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Welcome Message from the Editor in Chief

Dear Esteemed Readers, Authors, and Researchers,

It is with great pleasure that I welcome you to the Journal of Financial and Management Sciences (JFMS), a scholarly platform dedicated to advancing research and knowledge in finance, management, and related disciplines.

At JFMS, we are committed to fostering rigorous academic inquiry, innovative thinking, and practical solutions to contemporary financial and managerial challenges. Our journal serves as a bridge between academia and industry, providing a forum for thought leaders, scholars, and practitioners to exchange ideas, share research findings, and contribute to the development of sustainable business and financial practices.

We take pride in maintaining the highest standards of academic integrity and excellence. Each article undergoes a meticulous peer-review process, ensuring that we publish only high-quality, impactful research that adds value to the global body of knowledge.

As we embark on this journey, I invite scholars, researchers, and professionals to contribute their work to JFMS. Whether you are submitting groundbreaking research, engaging in thought-provoking discussions, or seeking insights from leading experts, we are honored to have you as part of our scholarly community.

Thank you for your support, and I look forward to engaging with you in advancing financial and management sciences.
Warm regards,

Dr Ronald Kwena
Editor in Chief, Journal of Financial and Management Sciences
Associate Deputy Vice Chancellor – Research, Innovation & Enterprise
University of Kigali

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Special Feature Editorial:
The challenging task of managing complexity and transformation continuum for sustainability

Sustainability and sustainable development are challenging primarily because they cut across various spheres of life. There is a common view that sustainability involves various forms of change and demands the capability of managing complexity at the core of the multiple activities, processes and policies interacting to unlock sustainable development. Any meaningful attempt by market or non-market actors, such as government, to ensure sustainability needs to be grounded in capability to manage complexity and change at the intersection of sustainability economic, social and environmental domains.

Managing complex interdependencies sustainably is a critical capability, and we must be mindful that the world exists as an ecosystem of businesses, governments, non-governmental organisations, and non-profits, interlocking in one way or another. Complexity is traceable to the Latin word complexus. Chan (2001:1) reveals that com- means "together" and plectere means "to weave" or "braid". For example, the Just Energy Transition is not simply about green technology, green human capital, regulation and collaborative policy and mitigation of climate change effects but also complex interactions which include the role of energy storage to address the energy poverty of about 600 million African people who still lack access to reliable and affordable energy yet live on a continent blessed with abundant sources of green energy. Energy poverty in Africa exemplifies a complex issue creating barriers to social and economic development and human rights concerns. Thus, managing the complex interactions of policies, mechanisms for private-public partnerships, financing of green energy, and the necessity of developing sustainable human capital and building regional collaboration in Africa is pivotal to unlocking the full potential of reliable and affordable fruits of sustainable development.

However, managing complexity without understanding the density of interactions between different components (agents, parts, elements, artefacts) regarding how to embed sustainability in the interconnected world is challenging. Placing complexity at the centre of sustainability compels us to focus not only on the elements but also the variety and number of "inter-relationship, inter-action, and inter-connectivity of elements within a system" making up the system (micro-level) and among different systems (macro-level)" necessary to get sustainable outcomes. Interdisciplinary solutions and institutional collaborations need to work cohesively rather than inisolated silos to handle the complexity of unlocking and implementing significant national and regional policies such as Just Energy Transition, One Health in East African Community, efforts for social inclusion in hospitality education in Kenya, and address inequalities to accessing sexual reproductive health in Zimbabwe to mention just a few.

Another fundamental facet of managing complexity sustainably is the clarity on the type and magnitude of change required for sustainable development, especially for African economies with many small and medium enterprises on the market. Transformation continuum with radical change on one end and incremental change on the other conjures the thought of sustainability as an ongoing and dynamic change process rather than an event. Sustainability unfolds on a transformation continuum and brings to the fore the range between incremental changes (small updates) and transformation (significant shifts), which calls for recognising that both play roles in the pursuit of sustainability and sustainable development. The radical process with pervasive transformation or incremental change is relevant to innovative thinking and sustainability in African economies. In terms of the continuum, transformation can be brought about incrementally over time through smaller changes or radically in larger transformations, both of which result in transformative sustainability. It is prudent to think of sustainability in various forms of change captured on the continuum of disruptive innovation on the one hand and incremental innovation on the other.

Change may involve modifying specific aspects in response to external influences or internal changes, aiming for incremental improvements. In contrast, transformation entails a profound, fundamental shift that redefines beliefs, values, and behaviours, often resulting in a complete overhaul of existing systems.

It is also tempting to think that managing complexity in a sustainable manner is more meaningful if the various actors in the ecosystem are not guided by the outdated mantra of the business of business is business by Milton Friedman. Undoubtedly, Friedman's mantra has resulted in some unsustainable business and financing models over the years, which are characterised by excessive focus on improving the short-term performance of the organisation at the expense of important longer-term opportunities and societal issues. Integrating sustainability into business, organisational and societal practices can be challenging, but it is essential for the long-term success of people, planet and profit. Two issues are cardinal as academics and policymakers in Africa become enthusiastic about pursuing the challenging task of managing complexity and various forms of change on the transformation continuum for sustainability.

First is which competencies must be developed among managers and key stakeholders to lead and manage complexity in a connected world. Second, sustainable development is inclusive such that managing complexity for sustainability should not exclude the transformative or incremental change for and by small and medium enterprises, which are the cornerstone of many African economies. It is time for sustainable development to not only focus on radical changes by large organisations and government. There is a grave need to adopt a multi-stakeholder and multi-pronged approach, embracing market and non-market actors with transformative potential and digital innovation value, such as Africa’s numerous small and medium enterprises.

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The Drivers of green energy consumption in East African Community

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Abstract

The The study examines the effects of environmental policy quality, GDP per capita, quality of policy and institutional frameworks, regulatory effectiveness, population growth, electricity access, and research and development investments on green energy consumption in the East African Community (EAC). The study employed the FMOLS and CCR models for analysis. Data was sourced from the World Development Indicators (WDI) and International Energy Agency (IEA) for the EAC from 2000 to 2022. The study found that regulatory quality, quality of environmental policies, and access to electricity has a positive and significant long-run effect on green energy consumption in the EAC. However, the study also found that GDP per capita and the Quality of Institutions and Policies do not have a long-run effect on green energy consumption in the EAC. Given the global attention to Green Energy Consumption as a solution to climate change and to meet energy needs, this study discloses less studied drivers of Green Energy Consumption (as a proxy of Green Energy Transition), especially "Quality of environmental policies" in the EAC. Furthermore, most existing studies focus on renewable energy consumption, which includes solid biomass such as charcoal and firewood, while this study covers green energy consumption.

Keywords: Climate Change, Energy Transition, Sustainability, FMOLS, CCR, EAC.

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1. Introduction

Green Energy Transition (GET) promises to meet energy needs and fulfil climate change commitments through the consumption of green energy and a decline in emissions. Thus, it represents a critical opportunity to safeguard the planet and build a more sustainable and equitable energy future (UNEP, 2022; UNDP, 2021; UNFCCC, 2018). The urgency of climate change mitigation and the pursuit of sustainable development have positioned the GET as a global priority (World Bank, 2023). In this study, GET is defined as the global shift of the energy sector from traditional, carbon-intensive energy and technologies to sustainable, green-energy alternatives that replenish naturally, with zero or minimal carbon emissions, ensuring long-term energy security and environmental sustainability (Muhire et al., 2024).

