflation, GDP per capita, lending rates, the real effective exchange rate, and energy investments are significant in explaining variations in the loss of electricity power in Uganda. Therefore, to address the persistent power losses, policymakers must implement strategies that stabilize inflation, encourage sustainable energy investments, and enhance economic growth. Additionally, improving the management of the energy sector, addressing exchange rate fluctuations, and fostering technological advancements in energy transmission and distribution will contribute to minimizing power losses and improving the efficiency of Uganda's electricity system.

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Macroeconomic Dynamics in Uganda: Investigating the Relationships among GDP Growth, Gross Capital Formation, Population Growth and FDI

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Abstract: This paper sought to investigate Uganda's macroeconomic dynamics, informed by the objective of studying relationships among GDP growth, Gross Capital Formation (GCF), population growth, and net inflows of Foreign Direct Investment (FDI) by applying the endogenous growth theory. These key variables include GDP growth, GCF, population growth, and FDI net inflows; secondary data from national databases and international organizations were collected from 2000 to 2022. In this regard, the study follows a quantitative approach by adopting a descriptive and econometric design to investigate the relationship among the aforementioned variables. The methodological tools were Descriptive statistics, stationarity tests, multicollinearity testing, cointegration testing, and ARDL model estimation. These range from relative stability in GDP growth to the highly volatile GCF growth and smooth population growth trends to negative net inflows indicated by FDI. This confirms the long-run cointegration between the variables, whereby GCF proves to be firmly and positively related to GDP through an ARDL model. In contrast, variables FDI and population growth become influential after due lags. The results show that Uganda needs domestic and foreign investment to maintain economic growth; however, it has to deal with disinvestment challenges and an increasing population for long-term stability. This study finds that capital formation and foreign investment are integral to the Ugandan economy and can, if managed appropriately, ensure continued growth by overcoming these challenges in demography and investment.

Keywords: *Macroeconomic Dynamics, Uganda, GDP Growth, Gross Capital Formation, Population Growth, FDI*

1. Background

Macroeconomic dynamics encompass the interdependent variables influencing a nation's overall economic performance, including GDP growth, gross capital formation, population growth, and foreign direct investment (FDI) inflows (Adam, 2021). These variables are intricately connected, influencing the others in complex ways that ultimately shape a country's economic trajectory (Asongu, 2013). For instance, population growth contributes to economic output by increasing labor and boosting domestic demand (Alam, Nur Alam, & Hoque, 2020). Simultaneously, GDP growth fosters improvements in capital formation, as a growing economy attracts more investment into infrastructure and productive assets (Koskei, Buigut, & Kibet, 2013). The relationship between GDP and FDI is particularly significant, as FDI brings capital, technology, and managerial expertise, further driving economic expansion and enhancing productivity (Edwards, Naanwaab, & Romero, 2017). In regions like Africa, while population growth presents opportunities and challenges, such as expanding labor forces that can drive consumption, it also necessitates substantial investments in infrastructure and education to harness its full potential (Chirwa & Odhiambo, 2018). Over the past two decades, many African countries, including Uganda, have struggled to fully capitalize on these dynamics due to gaps in infrastructure and capital formation (Hasnawati et al., 2024). Statistical evidence highlights Uganda's population growth rate, which, while high, has not been matched with a commensurate increase in investment or GDP growth, thus limiting the country's ability to absorb and utilize its expanding workforce effectively (Kirby, 2022). The implication is that strategic investments in capital formation should occur, as improving infrastructure and regulatory frameworks have accommodated stronger FDI inflows and higher GDP growth in other economies (Kosztowniak, 2016).

To better understand these macroeconomic dynamics, it is best viewed through the endogenous growth theory, which emphasizes internal factors such as human capital, innovation, and technology for sustained economic growth. Jones (2019 has propounded a similar view. This theory postulates that a nation's growth is induced by external factors such as capital investment and internal factors in its capacity to generate and adapt new ideas and technologies that augment productivity (Howitt, 2010). This framework is particularly relevant to Uganda, whose population growth, while rewarding an increase in the labor force, needs simultaneous

investments in education, technological development, and infrastructure to make the labor force productive enough to contribute meaningfully to GDP growth (Schilirò, 2019). Recent studies indicate that while FDI inflows have increased in Uganda, these investments have not fully translated into higher economic growth due to insufficient human capital and technological capacity to utilize these investments effectively (Qamruzzaman, 2024). This situation is characteristic of findings in other African countries, where capital formation, such as in education and infrastructure, would improve returns on FDI and ensure the growing population gets integrated into the formal economy. As Kanu & Ozurumba 2014 note, the critical areas on which to focus in Uganda involve improving infrastructure along with human capital development to keep pace with population growth. However, the studies indicate that, whereas Uganda's capital formation is improving, its effect on GDP is minimal due to incomplete engagement of the private sector and sluggish progress of technological change, as observed by Achar et al. in 2024. The endogenous growth theory, therefore, informs this study by providing a framework to assess the possibility of Uganda exploiting its increasing population and external investments to realize more sustainable economic development, as Yuan and Zhang noted in 2024. In conclusion, understanding the interplay between population growth, capital formation, FDI, and GDP growth is vital for developing effective strategies to stimulate and sustain Uganda's economic growth (Adam, 2021; Sendi, Mayanja, & Nyorekwa, 2021).

2. Literature Review

Theoretical literature review

This study is founded on the Endogenous Growth Theory, developed by Paul Romer in the 1980s. The theory emphasizes the internal factors that explain long-term economic growth, such as human capital, knowledge, and innovation, rather than dependence on external factors (Howitt, 2010). According to Romer, economic growth stems from the accumulation of knowledge and the increasing returns to scale associated with investments in human capital and innovation (Jones, 2022). In this study, the theory helps to explain the relationships between key macroeconomic variables, such as GDP growth, Gross Capital Formation (GCF), Foreign Direct Investment (FDI), and population growth, that are integral to Uganda's economic dynamics. The theory postulates that GCF and FDI contribute to long-term sustainable economic growth by increasing productive capacity. In contrast, population growth is a source of labor supply, where its contribution to output highly depends on the extent of human capital utilization (Chirwa & Odhiambo, 2018). This paper, therefore, explores the interaction of these variables within the context of endogenous growth that perpetuates Uganda's economic performance as a whole.

Previous literature has applied the Endogenous Growth Theory to different contexts for some insight into its applicability. Bolkol (2023) analyzed regional income convergence in Turkey and found that human capital and innovation investments were key to reducing regional disparities. Yuan and Zhang (2024) assessed the role of entrepreneurship and technological progress in sustaining growth in resource-dependent economies, illustrating the importance of endogenous factors like knowledge and human capital. Acs and Sanders (2021) explored regional extensions of the theory, emphasizing that localized investments in human capital and technology were central to fostering economic development. Zhang (2018) investigated the relationship between capital, knowledge, and institutions, confirming the theory's role in driving long-term economic growth. Despite its strengths, the Endogenous Growth Theory has limitations, such as simplifying knowledge and human capital's impact, failing to fully consider institutional constraints, or the complexities of technological diffusion (Jones, 2019).

Additionally, it struggles to explain why some economies, despite investing in these endogenous factors, do not experience commensurate growth (Chirwa & Odhiambo, 2018). This paper remedies these shortcomings by analyzing Uganda's institutional context. It discusses the interaction of domestic policies, infrastructure, and exogenous factors like FDI that determine the potency of endogenous drivers of growth. It enriches the understanding of their interactions in influencing Uganda's macroeconomic performance.