Green energy resources include wind, solar, hydropower, geothermal and modern biomass while renewable energy includes all green energy sources plus the unsustainable solid biomass such as firewood and charcoal. GET is driven by the United Nation's Sustainable Development Goal 7, which calls for access to affordable and clean energy by 2030, and the Paris Agreement, which aims to limit global warming to 1.5°C above pre-industrial levels and achieve carbon neutrality by the middle of the 21st century.

Despite the critical importance of GET, traditional energy resources are still widely consumed globally. In fact, over 77% of global energy is sourced from traditional sources (IEA, 2021). Primarily, fossil fuels and unsustainable solid biomass are responsible for over 75% of Greenhouse Gas (GHG) emissions worldwide and drive climate change and global warming, which are existential threats to humanity in the 21st century (UNEP, 2022; Costello et al., 2009). Africa has enormous potential for green energy, such as solar, hydropower, geothermal, wind, and modern biomass (IRENA, 2021).

Nevertheless, traditional or unsustainable solid biomass, mainly wood fuel and charcoal, dominates the continent's energy sector, leading to massive forest cover loss and other related consequences (UNEP, 2022). Similarly, the EAC has a diverse and substantial green energy landscape owing to its geography, including the Great Rift Valley, the Great Lakes, the Nile Basin and varied climatic zones (IRENA, 2022).

Regardless of EAC's green energy potential and commitment to promoting green energy (EAC Regional Energy Access Strategy, 2006), the current landscape of green energy consumption within the EAC is markedly low, averaging only 10%, with disparate figures across member states—Uganda at 22%, Tanzania at 16%, Rwanda at 8%, Kenya at 3.8% and Burundi at 1.5%, (IEA, 2022). Green energy resources, a part of renewable energy sources, encompass wind, solar, hydropower, geothermal, and modern biomass. In contrast, renewable energy includes all green energy sources and unsustainable solid biomass, such as firewood and charcoal. Within the EAC, renewable energy sources dominate final energy consumption, accounting for over 90%. However, unsustainable solid biomass in the form of charcoal or direct firewood alone accounts for over 80% of the total final energy consumption (IEA, 2023; IRENA, 2021; REN21, 2016).

The consumption of unsustainable solid biomass has led to pressing environmental issues, including deforestation and increased carbon dioxide emissions (Kyaw et al., 2020). Consequently, my study will focus on green energy consumption rather than the broader category of renewable energy consumption. Notably, EAC faces its share of challenges attributed to climate change, including intensified extreme weather events resulting in food, water, and energy insecurity, environmental degradation, biodiversity loss, tourism revenue decline, sea level rise, natural resource-based conflicts, infrastructure damage, and pest invasions (EAC, 2023).

Driven by the need to encourage green energy use, numerous studies (Khalfaoui et al., 2024; Weng et al., 2024; Petre & Doru, 2024; Sadiq et al., 2023; Chien et al., 2023; Mohammad & Sultana, 2022; Tudor & Sova, 2021; Oluoch et al., 2021; Vo & Vo, 2021; Li & Ullah, 2021; Rasoulinezhad & Saboori, 2018) have focused on identifying the factors that drive its consumption. This shift in energy research highlights the growing importance of green energy as a vital response to climate change and energy demands (UNEP, 2024). However, existing research reveals conflicting evidence on the impact of various factors on green energy consumption across different countries and regions (Kwakwa, 2020).

Despite numerous studies exploring factors influencing sustainable energy consumption, there remains a significant lack of comprehensive analyses specifically addressing green energy consumption, especially within the East African Community (EAC). Prior research, including that by Nabaweesi et al. (2023 and 2024), has predominantly concentrated on aspects such as financial development and governance impacts on renewable energy utilisation. This focus has left a gap in understanding the nuanced roles of other key factors, including environmental policy quality and national income, in driving green energy consumption.

The importance of green energy consumption cannot be overstated; it plays a critical role in reducing greenhouse gas emissions, mitigating the adverse effects of climate change, and enhancing energy security. Moreover, promoting green energy contributes to economic diversification and job creation within the EAC, making it essential for sustainable development (UNEP, 2022; Costello et al., 2009). Understanding the variables that positively influence green energy consumption—such as the quality of environmental policies, access to electricity, regulatory quality, and R&D investments—will yield insights necessary for shaping effective strategies for policymakers. The inconsistency in findings across different studies underscores the necessity for context-specific research.

Therefore, this study aims to bridge the research gap by systematically investigating the effects of the quality of environmental policies, national income (GDP per capita), population growth, regulatory quality, quality of policy and institutions, access to electricity, and research and development expenditure on green energy consumption in the EAC. By focusing on these drivers, this research will provide valuable insights that facilitate effective policymaking and support the region's transition to a more sustainable energy future.

2. Review of literature

While renewable energy sources have gained traction to combat climate change, it is crucial to distinguish between renewable energy, which includes solid or traditional biomass, and genuinely sustainable green energy solutions. While technically renewable, as highlighted in the introduction, reliance on solid biomass, such as firewood and charcoal, carries significant environmental drawbacks, including deforestation and carbon emissions. This paper delves into the drivers of true green energy consumption within the East African Community, examining the roles of environmental policy quality, GDP per capita, quality of policy and institutional frameworks, regulatory effectiveness, population growth, electricity access, and research and development investments.

Several empirical studies have examined the drivers of renewable energy consumption but have yielded mixed findings. For instance, earlier studies (Apergis & Payne, 2010; Sadorsky, 2009) have reported a positive correlation between income and renewable energy consumption. Recent studies, including Tudor and Sova (2021), studied the impact of relevant economic factors, including GDP per capita.

They applied heterogeneous panel data fixed-effects estimation techniques, both static and dynamic, along with robust Driscoll-Kraay standard errors. The findings suggest that GDP per capita promotes green energy consumption. Oluoch et al. (2021) analysed data from 23 sub-Saharan African countries between 1998 and 2014. The study revealed a positive and significant effect between renewable energy consumption and GDP per capita.

Studies by Sadiq et al. (2023) and Chien et al. (2023) have indicated a positive link between economic growth and green energy transition. Sadiq et al. (2023) utilised time series data from China from 1981 to 2019 and found a positive correlation between economic growth and sustainable energy consumption. Similarly, Chien et al. (2023) investigated China's green energy transition from 1999 to 2019 and identified a significant positive effect of economic growth on energy transition through green energy consumption.

However, there are conflicting findings as well. Matei (2017) observed a negative association between income and renewable energy consumption. In a related study, Prempeh (2023) reported a negative impact of economic growth on green energy transition in Ghana. Similarly, Yu and Guo (2023), studying China's green energy transition from 2000 to 2020, concluded that economic growth negatively influences green energy transition in the long run.