Empirical literature review

The Relationships Among GDP growth, Gross capital formation, Population Growth, and FDI net inflows.

In understanding the relationships among GDP growth, gross capital formation, population growth, and FDI net inflows, the interaction of these variables with one another will determine the macroeconomic dynamics

of a country. First, there is a strong linkage between population growth and GDP. A growing population increases the labor force, which, if skilled and employed in productive sectors, may contribute to higher GDP (Kitov, 2008). However, if population growth outpaces economic output, it can strain resources, leading to lower per capita income and reduced living standards (Cai & Lu, 2013). This dynamic is especially relevant for Uganda, where rapid population growth has not consistently translated into higher GDP due to a lack of adequate investments in human capital (Kirby, 2022). For this reason, comprehension of how population growth affects GDP is important in developing policies to boost productivity in labor and economic growth (Lianos, Pseiridis & Tsounis, 2023). Gross capital formation is another crucial factor in linking population growth and macroeconomic performance. Generally, a growing population increases the need for infrastructure, housing, and other forms of services, hence encouraging capital formation by raising physical and human capital investments (Sijabat, 2022). However, this may not always be the case, as in countries like Uganda, population increase has outgrown capital formation, where the capital deficit impeded economic growth because of a lack of capital formation, according to Ntamwiza & Masengesho, 2022. Therefore, depending on the investment environment, population growth may further enhance capital formation or worsen the problem of inadequate investment in vital sectors. Hasnawati et al. (2024) support this. Other studies, such as those by Asongu (2013) in Africa, indicate that population growth can stimulate or impede capital formation, depending on government policies and the general investment climate. This gap in how population growth influences capital formation in Uganda presents an important area for further research.

GDP growth and FDI inflows are often positively correlated, as FDI can stimulate economic activity by enhancing industrial capacity, transferring technology, and increasing productivity (Agrawal & Khan, 2011). A higher GDP growth rate can also attract FDI, as foreign investors are generally more likely to invest in growing economies with a higher potential for returns (Sengupta & Puri, 2020). However, while FDI inflows contribute to GDP growth, the relationship can be more complex in developing countries like Uganda, where FDI has not always led to proportional economic growth. The impact of FDI on Uganda's GDP depends on factors such as the efficiency of investments and the ability of the economy to be absorptive (Sadikova, Faisal & Resatoglu, 2017). This, therefore, presents a research gap in understanding how FDI inflows can be optimized to contribute more effectively to the growth of Uganda's GDP. Koskei et al. (2013) pointed out that different types of FDI, especially those channeled into agricultural and technological sectors, are expected to contribute a great deal to the overall GDP growth of Uganda. The correlation between population growth and FDI inflows is, however, mixed. A growing population may attract more FDI inflows due to the increase in market size, which presents an opportunity for a foreign investor regarding consumer demand and labor force availability, as Aziz and Makkawi (2012) pointed out. However, rapid population growth may lead to higher resource competition, political instability, and infrastructure bottlenecks, deterring FDI (Koskei, Buigut & Kibet, 2013). In Uganda, population growth has not always been correlated with a significant increase in FDI, with factors such as political instability, weak infrastructure, and inadequate policies identified as barriers to attracting foreign investment (Koskei et al., 2013). Again, the effect points to a complex relationship between population growth and FDI, hence more effective targeted policies to attract investment given Uganda's demographic trends by Alam, Nur Alam & Hoque, 2020. This study now tries to determine the interaction of the population growth variable with FDI and its eventual consequences for economic growth in Uganda.

Another important determinant of economic growth is the relationship between FDI and gross capital formation. FDI inflows stimulate capital formation by bringing in foreign capital, which is crucial in financing infrastructure and industrial development (Xia, Qamruzzaman & Adow, 2022). In Uganda, FDI could decisively help with the capital shortage by investing in basic infrastructure, such as energy and technology-related areas, which are essential for long-run economic growth (Kumari & Sharma, 2018). However, there are issues: the capacity to attract a sufficient volume of foreign investment, together with providing a suitable investment climate for private capital accumulation in Uganda, has meant the contribution of FDI towards capital formation remains weak (Sijabat, 2022). Understanding how FDI can enhance capital formation in Uganda is an important aspect of this study, as it will help policymakers design strategies to improve the capital investment climate and accelerate economic growth (Alam, Nur Alam & Hoque, 2020). The relationship between GDP and gross capital formation is one of the most well-established in economic theory, with gross capital formation being a primary driver of GDP growth (Kumari & Sharma, 2018). Increased investment in infrastructure, machinery, and technology enhances the productive capacity of an economy, leading to higher output and, consequently, higher GDP (Koskei et al., 2013). However, despite the potential for higher GDP growth through capital

formation in Uganda, the country faces significant challenges in mobilizing sufficient capital for investment (Ntamwiza & Masengesho, 2022). Inadequate capital formation has constrained Uganda's ability to reach its growth potential, presenting a key gap in the literature (Asongu, 2013). This study tries to establish the contribution of gross capital formation to GDP growth in Uganda and how targeted investments in key sectors unlock higher GDP growth. According to Qamruzzaman (2024), the interaction between GDP growth, gross capital formation, population growth, and FDI inflows is an interplay of complex relationships determining a country's macroeconomic performance. While these variables are interlinked and reinforcing, the magnitude of their effects is contextual, given the policy environment, level of economic development, and structural factors. Lianos et al. (2023) present that, in Uganda, the exact nature of these relationships has not been fully explored, and this study tries to fill these gaps by investigating the specific dynamics between these variables in the Ugandan context. Therefore, this study seeks to develop actionable insights through which Uganda's economic policy and development strategy could be informed by understanding the interplay between population growth, capital formation, FDI, and GDP (Sadikova, Faisal & Resatoglu, 2017).

3. Methodology

This study employs a quantitative approach with a descriptive and econometric design to analyze the relationships among GDP growth, Gross capital formation, population growth, and FDI net inflows in Uganda. The population comprises Uganda's economic indicators from 2000 to 2022, with secondary data from national databases and international organizations. Data collection methods include gathering annual data on GDP growth, Gross Capital Formation (GCF), population growth, and Foreign Direct Investment (FDI) net inflows. Validity was ensured by carefully selecting relevant variables and reliable data sources, while reliability was tested through consistency in data over the study period. Data analysis involved descriptive statistics, stationarity tests (ADF), multicollinearity checks, cointegration tests, and ARDL model estimation. Limitations of the study include potential data constraints, such as missing or inaccurate values in FDI flows and the assumption that the relationships observed over time remain constant. Additionally, the study does not account for potential external shocks or policy changes that may influence economic dynamics.