Beyond economic factors, demographic trends like population growth also play a crucial role. Olalekan et al. (2020) investigated the key drivers of renewable energy consumption, focusing on the five most populous African nations. Their study, utilising Bayesian Model Averaging, highlights a crucial link between population growth and renewable energy consumption. Specifically, the study finds that population growth, alongside factors like urbanisation, energy use, and electricity consumption, are significant determinants of renewable energy consumption in these nations. Similarly, Vo and Vo (2021) employ a panel vector autoregressive model and Granger non-causality test to investigate the relationship between renewable energy usage and population growth in the ASEAN region.

The study identifies population growth as a driver of increased renewable energy consumption, suggesting that growing populations necessitate a corresponding expansion of renewable energy sources.

The role of environmental policy and institutional quality is also paramount. Khalfaoui et al. (2024) used a CS-ARDL panel model for a sample of 69 low-income countries in Africa, Asia, Europe, and North America from 2005 to 2020 to examine the impact of environmental sustainability policies and institutions on green economic growth. The study found that effective environmental policies, particularly those encouraging a shift towards renewables, are crucial for fostering sustainable development and a green economy. Mohammad and Sultana (2022) examined the impacts of institutional quality on renewable energy from the perspective of emerging economies. The study revealed that institutional effectiveness positively and significantly affects renewable energy consumption.

Weng et al. (2024) analysed the impact of governance quality (regulatory quality and other five dimensions) on renewable and non-renewable energy consumption. The study results revealed that governance quality enhances renewable energy consumption. Furthermore, Ekundayo et al. (2022) investigated the impact of energy use and financial development mediated by regulatory quality on pollution reduction in 18 African countries between 1996 and 2017, using the Pooled Mean Group approach. Their research highlighted the crucial mediating role of regulatory quality. Specifically, they found that strong regulatory quality consistently led to significant reductions in pollution, both in the short and long term, by influencing how energy is used.

Research and Development is another critical factor influencing the transition to renewable energy through green energy consumption. Petre and Doru (2024) employed a panel data approach to analysing the impact of R&D investments on the renewable energy transition in the European Union. The study results showed that R&D expenditure positively affects renewable energy consumption. A similar study by Li and Ullah (2021) investigated the influence of R&D intensity on renewable energy consumption with evidence from selected Asian economies. The study results indicated that R&D expenditure significantly and positively affects renewable energy consumption in the short and long run. Electricity access is another critical driver of green energy consumption and sustainable development.

As highlighted by Sokona et al. (2012), policymakers must move beyond a narrow focus on "energy access" and adopt a more nuanced approach that considers the "dual nature of the energy system" and encompasses broader energy transition goals. This requires engaging a diverse range of actors across sectors to develop effective institutions and innovative policy frameworks capable of navigating the complexities of this fragmented energy landscape. The importance of widespread electricity access is underscored by Ulsrud's (2020) research on decentralised solar power in Sub-Saharan Africa. The study reveals that a lack of access can hinder the overall energy transition, as large population segments rely on traditional, often unsustainable energy sources.

This continued reliance on inefficient and environmentally damaging energy sources, as highlighted by Oseni (2012), underscores the pressing necessity to increase the availability of green and sustainable energy systems. Renewable energy alternatives, in particular, hold the potential to drive economic development and environmental sustainability. Furthermore, Mulugetta et al. (2019) emphasise that ensuring access to "adequate, reliable, and clean energy services" is not only crucial for a successful energy transition but also fundamental for achieving the broader Sustainable Development Goals. Therefore, addressing the challenge of energy access is paramount for promoting both sustainable development and a successful transition to renewable energy sources. The review highlights an intricate relationship of various factors affecting green energy consumption.

While economic growth, population dynamics, and electricity access are crucial, the role of effective environmental policies, robust institutions, and targeted research and development cannot be overstated. Nonetheless, there is a considerable gap in research regarding the understanding of the phenomenon in the specific context of the East African Community. The paper aims to address the gap by investigating the drivers of green energy consumption within this region, providing valuable insights for policymakers and stakeholders invested in promoting a sustainable energy future for East Africa. In addition, this study will add to the ongoing discussion regarding the relationship between environmental policy quality, national income, quality of policy and institutional frameworks, regulatory quality, population growth, electricity access, Research and Development investments and green energy adoption, particularly within the context of developing economies.

3. Methods and Materials

3.1 Data

This study adopted longitudinal and causal research designs using time-series cross-sectional (TSCS) panel datasets covering the EAC countries of Uganda, Kenya, Tanzania, Rwanda, and Burundi. The study utilised data from the World Development Indicators (WDI) and International Energy Agency (IEA) from 2000 to 2022. Panel data effectively captures common trends and individual group dynamics, surpassing the capabilities of time series or cross-sectional datasets.

3.2 Specification of the empirical model

For this study, a multivariate linear regression model is specified in which the dependent variable is Green Energy Consumption (gec) as % of total final energy consumption; the independent variables include national income, whose proxy variable is GDP ($gdpka$) in current US dollars, Population Growth ($pngth$) (annual %), Regulatory Quality Index ($regqty_{it}$), the Quality of Environmental Policies, whose proxy is the CPIA Policy and Institutions for Environmental Sustainability Rating Index ($cpiapiesr$), Quality of Institutions & Policy Index, whose proxy is (CPIA Business Regulatory Environment) ($cpiabre$), an Index for Research & Development Expenditure ($index$) and Access to Electricity in per cent.
The primary econometric model takes the form:

$$gec_{it} = \alpha_0 + \alpha_1 gdpka_{it} + \alpha_2 pngth_{it} + \alpha_3 regqty_{it} + \alpha_4 cpiapiesr_{it} + \alpha_5 cpiabre_{it} + {} + \alpha_6 rde_{it} + \alpha_7 ate_{it} + \mathrm{u}_{it} \ldots\ldots\ldots\ldots \quad (2);$$

Where;
i is country, t is the period and u_{it} is the error term.
α_0 is a constant,
$\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7$ are model parameters to be estimated such that α_0, $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7 > 0$

Pre-model estimation diagnostic tests

Pre-model estimation diagnostic tests such as normality, multicollinearity, cross-sectional dependence, unit root testing and cointegration were conducted. Normality tests were conducted to check if the dependent variable is normally distributed, and multicollinearity was run to check for highly correlated independent variables. Furthermore, cross-sectional dependency was carried out to check for the dependency variables in the cross-sections. On the other hand, unit root tests were carried out to know the stationarity of variables in the panel data set. Finally, Cointegration tests were conducted to establish the existence or absence of long-run equilibrium relationships between (nonstationary) series.

3.3 Specification of the variables

Table 1: Specification of the variables

Variables	Description	Units	Sources	Some studies that have used the variables
Gec	Green Energy Consumption	Percentage share of green energy in total final energy consumption	IEA	All below
Gdpka	National income (GDP per capita)	In current US dollars	WDI	Apergis & Payne, 2010; Sadorsky, 2009; Tudor & Sova (2021)
Pngth	Population growth	Annual Percent	WDI	Olalekan et al., 2020; Vo & Vo (2021
regqty	Regulatory quality	Index	WDI	Ekundayo et al., 2022
Cpiapiesr	Quality of environmental policies (CPIA Policy & Institutions for Environment & Sustainability)	Index	WDI	Khalfaoui et al.,2024; Mohammad & Sultana, 2022
Cpiabre	Quality of Institutions & Policy (CPIA Business Regulatory Environment)	Index	WDI	Weng et al., 2024
Ate	Access to electricity	Percentage of the population	WDI	Mulugetta et al., 2019
Rde	Research and Development expenditure	Percentage of GDP	WDI	Petre & Doru, 2024; Li & Ullah, 2021

Source: Author

4. Results and Discussion

4.1 Results from multicollinearity checks in the models for the study

To avoid the possibility of inefficient regression estimates arising from redundant regressors in the empirical model, the study conducted multicollinearity checks on all the independent variables included in the final model. The variance inflation factors (VIFs) for each independent variable were estimated and examined. The mean VIF in excess of 10 (i.e., VIF >10) was considered an indicator of severe multicollinearity (see Kim, 2019). Table 2 gives a summary of the estimates of the variance inflation factors (VIFs) for each independent variable and the mean VIF for all the independent variables included final model for the study.

Table 2: VIFs of the independent variables in the final model:

Variable	VIF	1/VIF
Regulatory Quality ($regqty$)	12.39	0.081
Quality of environmental policies (CPIA Bus. Regulatory Environment ($cpiabre$))	6.83	0.146
The logarithm of GDP per capita ($loggdpc$)	5.84	0.171
Access to electricity (ate)	3.12	0.320
Quality of environmental policies (CPIA Policy & institutions for Sust. Rating ($cpiapiesr$))	2.97	0.337
Mean VIF	**6.23**	**0.211**

Source: Compiled by the author.

As indicated in Table 2, the estimates of the VIFs show that in the primary model, the variable regulatory quality ($regqty$) has a VIF value above the threshold of VIF of 10 (VIF = 12.39 >10 for regulatory quality). Apart from the regulatory quality variable, the rest have their respective VIF estimates of less than 10. However, considering the mean VIF for all the independent variables collectively (Mean VIF= 6.23), the estimated mean VIF is less than 10. This suggests that all the independent variables may be included in the final model while tolerating moderate multicollinearity.

After the multicollinearity and unit root tests, ***the final Econometric model is*:**

$gec_{it} = \alpha_0 + \alpha_1 loggdppc_{it} + \alpha_2 regqty_{it} + \alpha_3 cpiapiesr_{it} + \alpha_4 cpiabre_{it} + \alpha_5 ate_{it} + u_{it}$..(3)

Equation (3) which forms the final model for the study, excludes two variables: a variable on Research and Development Expenditure (rde) which has been excluded on the grounds of having quite a large number of missing observations in the data set at hand and a variable population growth ($pngth$) which has been excluded on the grounds of failing to be integrated.

4.2 Test for cross-sectional in/dependence in the model

The study tested for cross-sectional in/dependence in the panel model using the Breusch-Pagan (BP) test for cross-sectional independence. This approach to testing for cross-section in/dependence is appropriate in panel data models where T>N (Breusch & Pagan, 1980), which is consistent with the panel data dimensions for empirical analysis of the study. The null hypothesis tested is whether the errors are independent across cross-sections, or there is cross-sectional independence, which implies that the cross-sectional units are not contemporaneously correlated. The results from the Breusch-Pagan (BP) test for cross-sectional independence are summarised in Table 3.

Table 3: Results from the Breusch-Pagan (B-P) LM test for cross-sectional dependence in the model

Panel Model	B-P LM Chi-sq, stat.	p-value
Fixed effects	13.504	0.1589
Random effects	14.952	0.1034

Source: Author's compilation.

For both the Fixed Effects and Random Effects models, the estimated chi-square statistics from the Breusch-Pagan LM test for cross-sectional in/dependence, as indicated in Table 3, do not reject the null hypothesis of across cross-sectional independence at all the conventional testing levels. Therefore, the cross-section in/dependence test results suggest evidence of cross-sectional independence in the final panel model.

One key implication of the absence of cross-sectional dependence in the empirical panel model is that the first-generation panel unit root tests may be implemented on the panel variables to test their stationarity. Secondly, implementing Fixed or Random Effects estimators on the empirical panel model can yield unbiased and consistent estimates (Pesaran, 2006).

4.3 Panel unit root test results

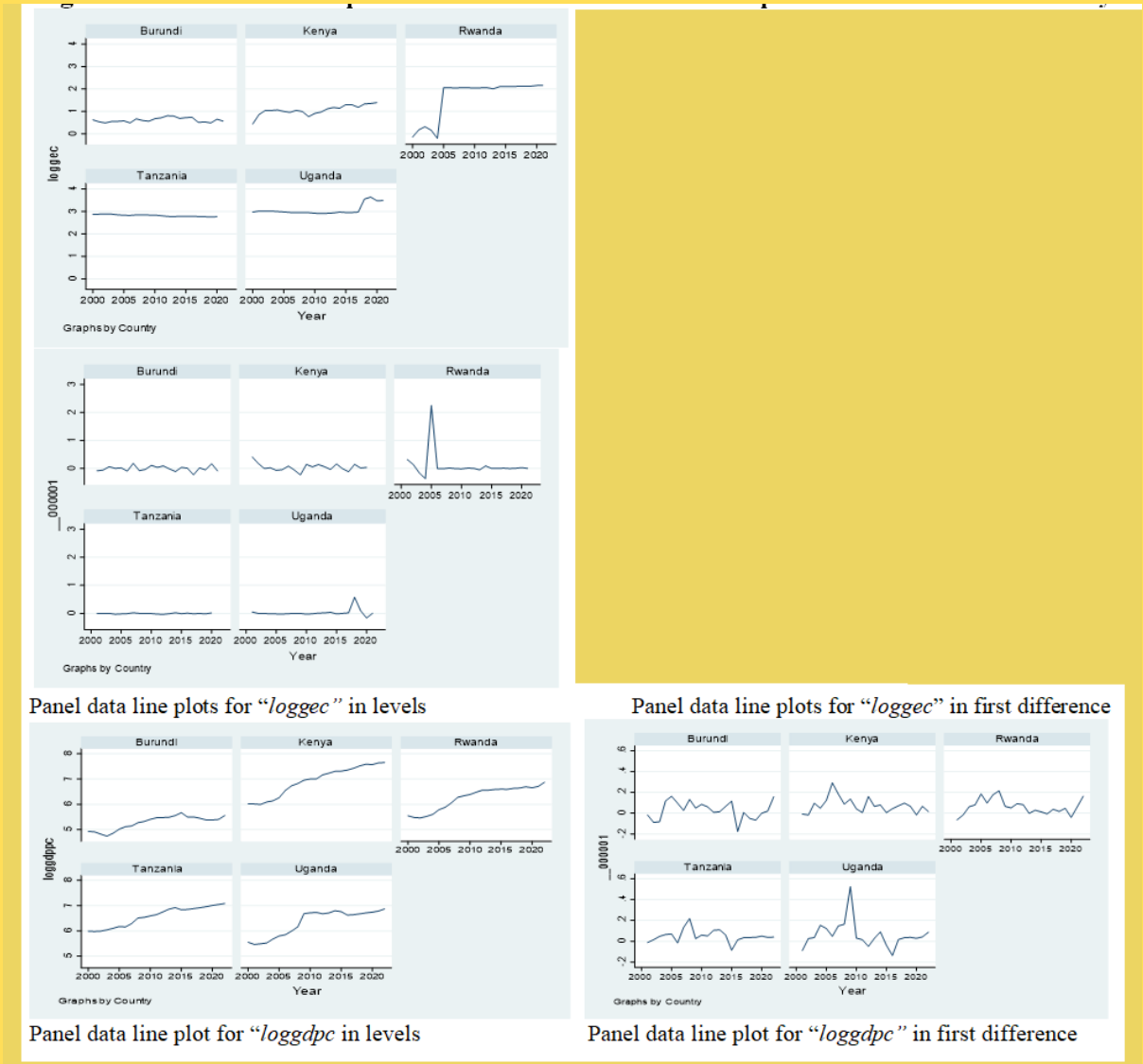
Given that the empirical panel data for this study has some gaps and that the time dimension is greater than the cross-sectional dimension (T >N), this study employed the Fisher-type (Choi, 2001) panel unit root test, which is appropriate for panels with such characteristics. Appendix 1. shows a summary of the results from the Fisher-type (Choi, 2001) panel unit root testing procedure, which has been employed on variables in the empirical panel model.