4. Study Findings

Table 1: Data View and Descriptive Analysis

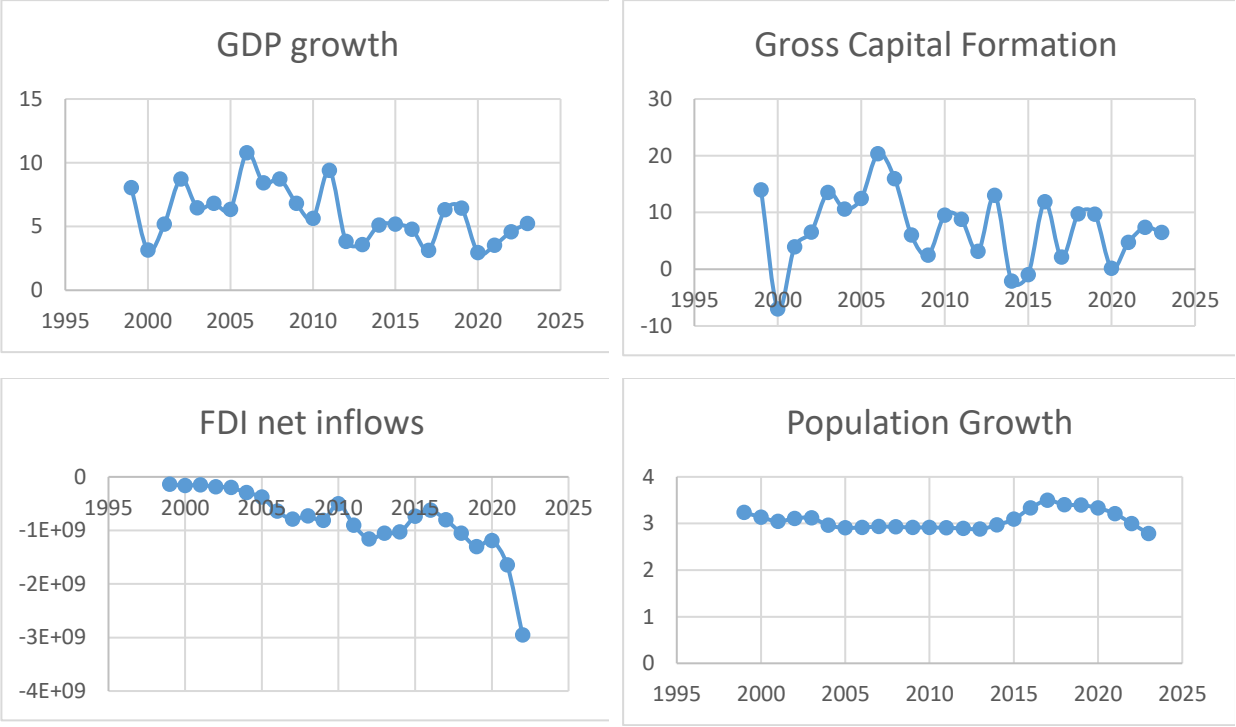
Statistics	GDP growth rate	Gross Capital Formation	Population growth	FDI net inflows
Mean	5.965734	7.289664	3.072289	-8.11E+08
Standard Deviation	2.138052	6.25831	0.197636	6.14E+08
Min	2.951306	-6.98748	2.78161	-2.95E+09
Max	10.78474	20.34784	3.496469	-1.40E+08

The descriptive statistics provide a detailed overview of the distribution and variability of the study variables, highlighting their central tendencies and dispersion. The GDP growth rate has a mean of 5.97%, with a standard deviation of 2.14%, indicating moderate variability around its average, and a range spanning from a minimum of 2.95% to a maximum of 10.78%. This relatively stable distribution suggests consistent economic growth with occasional peaks and troughs. Similarly, Gross Capital Formation (GCF) shows more significant variability, with a mean of 7.29%, a standard deviation of 6.26%, and a wide range from -6.99% (indicating disinvestment) to 20.35%. This wide range reflects fluctuations in Uganda's investment levels, likely driven by economic cycles or external factors.

Population growth has a mean of 3.07% with a low standard deviation of 0.20%, indicating minimal variation around the average and suggesting a stable demographic trend. In contrast, FDI net inflows have a negative mean value of -811 million, indicating consistent net outflows over the period analyzed, with a standard deviation of 614 million. The range of FDI spans from -2.95 billion to -140 million, reflecting significant variability in foreign investment trends. These distributions indicate that the variables provide meaningful variation and patterns necessary for robust econometric analysis, with no extreme outliers or unrealistic values

that would compromise the validity of the preceding statistical models. The data appears well-suited for regression or time series analysis, as it reflects realistic economic and demographic dynamics over the observed period.

Figure 1: Trend analysis of study variables



The trend analysis of the study variables reveals distinct patterns over the years. GDP growth shows significant fluctuations, peaking in the mid-2000s before stabilizing at lower levels post-2015, indicating periods of economic volatility followed by moderate growth. Gross Capital Formation (GCF) exhibits cyclical behavior, with sharp increases in the early 2000s and notable dips around 2015, suggesting intermittent investment growth and contraction periods. FDI net inflows present a downward trend, starting with relatively stable inflows around 2000 but declining sharply after 2020, reflecting potential disinvestment or reduced foreign investor confidence. Population growth remains relatively stable, peaking slightly around 2015 before experiencing a gradual decline, which may indicate demographic or fertility trend shifts. These trends provide key insights into Uganda's economic and demographic landscape dynamics.

Therefore, the trend option is included in the stationarity test to account for the deterministic trends observed in variables like GDP growth, GCF, and FDI. These variables exhibit systematic changes over time, and ignoring this component could lead to false conclusions about non-stationarity. Incorporating the trend ensures accurate testing and reliable model specification.

Table 2: Stationarity tests at variable levels

Variable	Test Conducted	Null Hypothesis	Test Statistic z(t)	Critical Value (5%)	P-Value	Conclusion
GDP	ADF (with trend)	Has a unit root	-3.682	-3.600	0.0236	Stationary (trend)
GCF	ADF (with trend)	Has a unit root	-4.334	-3.600	0.0028	Stationary (trend)
FDI	ADF (with trend)	Has a unit root	-3.67	-3.34	0.02	Stationary (trend)

Population	ADF (with drift)	Has a unit root	-1.937	-1.734	0.0343	Stationary (drift)

The results of the Augmented Dickey-Fuller (ADF) stationarity tests indicate that GDP, Gross Capital Formation (GCF), and Foreign Direct Investment (FDI) are all stationary when a trend is included in the model, as their test statistics are below the critical values at the 5% level, with corresponding p-values below 0.05. This implies that these variables exhibit a deterministic trend and do not require further differencing to achieve stationarity. On the other hand, the Population is stationary with a drift, as the ADF test statistic is below the critical value at the 5% level with a p-value of 0.0343. This suggests that while the Population lacks a deterministic trend, it is stationary around a mean with a constant drift. These findings validate that all variables are appropriately stationary at their levels under the given conditions, making them suitable for inclusion in the econometric model to be estimated. Variables were log-transformed and tested for multicollinearity

Table 3: Multicollinearity check

Variable	VIF	1/VIF
Gross Capital Formation	1.02	0.985195
Population	1.01	0.985281
FDI	1.00	0.999317
Mean VIF	1.01	

These results confirm that the independent variables (Gross Capital Formation, Population, and FDI) are not highly collinear, providing distinct information to explain variations in the dependent variable. This strengthens the reliability of the estimated coefficients and ensures that the model is not compromised by multicollinearity. Consequently, the model's inferences about the relationship between GDP growth and the explanatory variables are valid.

Table 4: Test for cointegration

Statistic	Observed Value	Critical Value (I0, 5%)	Critical Value (I1, 5%)	Decision (5%)
F-statistic	6.003	4.101	5.865	Reject H_0
t-statistic	-4.65	-2.963	-3.977	Reject H_0

At the 5% significance level, the Pesaran, Shin, and Smith (2001) bound test results provide evidence of a long-run relationship among the variables. The F-statistic (6.003) exceeds the critical bounds for I(0) and I(1) at 5% (4.101 and 5.865, respectively), leading to the rejection of the null hypothesis of no level relationship. Similarly, the t-statistic (-4.650) is more extreme than the I(1) critical value at 5% (-3.977), confirming a significant adjustment mechanism toward equilibrium in the long run.

These findings indicate that the variables in the model are cointegrated at the 5% level, implying that they share a stable long-run relationship. These results support further analysis of the short-run and long-run dynamics using the ARDL model.

Table 5: ARDL model estimation

D.GDP	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
ECT	-1.68578	0.362566	-4.65	0.001	-2.47575	-0.89582
Long Run						
GCF	0.303186	0.063394	4.78	0.000	0.165063	0.441309
Population	-1.27875	0.619129	-2.07	0.061	-2.62772	0.070218
FDI	0.125922	0.052033	2.42	0.032	0.012553	0.239291

Short Run						
GDP_{LD}	0.818871	0.270709	3.02	0.011	0.229046	1.408695
D.GCF	-0.28852	0.114888	-2.51	0.027	-0.53884	-0.0382
GCF_{LD}	-0.19421	0.073241	-2.65	0.021	-0.35379	-0.03463
D.FDI	0.063571	0.300586	0.21	0.836	-0.59135	0.718491
FDI_{LD}	0.957547	0.324156	2.95	0.012	0.251273	1.663821
Constant	8.922826	2.335299	3.82	0.002	3.834645	14.01101

In the short run, GCF hurts GDP growth in Uganda, suggesting that initial investments may introduce inefficiencies or adjustment costs before generating returns. This finding is consistent with results from low-income countries, where capital formation often faces challenges such as delays in implementation and absorption of funds (Topçu et al., 2020). However, in the long run, GCF demonstrates a strong positive effect on GDP, reflecting its role in expanding Uganda's productive capacity. Similar results were found in Rwanda, where GCF significantly influenced GDP growth in both the short and long run, highlighting the critical role of investments in fostering economic development (Ntamwiza & Masengesho, 2022). For Uganda, this suggests that prioritizing infrastructure and industrial investments can create a foundation for sustained economic growth, aligning with the exogenous growth theory's emphasis on capital accumulation as a growth driver.

Population growth shows no significant impact on GDP growth in the short run, likely reflecting the time needed to integrate an expanding labor force into productive economic activities. However, in the long run, it has a marginally significant negative impact on GDP, suggesting that rapid population growth may strain Uganda's limited resources and infrastructure. Similar patterns are observed in developing regions where high population growth dilutes the benefits of capital formation and imposes pressure on existing economic systems (Topçu et al., 2020). This underscores the importance of addressing structural constraints, as highlighted in studies emphasizing that population growth must be complemented by investments in education, health, and employment to convert demographic trends into a growth advantage (Aslan & Altinoz, 2021).

FDI shows no significant impact on GDP growth in the short run. It is consistent with findings that foreign investments often have delayed effects as they require time to integrate into the local economy. However, lagged FDI positively influences GDP growth, and in the long run, it has a significant positive impact, aligning with evidence from African economies where FDI contributes to technological transfer, industrial development, and market integration (Pasara & Garidzirai, 2020). For Uganda, this indicates the potential of FDI to act as a catalyst for sustainable growth if paired with policies that foster a stable investment climate. Additionally, studies in developing economies suggest that FDI's effectiveness is enhanced when coupled with domestic reforms and infrastructure development to maximize productivity spillovers (Ntamwiza & Masengesho, 2022).

Post-model estimation diagnostics
Normality test for residuals

Table 6: Shapiro-Wilk test for normal data

Variable	Obs	W	V	z	Prob>z
Residuals	22	0.98298	0.431	-1.705	0.95593

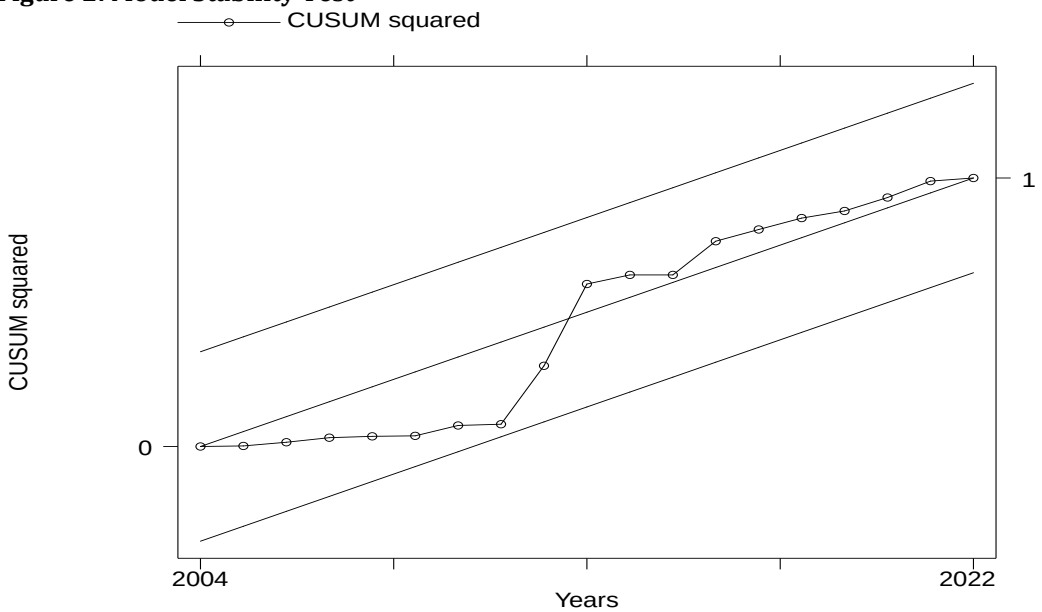
The results of the Shapiro-Wilk test suggest that the residuals conform to the assumption of normality. The test statistic (W = 0.98298) is close to 1, indicating a strong alignment with a normal distribution, while the p-value (P > z = 0.95593) far exceeds the conventional significance threshold of 0.05. Consequently, the null hypothesis of normality cannot be rejected, providing robust evidence that the residuals exhibit a normal distribution, which supports the validity of this assumption in the model.

Table 7: Heteroscedasticity test

Test Statistic	Value	P-value	Hypothesis
Chi-squared (1)	0.08	0.784	H0: Constant variance (homoskedasticity)

The results of the Breusch-Pagan/Cook-Weisberg test for heteroskedasticity indicate that the null hypothesis of constant variance (homoskedasticity) cannot be rejected, as the test statistic (Chi-square (1) = 0.08 yields a p-value of 0.784, which is far above the conventional significance levels of 0.05. This implies that there is no evidence of heteroskedasticity in the residuals, and the assumption of constant variance is satisfied

Figure 2: Model Stability Test



The results suggest that the model's parameters are stable over time, as the CUSUM squared line remains within the critical boundaries throughout the observed period (2004–2022). There is no evidence of structural instability in the model.

Discussion

Analysis of Uganda's economic indicators gives an overall understanding of the inter-relationship between GDP growth, Gross Capital Formation, population growth, and FDI inflow. The descriptive statistics show that, on average, the GDP growth rate for Uganda is 5.97% with a moderate dispersion, which stipulates that the nation's economic performance has remained relatively stable but unpredictable. GCF is highly volatile and reflects sensitivity to investment cycles. Population growth is steady with minimal fluctuation, as is expected in a developing economy. FDI shows negative net inflows, reflecting disinvestment, a pattern seen in other developing economies. This also aligns with the work of Sadikova et al. (2024), who studied the impact of energy use, FDI, and population growth on unemployment in Russia. According to them, countries receiving unstable foreign investment flows will likely suffer from poor economic growth. Similarly, Sengupta and Puri (2020), in their study of the effects of FDI on GDP in India and its neighboring countries, found that countries receiving irregular capital inflows are more likely to suffer from increased economic instability. Trend analysis of the study variables shows cyclical behaviors, with GDP growth and GCF demonstrating fluctuations over time.