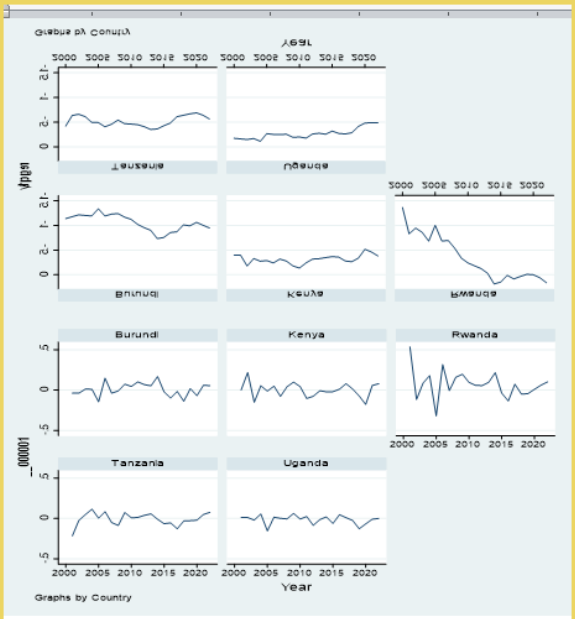
The Fisher-type (Choi, 2001) panel unit root test results summarized in Appendix 1 indicate that for all the model variables in the final model, all the four Fisher-type statistics (P, Z, Pm & L*) do not reject the null hypothesis of having a unit root in levels but reject the null hypothesis of having a unit root in the first difference of the variables. This result suggests that all the model variables in the final model are non –stationary in levels but become stationary in their first differences, implying that all the variables in the final model are integrated of order one, I(1).

4.4 The panel line plots on variables in the panel model

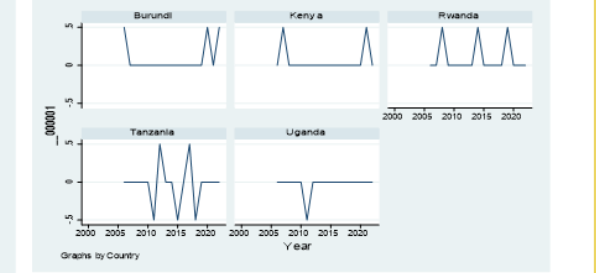
To augment the parametric-based Fisher-type (Choi, 2001) panel unit root tests results summarized in Table 4, the study further generated line plots for the variables in the panel model. Figure 4.3 indicates the line plots for each variable in the panel model in which the line plots are generated for the sample over the study period and are displayed by country, first in levels and then in differences where applicable.

Figure 1: Panel line plots for the variables in the panel model for the study

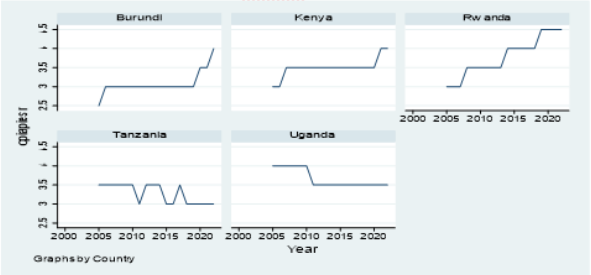




Panel data line plot for "*regqty* in levels

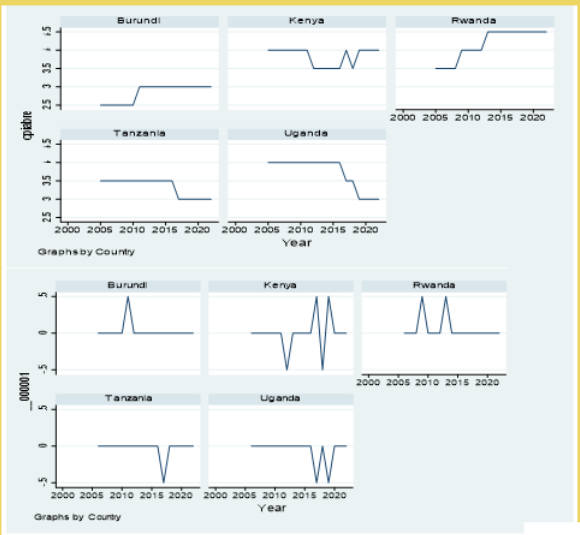


Panel data line plot for "*regqty*" in first difference



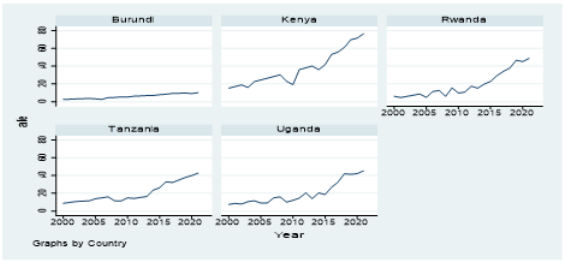
Panel data line plots for "*cpiapiesr* " in levels

Panel data line plots for "*cpiapiesr*" in first difference

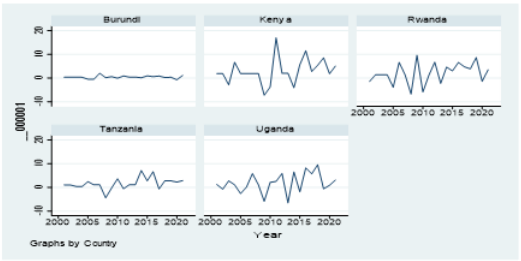


Panel data line plot for "*cpiabre*" in levels

Panel data line plot for "*cpiabre*" in first difference



Panel data line plot for "*ate*" in levels



Panel data line plot for "*ate*" in first difference

It can be observed from Figure 4.3 that the panel line plots for each of the variables in the panel model show non-stationarity of the variables in levels and stationarity of the variables in the first differences. The line plots thus validate the order of integration of the panel model variables produced by the parametric Fisher-type (Choi, 2001) panel unit test results summarized in Table 4.