This is highly evident by the drop in FDI in recent years. It corroborates the arguments of Xia et al. (2022) on how remittance-driven human capital development is related to FDI. According to these authors, FDI streams are susceptible to changes both in external market conditions and in the implementation of domestic policy. Indeed, the analysis of the effect of FDI and GCF on economic growth in Rwanda, done by Ntamwiza and Masengesho (2022), showed that regional and global factors cause fluctuations in FDI. Population growth

peaked around 2015 and has been in decline ever since, thus supporting the argument of Yuan and Zhang 2024, who, while studying the relationship between natural resources, sustainable growth, and entrepreneurship in the context of population dynamics and economic expansion, concluded that countries that have stable or declining population growth usually face slower long-term economic growth. Stationarity tests conducted for the data in this study confirm that the GDP, GCF, and FDI are trend stationary, while population growth is difference stationary; hence, the data are suitable for further econometric analysis.

The Pesaran, Shin, and Smith bounds test results support the presence of long-run relationships among the variables, confirming that GDP, GCF, FDI, and population growth share a stable long-run equilibrium. This result also supports Qamruzzaman (2024), who examined the nexus of FDI, GCF, financial development, and renewable energy consumption and found that, in developing countries, these variables are interrelated and will move to attain their long-run equilibrium over time. Furthermore, the estimation of the ARDL model indicates that GCF has a negative short-run impact on GDP but has a strong positive effect in the long run. This shows that capital investment yields a return in a lagging manner. This is also the finding of Kanu and Ozurumba (2024) in their work on capital formation and economic growth in Nigeria, where the researchers established that capital investments show their complete effect later in increasing GDP. The diagnostic tests further corroborate the model's strength, as the normal distribution of residuals is confirmed by the Shapiro-Wilk test, no heteroscedasticity was detected by the Breusch-Pagan test, and the stability of the model is confirmed by the CUSUM squared test.

The results further assure the model's integrity in depicting an underlying relationship within the variables identified in Uganda's economic setting. There is no repetition of variables that could show perfect multicollinearity; hence, the VIF test results ensure that each factor contributes uniquely. This result is in line with the approach Sijabat (2022) followed while analyzing the relationship between economic growth, foreign aid, FDI, and GCF in Indonesia; he found that the absence of multicollinearity increased the accuracy and interpretability of econometric models. The latter fact was put forth in a parallel paper dealing with FDI-GCF and their effects on the economy's growth rate, undertaken by Koskei et al. (2023). Their argument stated that policy recommendations need confirmation by diagnostic tests that assert the soundness of such a model.

5. Conclusion

In conclusion, Uganda's economic performance is shaped by a complex interaction between GDP growth, Gross Capital Formation (GCF), population growth, and Foreign Direct Investment (FDI). The analysis reveals that while GDP growth is relatively stable with occasional fluctuations, GCF demonstrates considerable volatility, reflecting the nation's sensitivity to investment cycles. Population growth remains steady, with minimal fluctuations, while FDI shows negative net inflows, indicating disinvestment trends common in developing economies. The study's findings align with endogenous growth theory, which emphasizes the critical role of investment and capital formation in driving long-term economic growth. The positive long-term impact of GCF on GDP supports the idea that sustained capital accumulation fosters economic expansion. However, the short-term adverse effects highlight delays in realizing investment returns. Similarly, while FDI shows no immediate short-term impact on GDP, its positive long-term influence suggests that foreign investment can significantly contribute to economic development if coupled with supportive policies. These findings reinforce the importance of domestic and foreign investment as key growth drivers in Uganda's economic landscape while highlighting the challenges posed by disinvestment and demographic changes.

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The Combined Effect of Social Capital and Personal Initiative on Women's Self-Employment in Mbarara City

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Abstract: The research investigated the impact of social capital and personal initiative on women who start businesses in Mbarara City, Uganda. The research focused on women's low entrepreneurial participation because self-employment has become recognized as a tool for economic empowerment. The research employed a cross-sectional quantitative survey design to gather data from 382 women entrepreneurs through self-administered structured questionnaires. The research used stratified random sampling to achieve business sector and geographical area representation. SPSS analyzed the data through Pearson correlation and regression models, which tested the study hypotheses. The analysis showed that social capital demonstrated a positive and statistically significant relationship with women's self-employment ($r = .478$, $p < .01$) and personal initiative showed a similar positive relationship ($r = .563$, $p < .01$). The combined impact of social capital and personal initiative explained 33.3% of the self-employment variations among women in Mbarara City (Adjusted $R^2 = .333$). The research indicates that women's economic success depends on developing social connections and promoting proactive entrepreneurial behaviors through targeted interventions. The research demonstrates through empirical evidence that specific policies and programs must develop social networks and promote personal initiative while eliminating barriers to women's self-employment in urban Uganda.

Key words: *Social capital and personal initiative, Women's Self-Employment, Mbarara City*

1. Background to the Study

Self-employment among women acts as a key force that both enhances personal strength and minimizes gender inequalities while creating conditions for national economic growth. Through their entrepreneurial activities, women create transformative change by defying traditional gender expectations while developing both their personal lives and professional careers, according to the International Labour Organization (2023). Social capital functions as a key enabling factor for women's entrepreneurship because it includes networks and relationships together with shared norms that provide essential resources and support systems for business success (Dal Mas & Paoloni, 2020; Nieuwenhuizen, 2022). Women's self-initiative functions as a vital factor that demonstrates their ability to act proactively through innovative approaches while maintaining their resilience. The ability of women to identify entrepreneurial opportunities enables them to exploit these chances even in situations where structural barriers continue to exist (Nsereko et al., 2021). Self-employment has emerged as a promising solution to economic inclusion for women because they face higher unemployment compared to men across the world. According to the Global Entrepreneurship Monitor (2023), women make up one-third of all entrepreneurs throughout the world. The restricted growth of women in self-employment business ventures is mainly because they lack access to capital along with mentorship and market possibilities (Wang et al., 2020).

Women in Africa establish their businesses both as a survival method and as an intentional strategy against the high unemployment figures in their nations. The Mastercard Index of Women Entrepreneurs (2021) shows that female business ownership in Uganda, Ghana and Botswana exists at high levels due to both compelling reasons and favorable conditions. Nevertheless, challenges persist. The inability to build solid social networks together with weak personal initiative makes it difficult for women to expand their businesses and maintain prolonged growth, according to Babajide et al. (2022) and Sahani (2023).

Self-employment functions as an essential survival method for women in Uganda because of the severe gendered labor gaps that persist throughout the country, particularly in Mbarara City, which stands as a major urban center in the southwestern area. Traditional Ankole customs that shape community bonds lead to better female entrepreneurial performance (Nsereko et al., 2021). Women's self-employment rates in Mbarara are currently low because of insufficient social capital and weak self-initiative (Gavigan et al., 2020; Kusemererwa

et al., 2020). The restrictions indicate the requirement of specific programs that focus on building women's entrepreneurial potential and support structures. The research investigates the connections between social capital, along with self-initiative, and female self-employment in Mbarara City. The research aims to develop country-specific findings that will guide policy-making and program development to boost women's economic empowerment and involvement.

2. Empirical Literature Review

Theoretical Underpinning

Social Capital Theory and Social Role Theory provide two theoretical frameworks that support this research as complementary approaches to examine women's self-employment and entrepreneurship dynamics. According to Social Capital Theory, networks with relationships, together with shared norms, function as important resources that help individuals obtain support and information and access resources. Women entrepreneurs depend on social capital to acquire business opportunities, together with mentorship and financial resources, and emotional support from their informal and formal networks (Babajide et al., 2022; Setini et al., 2020). Women need these networks most in situations where institutional resources remain restricted or unavailable. Women entrepreneurs in Uganda maintain their business operations through networks that include family connections and peer communities as well as community-based organizations (Gavigan et al., 2020).

Social Role Theory provides an additional framework to understand how cultural expectations and social norms affect gender roles, which in turn determine women's economic activities and entrepreneurial ambitions. The deeply ingrained gender stereotypes limit women's career goals and their ability to feel effective as entrepreneurs because they learn to put domestic duties above economic activities (Bullough et al., 2022; Wandera et al., 2021). Women face both structural and psychological obstacles to self-employment because of normative expectations that exist in patriarchal societies. The combination of these two theories enables a deeper analysis of the enabling and constraining factors. Social capital offers structural support for entrepreneurship, but social role expectations establish the operational limits for women. Personal initiative functions as a mediating factor that enables women to break through social limitations and maximize their network potential for business success (Casabianca et al., 2023; Sahani, 2023). The combination of personal initiative and resilience and proactive behaviors in women enables them to overcome societal obstacles and achieve better economic control (Kusemererwa et al., 2020).

The research investigates how women in Mbarara City use their social connections to break through gender expectations and achieve economic independence. The application of these theories requires critical examination. Understanding how different dimensions of women's lives intersect through class, education, ethnicity and age provides a comprehensive view of gender and entrepreneurship (Casabianca et al., 2023). The research supports an integrative theoretical approach that both identifies obstacles and emphasizes women's ability to transform themselves.

The correlation between social capital and self-employment

Academic research extensively investigates the complex relationship between social capital and self-employment (Barugahara & Barungi, 2023). The study of social capital effects on self-employment has produced multiple findings across multiple research settings (Hamdani et al., 2023). The foundation of social capital enables entrepreneurs to access important resources, together with vital information needed to achieve success (Amiri, 2022). People who belong to extensive social networks gain financial backing together with business guidance and market understanding from their connections, which helps them achieve their objectives and seize new opportunities (Muhammad et al., 2020). The development of social capital creates trust relationships and cooperative partnerships, which produce business-friendly environments that promote innovation (Babajide et al., 2022). Strong social connections enable groups to work together while sharing knowledge and solving problems, which creates supportive environments that boost entrepreneurship (Nsereko et al., 2021). Social capital has a direct impact on the development of entrepreneurial identity, along with the level of ambition that entrepreneurs possess. The view of self-employment as a practical career choice becomes more appealing to people when they encounter supportive networks filled with entrepreneurial role models (Bridges et al., 2022).

The composition and arrangement of social networks directly impact the business results that individuals achieve (Nieuwenhuizen, 2022). Studies demonstrate that network characteristics such as size and diversity and density determine both self-employment choices and entrepreneurial success probabilities (Kawamorita et al., 2021). The availability of resources and business opportunities grows larger when networks expand, thus boosting the chances of new business entry and maintenance (Gavigan et al., 2020). Business innovation and creativity benefit particularly from networks with diversity because they present members with different perspectives as well as knowledge bases and life experiences (Kisubi et al., 2021). Network density, which represents the degree of contact links between members, also influences results (Kriaa et al., 2020). When networks become densely connected, they enhance trust and collaboration yet restrict exposure to fresh information and different viewpoints, which can limit innovation and growth (Bormann et al., 2021). Networks need strong and weak ties to function effectively. Strong ties deliver both emotional support and immediate help, but weak ties bring necessary external business development opportunities together with new concepts (Bullough et al., 2022; Setyaningrum et al., 2023). The analysis of social network dynamics enables evaluation of how self-employment happens and helps develop appropriate support structures for new entrepreneurs (Wandera et al., 2021).

Social capital serves as a driver of community and regional development as well as individual success (Dal Mas & Paoloni, 2020). Research demonstrates how social capital generates positive effects that benefit both local economic development and entrepreneurial environments (Sengupta, 2019). Networked communities achieve joint action and civic involvement, which leads to developing institutions and infrastructure and policies that benefit entrepreneurship (Bridges et al., 2022). Local economies benefit from social capital through its ability to spread resources and knowledge, which strengthens business networks and supply chains and market connections, leading to better sustainability and resilience (Kusemererwa et al., 2020). Societies with high social capital levels develop both trust among their members and social cohesion, which are essential to attract investments and support business activities through cost reduction (Amiri, 2022). Community social capital development investments produce substantial beneficial outcomes, which drive self-employment growth and economic development and societal health improvements.

The correlation between Personal initiative and self-employment

The correlation between personal initiative and self-employment constitutes a pivotal area of inquiry in understanding entrepreneurial behaviors and outcomes. Within self-employment contexts, personal initiative plays a central role in driving entrepreneurial action and influencing the trajectory of business success (Nsereko et al., 2021). It is intricately connected to entrepreneurial intentions, particularly through internal motivators such as autonomy, passion, and self-efficacy (Hamdani et al., 2023; Frese & Gielnik, 2014). Individuals who exhibit high levels of personal initiative are not only more inclined to pursue entrepreneurial opportunities but also show a tendency toward proactive problem-solving and risk-taking, critical behaviors for navigating the uncertainties of entrepreneurship (Hahn et al., 2012; Hamdani et al., 2023).

Personal initiative also significantly influences opportunity recognition and exploitation. Entrepreneurs with a proactive mindset are more alert to market cues and environmental shifts, which enables them to detect emerging trends and gaps in the market (Nsereko et al., 2021; Gielnik et al., 2012). Their capacity for strategic foresight and adaptability often gives them a competitive advantage in rapidly evolving business environments (Babajide et al., 2022). Furthermore, personal initiative helps entrepreneurs confront and overcome challenges inherent in self-employment, such as financial instability, regulatory hurdles, and competitive pressures (Barugahara & Barungi, 2023). This resilience, supported by persistent effort and creative problem-solving, is vital for sustaining entrepreneurial engagement (Luthans & Youssef-Morgan, 2017).

In addition to resilience, personal initiative plays a crucial role in fostering innovation and value creation. Entrepreneurs who score highly on personal initiative are often more engaged in experimentation and knowledge-seeking behaviors that lead to the development of new products, services, or business models (Gavigan, Ciprikis, & Cooney, 2020; Rauch & Frese, 2007). Such innovation is critical not only for firm differentiation but also for long-term sustainability. These individuals promote a culture of continuous learning and adaptability, thereby improving their businesses' capacity to respond to change and harness new opportunities (Bormann, Backs, & Hoon, 2021; Babajide et al., 2022).

Moreover, personal initiative extends beyond the individual level to shape organizational culture and behavior. Entrepreneurs with high personal initiative often cultivate an entrepreneurial environment that encourages autonomy, creativity, and collaboration across all levels of the enterprise (Bormann, Backs, & Hoon, 2021). This culture of shared ownership and proactive engagement enables teams to respond swiftly to market changes and generate innovative solutions, reinforcing enterprise growth and market relevance (Babajide et al., 2022; Gavigan, Ciprikis, & Cooney, 2020).