4.5 Panel Cointegration Test Results

Having found cross-sectional independence in the final panel model and that all the model variables were integrated of order one, I (1), this study adopted the Pedroni cointegration test (Pedroni, 2004) which is a residual–based panel cointegration test that is robust in panels with medium N and large T dimensions and having one or more nonstationary explanatory variables. The Pedroni cointegration tests the null hypothesis of no cointegration in all panels against the alternative hypothesis that the variables are cointegrated in all the panels.

The Pedroni cointegration test produces three statistics: Modified Phillips–Perron t statistic, Phillips–Perron t statistic and Augmented Dickey-Fuller t statistic. The null hypothesis of no cointegration is rejected if all the estimated statistics or the majority (or two-thirds) of the estimated statistics have p-values less than 0.05. Table 5 summarises the cointegration test results from the Pedroni cointegration test on the panel model specified to address this study.

Table 4: The Pedroni cointegration test results on the panel model

The Pedroni statistic	Estimated statistic value	p-value
Modified Phillips-Perron t	1.9186**	0.0275
Phillips-Perron t	- 4.1796***	0.0000
Augmented Dickey-Fuller t	- 4.0146***	0.0000

Source: Generated by the author. ** p<0.05; *** p<0.01.

As indicated in Table 4, all three test statistics from the Pedroni cointegration test reject the null hypothesis of no cointegration at a 5 per cent level of significance in favour of the alternative hypothesis of the existence of cointegration in all panels. The cointegration test results summarized in Table 5 suggest cointegration among the variables in the panel model.

4.6 Regression estimates of the model

Based on the fact that the unit root tests showed that all the variables in the panel model were integrated of order one, I (1) and that the cointegration test confirmed the presence of cointegrating relations in the empirical panel model, this study implements the panel cointegration estimation techniques that reveal long run causal relationships between the variables in the empirical panel model.

Out of the three commonly implemented fully efficient estimations for cointegration regression, that is, fully modified ordinary least squares (FMOLS), canonical cointegration regression (CCR), and the dynamic ordinary least squares (DOLS), this study adopts the first two methods, i.e., FMOLS and CCR. Because there are some gaps in the panel data, this study could not estimate the DOLS efficiently because the DOLS method uses leads and lags of the differenced regressors (which is feasible when the panel data has no gaps) in its process to get rid of the long-run correlation between the cointegration equation error and the regressor innovations. The study then chooses the final model between the FMOLS and CCR using the Hausman specification test under the null hypothesis that the FMOLS is a preferred model (both efficient and consistent under Ho). Table 5 shows a summary of the regression estimates from the FMOLS and CCR panel models as well as results from the Hausman specification tests.

Table 5: FMOLS and CCR panel regression estimates

Dependent variable: Logarithm of electricity consumption ($loggec$)						
	Model 1: FMOLS			**Model 2: CCR**		
Independent variable	Coef.	Std. Err.	p-value	Coef.	Std. Err.	p-value
First lag of logarithm of green energy consumption ($L.loggec$)	**0.4640*** **	0.037456	0.0000	**0.6289*** **	0.208758	0.0025
Logarithm of GDP per capita ($logdpc$)	-0.0179	0.011279	0.1115	-0.0184	0.015738	0.2430
Regulatory Quality ($regqty$)	**0.6063*** **	0.074602	0.0000	**0.8160*** **	0.279822	0.0035
Quality of environmental Policies (CPIA Policy & institutions for Sust. Rating) ($cpiapiesr$)	**0.1544*** **	0.017564	0.0000	**0.1504*** **	0.030459	0.0000
Quality of Institutions & Policy (CPIA Bus. Regulatory Environment ($cpiabre$)	-0.0448*	0.027199	0.0993	0.0575	0.140193	0.6814
Access to electricity (ate)	**0.0160*** **	0.000650	0.0000	**0.0178*** **	0.002547	0.0000
Constant	1.1886***	0.235593	0.0000	0.3370	1.141797	0.7678
R-square		0.910			0.892	
Adj. R-square		0.851			0.821	
Hausman, Ho: FMOLS is a preferred model Chi2 = 0.50; Prob > Chi2 = 0.9979						

Source: Author's compilation. *P<0.1; ** p<0.05; *** p<0.01

5. Discussion

The estimated chi-square statistic from the Hausman specification test, as indicated in the regression estimates summarised in Table 6, does not reject the null hypothesis that the FMOLS is a preferred model at a 5 per cent level of significance. Consequently, this study considers the regression estimates of the FMOLS estimator for interpretation and discussion. The FMOLS estimator produces long-run estimates of the regression model, providing vital insights into the factors influencing green energy consumption in the East African Community. The green energy transition is a long-term phenomenon, making long-run estimates preferred.

The long-run regression estimates from the preferred FMOLS model reveal that the estimated coefficients on regulatory quality, the quality of environmental policies (CPIA Policy & Institutions for Sustainability rating), access to electricity, and the first lag of the logarithm of green energy consumption are all positive and statistically significant at the 5 per cent level. Notably, regulatory quality has an estimated long-run coefficient of 0.6063 with a p-value of 0.000, indicating a positive and significant long-run effect on green energy consumption in the EAC.

This underscores the crucial role of regulatory quality in promoting green energy adoption. Effective regulatory frameworks, including clear policies and incentives for renewable energy, can stimulate investment and facilitate the transition towards cleaner energy sources, aligning with existing literature emphasising the importance of supportive regulatory environments for green energy development (Weng et al., 2024; Mohammad & Sultana, 2022; Ekundayo et al., 2022).

Additionally, the quality of environmental policies showed an estimated long-run coefficient of 0.1544 with a p-value of 0.000. This finding suggests that well-designed policies promoting environmental sustainability, such as carbon pricing mechanisms or renewable energy targets, can effectively incentivise the adoption of green energy technologies.

Furthermore, access to electricity demonstrated a significant long-run effect with an estimated coefficient of 0.0160 and a p-value of 0.000. This highlights the importance of electricity access in enabling green energy consumption, particularly in rural and underserved areas. The studies by Ulsrud (2020), Mulugetta et al. (2019), Sokona et al. (2012), and Oseni (2012) support this view, suggesting that expanding electricity access forms a foundation for increased adoption of green energy solutions.

Conversely, the estimated long-run coefficients on the logarithm of GDP per capita and the quality of institutions and policies related to the business regulatory environment were statistically insignificant at the 5 per cent level. The insignificance of these coefficients suggests that GDP per capita and the Quality of Institutions and Policy (CPIA Business Regulatory Environment) do not exert a long-run effect on green energy consumption in the EAC. Interestingly, while the study revealed a negative correlation between national income (GDP per capita) and green energy consumption, this relationship, although not statistically significant, indicates that as national income increases, green energy consumption may decline, which appears counterintuitive. This finding parallels the observations made in existing studies, including Matei (2017), which noted an inverse association between income and sustainable energy utilisation. In particular, Prempeh (2023) indicated a negative influence of economic growth on green energy technology adoption in Ghana.