However, the correlation between personal initiative and self-employment is not without complexity. Variations in personality traits, cognitive styles, and socio-cultural contexts can influence how personal initiative is manifested and its ultimate impact (Nsereko et al., 2021; Mueller & Thomas, 2001). While some individuals are naturally proactive and risk-embracing, others may lean toward cautious or reactive behavior. Cultural norms, gender expectations, and societal attitudes toward entrepreneurship also shape the degree to which personal initiative is expressed and valued (Hofstede, 2001; Stephan & Pathak, 2016).

In addition, the effectiveness of personal initiative in achieving positive self-employment outcomes is conditioned by external and institutional factors. Market conditions, access to resources, regulatory environments, and institutional support can either facilitate or constrain entrepreneurial activities, regardless of individual motivation (Barugahara & Barungi, 2023; Acs et al., 2008). Thus, even highly proactive entrepreneurs may struggle if they operate in unsupportive or resource-constrained settings.

Sustaining personal initiative over time also demands robust self-regulation and well-being management. The persistent effort associated with proactive entrepreneurship can lead to burnout if not accompanied by adequate self-care, social support, and psychological resilience (Luthans & Youssef-Morgan, 2017; Nsereko et al., 2021). Moreover, excessive proactivity or risk-taking, when not balanced with strategic reflection, may result in poor decision-making and entrepreneurial failure (Gavigan, Ciprikis, & Cooney, 2020; Rauch et al., 2009).

Finally, translating personal initiative into tangible outcomes depends on the alignment between motivation and strategic capacity. Entrepreneurs often face constraints such as limited funding, market access, or technical knowledge, which can hinder the realization of their goals despite their proactive intentions (Barugahara & Barungi, 2023). Consequently, support systems such as mentorship, incubation, and policy incentives are critical to complement personal initiative and foster successful self-employment (Gavigan, Ciprikis, & Cooney, 2020; Acs et al., 2008).

The interplay between social capital and personal initiative in Women's Self-Employment

The intricate interplay between social capital and personal initiative is paramount in understanding women's self-employment, serving as a central theme in entrepreneurship and gender studies. Social capital—comprising resources embedded in social relationships, networks, and trust—serves as a crucial foundation for entrepreneurial ventures by enabling access to critical information, emotional support, and business opportunities (Deshpande & Khanna, 2021; Mahato et al., 2022). Simultaneously, personal initiative—marked by proactive behavior, intrinsic motivation, resilience, and self-starting tendencies—empowers women to pursue self-employment despite structural and socio-cultural barriers (Nsereko et al., 2021; Frese & Gielnik, 2014).

The synergy between social capital and personal initiative is especially critical in enabling women to navigate the complexities of the entrepreneurial ecosystem. Social capital acts as a catalyst by facilitating resource mobilization, mentorship, and strategic partnerships, which are indispensable for overcoming gender-specific barriers to business success (Mahato et al., 2022; Ntshangase, 2020). At the same time, personal initiative enables women to translate these resources into action, leveraging their internal drive to innovate, take calculated risks, and engage in value-creating ventures aligned with their passions and competencies (Gielnik et al., 2012; Hassan et al., 2024).

Moreover, women's engagement in social networks provides access to diverse knowledge, moral support, and potential collaborators, all of which enhance entrepreneurial readiness and decision-making (Woldesenbet Beta et al., 2024). Through these connections, women are better positioned to identify viable market niches,

receive feedback, and gain confidence in pursuing business goals (Nsereko et al., 2021; Dal Mas & Paoloni, 2020). Therefore, fostering both strong social networks and a culture of initiative among aspiring women entrepreneurs is essential for building resilience and promoting sustainable self-employment.

However, the influence of cultural norms and entrenched gender roles cannot be overlooked in shaping women's entrepreneurial behavior. In many contexts, societal expectations confine women to domestic responsibilities, discouraging their participation in economic activities and reinforcing stigma against entrepreneurial ambitions (Kawamorita et al., 2021; Hassan et al., 2024). These traditional roles restrict women's access to education, finance, and time—resources vital for business development. Despite these constraints, shifts in societal attitudes and increasing advocacy for gender equality have opened new avenues for women to engage in entrepreneurship, particularly where institutional support and affirmative policies exist (Nieuwenhuizen, 2022; Al-Qahtani et al., 2022).

Policy interventions play a vital role in dismantling these systemic barriers and facilitating women's transition into entrepreneurship. Targeted programs—such as microcredit initiatives, gender-responsive training, and venture capital funds—can significantly enhance women's access to startup capital and skills development (Dal Mas & Paoloni, 2020; Nieuwenhuizen, 2022). Additionally, promoting equitable access to education, especially in digital literacy and entrepreneurial training, equips women with both hard and soft skills necessary for business success (Gavigan et al., 2020). Governments and development agencies must also address the digital gender divide, as online platforms increasingly offer women unprecedented access to markets, customers, and business resources (Al-Qahtani et al., 2022).

In sum, the convergence of social capital and personal initiative forms the bedrock of women's successful engagement in self-employment. Empowering women requires a multifaceted approach that fosters internal drive and external support mechanisms. Strategies promoting education, access to finance, mentorship, and digital inclusion must be integrated into broader frameworks of gender equity and entrepreneurship development to enhance women's economic participation and overall well-being.

3. Methodology

To investigate the combined effect of social capital and personal initiative on women's self-employment in Mbarara City, this study adopted a cross-sectional quantitative survey design. The cross-sectional approach was selected for its effectiveness in collecting data from a broad population at a single point in time, allowing for the exploration of relationships among key variables (Creswell & Creswell, 2018). This design is particularly advantageous in social science research due to its affordability, time efficiency, and ability to accommodate large samples (Sekaran & Bougie, 2016).

Structured self-administered questionnaires were used to gather quantitative data from women entrepreneurs. This method is widely recognized for its ability to capture standardized responses while maintaining the anonymity of participants, thus reducing social desirability bias (Bryman, 2016). Additionally, this tool allowed the researcher to gather demographic data (e.g., age, marital status, education, and income) and variables related to social capital, personal initiative, and self-employment outcomes.

Study Population and Sample Size Determination

The study population comprised women engaged in self-employment in Mbarara City, spanning sectors such as retail, hospitality, agribusiness, services, and manufacturing. These entrepreneurs were drawn from the three main divisions of Mbarara City: Kakoba, Kamukuzi, and Nyamitanga, ensuring spatial diversity in the sample (Mbarara City Commercial Office, 2024).

The sample size was determined using the Krejcie and Morgan (1970) sample size determination table, which provides a scientifically grounded method for sample selection based on known population sizes. Given an estimated population of approximately 930 women self-employed in formal and informal businesses in Mbarara City, a sample size of 382 respondents was selected to ensure sufficient statistical power and representativeness (Israel, 1992).

A stratified random sampling technique was employed to ensure inclusivity and proportional representation of various sectors and geographical zones within the city. Stratification by sector (e.g., trade, services, agriculture) and location helped to minimize sampling bias and enhance the generalizability of the findings (Etikan & Bala, 2017).

4. Results

Table 1: Demographics of respondents

Category	Item	Frequency	Percent
Number of children you pay school fees for	0	120	31.7
	1-2	117	31.0
	3-5	61	16.1
	6+	80	21.2
Number of Relatives staying with you	0	216	57.1
	1-2	144	38.1
	3-5	18	4.8
Number of relatives you pay school fees for	0	260	68.8
	1-2	92	24.3
	3-5	18	4.8
	6+	8	2.1
Religion	Catholic	128	33.9
	Anglican	139	36.8
	Pentecostal	45	11.9
	Moslem	32	8.5
	Others	34	9.0
	Total	378	100.0

The findings reveal that 120 women (31.7%), do not have any children for whom they pay school fees, 117 women (31%) pay school fees for 1-2 children, 80 women (21.2%) have six or more children for whom they pay school fees and lastly 61 women (16.1%) pay school fess for 3-5 children. In terms of living arrangements, a majority of respondents (57.1%) do not have any relatives staying with them. However, 144 women (38.1%) have 1-2 relatives staying with them, and a smaller percentage of women (4.8%) have 3-5 relatives staying with them.

Thirdly, the data regarding the financial responsibility for relatives' education reflects that majority of respondents (68.8%) do not pay school fees for any relatives, 92 women (24.3%) financially support 1-2 relatives' education, 18 women (4.8%) contribute to the education of 3-5 relatives, while an even smaller fraction (2.1%) support the education of six or more relatives.

Lastly, examining religious affiliation reveals that 139 women (36.8%) are Anglican, closely followed by Catholics, who are 128 women (33.9%), 45 women (11.9%) are under the Pentecostal denomination, Muslim (8.5%) and other religious affiliations take on 9% of the respondents.

Table 2: Demographics of Businesses.

Category	Item	Frequency	Percent
Location of business	Central town	118	31.2
	Katete	53	14.0
	Lugazi	44	11.6
	Kakoba	76	20.1
	Kizungu	51	13.5
	Rwebikoona	36	9.5
Category of business	Market vending	32	8.5
	Salon	75	19.8
	General merchandise	82	21.7
	Fashion and design	50	13.2
	Mobile money	110	29.1
	Restaurant	15	4.0
	Street vending	14	3.7
Duration in business	Below 1 year	17	4.5
	1-2 years	47	12.4
	3-4 years	95	25.1
	5-6 years	173	45.8
	Above 7 years	46	12.2
Daily sales	Below Ugx.100,000	110	29.1
	Ugx.100,000-200,000	34	9.0
	Ugx 201,000-300,000	120	31.7
	Ugx.301,000-400,000	48	12.7
	Above Ugx.400,000	66	17.5
Source of startup capital	Own savings	27	7.1
	Saving group	112	29.6
	Family and friends	56	14.8
	Microfinance loans	183	48.4
	Total	378	100.0

Regarding the location of businesses, there's notable variation in distribution across different areas. The highest concentration of businesses is observed in Central town, representing 31.2% (118 businesses) of the total. Kakoba follows closely with 20.1% (76 businesses), while Katete and Kizungu account for 14.0% (53 businesses) and 13.5% (51 businesses) respectively. Lugazi and Rwebikoona have smaller percentages, with 11.6% (44 businesses) and 9.5% (36 businesses), respectively.

In terms of business categories, mobile money businesses represent the largest category at 29.1% (110 businesses), followed by general merchandise (21.7%, 82 businesses), and salons (19.8%, 75 businesses). Fashion and design account for 13.2% (50 businesses), while market vending, restaurants, and street vending have smaller percentages, with 8.5% (32 businesses), 4.0% (15 businesses), and 3.7% (14 businesses), respectively.

The duration in business varies among the surveyed businesses, with a significant proportion operating for 5-6 years (45.8%, 173 businesses) and 3-4 years (25.1%, 95 businesses). Fewer businesses have been operating for below 1 year (4.5%, 17 businesses), 1-2 years (12.4%, 47 businesses), or above 7 years (12.2%, 46 businesses).

Regarding daily sales, the majority of businesses fall in the Ugx 201,000-300,000 range (31.7%, 120 businesses). Other ranges include below Ugx. 100,000 (29.1%, 110 businesses), Ugx. 301,000-400,000 (12.7%, 48 businesses), Ugx. 100,000-200,000 (9.0%, 34 businesses), and above Ugx.400,000 (17.5%, 66 businesses). Finally, the most common sources of startup capital are microfinance loans (48.4%, 183 businesses) and saving groups (29.6%, 112 businesses). Family and friends account for 14.8% (56 businesses), while own savings constitute 7.1% (27 businesses).

Table 3: Pearson Correlation

	1	2	3	4	5	6	7	8
Social Capital-1	1							
Self-starting-2	.513**	1						
Pro-activeness-3	.504**	.452**	1					
Persistence-4	.216**	.364**	.238**	1				
Personal initiative-5	.578**	.842**	.804**	.584**	1			
Managing suppliers-6	.416**	.492**	.359**	.465**	.563**	1		
Business identification-7	.441**	.361**	.305**	.410**	.453**	.611**	1	
Self-employment-8	.478**	.471**	.369**	.486**	.563**	.887**	.908**	1

** Correlation is significant at the 0.01 level (2-tailed).

Social Capital and Women's Self-Employment in Mbarara City

The results in Table 4 indicate that there is a positive and significant relationship between Social Capital and Women's Self-Employment in Mbarara City (r=.478, p<.01). This implies that any positive change in Social Capital is associated with a positive change in Women's Self-Employment in Mbarara City.

Personal Initiative and Women's Self-Employment in Mbarara City

The results in Table 4 indicate that there is a positive and significant relationship between Personal Initiative and Women's Self-Employment in Mbarara City (r=.563, p<.01). This implies that any positive change in Personal Initiative is associated with a positive change in Women's Self-Employment in Mbarara City.

Table 4: The combined effect of social capital and personal initiative on Women's Self-Employment in Mbarara City

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.782	0.224		3.489	0.001
	Interaction Term (SC*PI)	0.808	0.059	0.578	13.749	0.000
R	.578a					
R Square	0.335					
Adjusted R Square	0.333					
F	189.031					
Sig.	.000b					

a Dependent Variable: Self-employment

The results indicate that the combined effect of social capital and personal initiative explains 33.3% (Adjusted R Square=.333) of the variations in Women's Self-Employment in Mbarara City. This also implies that the remaining 66.7 % is explained by other factors not considered in this study. Furthermore, the results indicated that a unit increase in the combined effect of social capital and personal initiative will result in a 0.578-unit increase in Women's Self-Employment in Mbarara City.

5. Conclusions and Recommendations

It can be concluded that there is a significant positive relationship between social capital and Women's Self-Employment in Mbarara City. This implies that improvement in social capital in terms of structural, relational and cognitive would result in a positive change in Women's Self-Employment in Mbarara City. It can further be concluded that there is a significant positive relationship between Personal initiative and Women's Self-Employment in Mbarara City. This implies that any positive change in personal initiative in terms of self-starting, pro-activeness and persistence will result in a positive change in Women's Self-Employment in Mbarara City.

In conclusion, it can be concluded that the combined effect of social capital and personal initiative explains 33.3% of the variations in Women's Self-Employment in Mbarara City. This also implies that the remaining 66.7 % is explained by other factors not considered in this study.

Recommendations

It can be recommended that, to support personal initiative and entrepreneurship among women in Mbarara city, it's essential to ensure access to resources such as funding, training, and business development services. Policymakers should work to remove barriers to access, including financial constraints and gender-based discrimination. Offering targeted financial assistance programs, capacity-building workshops, and mentorship opportunities can help level the playing field for aspiring women entrepreneurs.

It can further be recommended that there is a need to focus on building collaboration and support networks within communities. Creating platforms for women to share knowledge, experiences, and resources can enhance their entrepreneurial success. Encouraging partnerships and cooperative ventures among women entrepreneurs can also lead to mutual benefits and increased innovation. It can also be recommended that there is a need to empower women to take initiative in starting and managing their businesses. Entrepreneurship training programs, workshops on business planning and goal-setting, and motivational sessions can help women develop the necessary skills and mindset to pursue entrepreneurial opportunities.

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