Similarly, research by Yu and Guo (2023) on China's green energy transition suggested that economic growth adversely affects green energy consumption. These insights imply that national income alone may not be sufficient to drive a transition to green energy and emphasise the need to consider multiple influencing factors. Higher income levels might lead to a greater reliance on conventional energy sources, especially when existing infrastructure supports fossil fuels.

Households may prioritise immediate needs, such as healthcare and housing, consuming a significant portion of their income, which limits the financial resources available for investing in green technologies. In the context of the East African Community, allocating income towards essential services often restricts opportunities for green energy investment. Families burdened by substantial out-of-pocket expenses for healthcare and education may perceive green energy as a luxury rather than a necessity.

Without strong governmental policies and incentives promoting green energy adoption, the short-term benefits of investments in healthcare and education can overshadow the long-term advantages of green energy. This complex interplay between income allocation and energy consumption emphasises the need for tailored policies that balance economic growth with environmental sustainability, encouraging investment in green technologies while simultaneously addressing pressing social needs. Finally, the lack of a significant relationship between the quality of institutions and policies related to the business regulatory environment and green energy consumption suggests that while a conducive business environment is vital for overall economic development, it may not be the primary driver of green energy adoption in the EAC context.

These findings collectively highlight the multifaceted nature of green energy consumption drivers and the importance of considering a comprehensive approach to policy-making that incorporates regulatory quality, environmental policies, and socioeconomic factors.

6. Conclusions and policy recommendations

This study provides valuable insights into the factors influencing green energy consumption in the East African Community. The empirical findings from the FMOLS model highlight the crucial role of regulatory quality and environmental policies in promoting green energy adoption.

The research underscores the multifaceted nature of green energy adoption in the East African Community. While a conducive business environment and national income are important factors, they are not sufficient on their own. Instead, the study reveals that targeted policies and investments are crucial for driving a sustainable energy transition. Specifically, robust regulatory frameworks, clear incentives, and ambitious environmental policies are essential for attracting investment and promoting the adoption of green technologies. Moreover, expanding electricity access, particularly in underserved regions, is fundamental for creating a foundation for broader green energy uptake. Ultimately, a comprehensive approach that prioritizes economic development and environmental sustainability is critical for unlocking the full potential of green energy in the EAC.

Based on these conclusions, policymakers in the EAC should foster a robust green energy transition through a multi-pronged policy approach. First, demand for green energy must be actively cultivated through comprehensive environmental policies. This includes implementing robust carbon pricing mechanisms, ambitious renewable portfolio standards, stringent energy efficiency standards, and targeted incentives for households and businesses to choose green energy options like rooftop solar installations. Second, ensuring the accessibility and reliability of green energy is crucial. This requires prioritizing expanding electricity access using green sources, particularly in underserved areas, and modernizing grid infrastructure to accommodate increasing shares of variable renewable energy.

Furthermore, fostering regional collaboration is essential. Harmonizing energy policies across EAC countries will facilitate cross-border green electricity trade, attract larger-scale investments, and share best practices. Finally, public awareness campaigns are vital to educate consumers about the benefits of green energy and encourage informed choices. Complementing this, investing in training programs for a local workforce skilled in green energy technologies will support widespread adoption, create green jobs, and stimulate economic growth.

By implementing these policy recommendations, the EAC can create an enabling environment for green energy investments, accelerate its transition to a sustainable energy future, and contribute to global efforts to combat climate change.

The study acknowledges several limitations that provide avenues for further research. Firstly, the analysis primarily focused on a macro-level examination of green energy consumption in the EAC. Future studies could delve into specific country-level contexts within the EAC to uncover nuanced challenges and opportunities. Secondly, the research primarily relied on secondary data and literature. Gathering primary data through interviews with policymakers, consumers, the general public, and other stakeholders could provide richer insights into potential drivers of green energy consumption in the EAC.

Furthermore, the study's geographical scope only considered Uganda, Kenya, Tanzania, Rwanda and Burundi. Future studies can include the newly admitted member states such as South Sudan, Democratic Republic of Congo and Somalia.

Overall, the study's findings suggest that policymakers in the EAC should prioritize the development of robust regulatory frameworks, strong environmental policies, and improved electricity access to effectively promote green energy consumption and achieve a sustainable energy future.

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Appendix 1

Table 4: The Fisher-type (Choi, 2001) panel unit root test results on all the panel variables in the final model

Variable being tested	Levels			First Difference			OOI
	Fisher-type statistic	Estimated statistic	p-value	Fisher-type statistic	Estimated statistic	p-value	
green energy consumption (gec)	P	6.7317	0.7505	P	57.6570***	0.0000	I(1)
	Z	0.2777	0.6094	Z	-6.0061***	0.0000	
	L*	0.2526	0.5988	L*	-7.2265***	0.0000	
	Pm	-0.7308	0.7676	Pm	10.6564***	0.0000	
The logarithm of GDP per capita ($logdpc$)	P	5.7935	0.8323	P	28.6230***	0.0000	I(1)
	Z	0.4094	0.6589	Z	-3.4008***	0.0000	
	L*	0.3714	0.6435	L*	-3.4792***	0.0000	
	Pm	-0.9406	0.8265	Pm	4.1642***	0.0000	
Regulatory Quality ($regqty$)	P	9.8173	0.4567	P	48.2205	0.0000	I(1)
	Z	0.1388	0.5552	Z	-5.0794	0.0000	
	L*	0.1477	0.5582	L*	-5.9995	0.0000	
	Pm	-0.0409	0.5163	Pm	8.5464	0.0000	
Quality of environmental policies (CPIA Policy & institutions for Sust. Rating ($cpiapiesr$))	P	7.0656	0.7192	P	46.5297***	0.0000	I(1)
	Z	1.2598	0.8961	Z	-4.5131***	0.0000	
	L*	1.6120	0.9411	L*	-5.6071***	0.0000	
	Pm	-0.6562	0.7441	Pm	8.1683**		

					*	0.0000	
Quality of Institutions & Policy (CPIA Bus. Regulatory Environment ($cpiabre$))	**P**	**4.1180**	**0.9419**	**P**	**26.7886***		**I(1)**
					**	0.0000	
	Z	**1.5203**	**0.9358**	**Z**	**-3.1255***	0.0000	
					*		
	L*	**1.5300**	**0.9316**	**L***	**-3.1727***	0.0000	
					*		
	Pm	**-1.3153**	**0.9058**	**Pm**	**3.7541***		
					*	0.0000	
Access to electricity (ate)	**P**	**3.2367**	**0.9753**	**P**	**52.4293***		**I(1)**
					**	0.0000	
	Z	**2.3378**	**0.9903**	**Z**	**-5.1267***	0.0000	
					*		
	L*	**2.3414**	**0.9869**	**L***	**-6.4936***	0.0000	
					*		
	Pm	**-1.5123**	**0.9348**	**Pm**	**9.4875***		
					*	0.0000	

Source: Author's compilation. ***p<0.01. P=Inverse chi-squared; Z= Inverse normal; L* = Inverse logit; Pm = Modified inv. chi-squared, OOI=Order of Integration.

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EAC Policies Influencing One Health and Sustainable Green Development: Scoping Review and Framework

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Abstract

This The East African Community (EAC) has adopted policies that influence the integration of the One Health Approach and Sustainable Green Development. This study aims to develop a framework that describes several policies through which the One Health approach influences sustainable green development within the EAC region. We carried out a scoping review to identify policies using the One Health and Sustainable Green Development (OHSGD) terms (n = 14) published and implemented prior to December 20, 2024, that discusses One Health and Sustainable Green Development aspects across all the 8 member states of EAC. We used the qualitative constant comparative technique to inductively code descriptions and examples of the One Health approach aspects within these policies, arrange the aspects into descriptive domains, and generate an overreaching framework. The resulting One Health Approach influence on sustainable green development across EAC countries identifies four areas of the One Health Approach that can influence sustainable green development in EAC. These areas are grouped into four influence categories: (1) integrated health and environmental management, (2) climate change mitigation and adaption, (3) sustainable agriculture practices, and (4) strengthening multisectoral collaboration. We propose a framework that positions these categories according to their relevance to sustainable green development outcomes and highlights two critical focus areas for assessing the impact of the One Health Approach in EAC: (1) government and policy-driven interventions to health and environmental outcomes and (2) the extent to which these

interventions address equity and sustainability concerns across diverse population groups.

Keywords: One Health, Sustainable Green Development, EAC, Africa

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1. Introduction

For many years, government actors and the governance structures within a country or a regional economic bloc, such as the East African Community (EAC) that regulates them, have significantly shaped public health and environmental sustainability. The increasing economic, political, and legal influence of governments in regional economic communities necessitates a critical examination of their role in shaping health as one of the sustainable development determinants. Recent scholarship has explored these dynamics through the lens of the commercial determinants of health (CDH), defined as the systems, practices, and pathways through which commercial actors drive health and equity (Freudenberg, 2023; Walls et al., 2020). Building upon Burau and Blank's (2006) foundation, the typologies of health systems to capture the institutional context of health policies to contribute to explaining health policies across the EAC provides a comprehensive framework to analyse government influence on population health and environmental sustainability.

In the East African Community (EAC), various policies have been implemented to integrate the One Health approach into sustainable green development strategies. This paper aims to develop a framework that delineates how these policies influence regional sustainable development. Through a systematic scoping review of policies related to One Health and Sustainable Green Development (OHSGD) published before December 20, 2024, we identified nine key policies addressing these aspects across the 8 member states of the East African Community (EAC). Employing a qualitative constant comparative technique, we coded descriptions and examples of One Health components within these policies, categorising them into distinct domains to construct an overarching analytical framework.

The resulting framework identifies four key domains through which the One Health approach can influence sustainable green development in the EAC: (1) integrated health and environmental management, (2) climate change mitigation and adaptation, (3) sustainable agricultural practices, and (4) strengthening multisectoral collaboration. These domains align with the typologies of health systems, which categorise government influence into structured domains and evaluate their impact on various population groups, including consumers, workers, and local communities.

Through the application of the typologies of the health systems concept, this paper offers a nuanced understanding of how governments in EAC and policy-driven interventions shape health outcomes and environmental sustainability. Specifically, it contextualises government influence on sustainable development by examining regulatory frameworks and industry-specific practices. Our analysis highlights two critical focus areas for assessing the impact of One Health policies in the East African Community that is (1) government and policy-driven interventions to health and environmental outcomes and (2) the extent to which these interventions address equity and sustainability concerns across diverse population groups.

This paper contributes to the broader discourse on CDH by providing a structured framework to assess policy-driven health and environmental interventions. Future research should explore how government entities navigate regulatory landscapes in the EAC and the effectiveness of multisectoral collaborations in promoting sustainable green development. By leveraging the typologies of health systems, policymakers and stakeholders can better evaluate government engagement in public health and environmental governance, ensuring that sustainable development initiatives prioritise health equity and environmental resilience.

1.1 Context

1.1.1 What is One Health?

One Health is an interdisciplinary approach that recognises the interconnection between human, animal, and environmental health. It advocates for cross-sectoral cooperation among stakeholders such as human and veterinarian health professionals, environmental scientists, policy makers, etc. to address complex health challenges. One Health aims to holistically achieve optimal health outcomes by addressing complex health issues (Danasekaran, 2024).
What is Sustainable Green Development?

Sustainable green development is a comprehensive strategy that intends to achieve economic development while preserving environment and ensuring social equity. It promotes progress that satisfies current needs without compromising the development of future generations by implementing practices that minimise ecological footprints and creating opportunities in green sectors and sustainable industries. Sustainable green development ensures that the advantages of progress are distributed equitably amont all the levels of the society by addressing inequalities, promoting inclusion, and guaranteeing access to essential resources ("Green economy," 2018).

1.1.2 Quick Facts about EAC (n.d.)

- Members: Burundi, Democratic Republic of Congo, Kenya, Rwanda, Somalia, South Sudan, Tanzania, Uganda
- Area (including water): 5.4 million square kilometers
- Population: USD 312.9 billion (2021)
- Date of foundations: 1967 (first established),7 July 2000 (re-establish)

2. Literature Review

The East African Community (EAC) has been working on integrating One Health and sustainable green development into its regional policies. These efforts recognise the interconnectedness of human, animal, and environmental health, aligning with global sustainability goals. However, challenges such as fragmented governance, financing limitations, and weak enforcement mechanisms continue to hinder effective policy implementation (EAC, 2021). This literature review explores cross-sectoral policy approaches, regional cooperation mechanisms, policy implementation challenges, and multisectoral collaboration models in sustainable development and One Health, incorporating insights from Rwanda, Uganda, and other EAC nations.

Cross-Sectoral Policy Approaches and Regional Cooperation.

One Health and environmental policies intersect in various ways across East Africa, where deforestation, pollution, and climate change exacerbate zoonotic disease risks (Tanzania National One Health Strategic Plan, 2022). The EAC Vision 2050 and the 6th EAC Development Strategy emphasise sustainable economic transformation and resilience (EAC, 2016; EAC, 2021). Similarly, frameworks like the African Union's Agenda 2063 align regional policy efforts with sustainability objectives (African Union, 2015). In comparison, ASEAN3 has established a Coordinating Centre for Animal Health and Zoonosis (ACCAHZ), which fosters regional collaboration on One Health strategies (ASEAN, 2023).

The One Health Strategic Plans of EAC countries play a crucial role in guiding national-level policies towards a unified regional approach. National One Health frameworks have been developed in Rwanda (2021), Uganda (2018), Kenya (2021), and Tanzania (2022), often with

2.1 Association of Southeast Asian Nations

Support from development partners such as the FAO4, WHO5, and GIZ6, mainly focusing on responding to the increasing burden of zoonotic diseases and antimicrobial resistance, underscoring the need for collaboration at national and sub-national levels. Rwanda's One Health Strategic Plan (2021-2026) underscores the importance of multisectoral collaboration for disease surveillance, antimicrobial resistance, and environmental conservation (Rwanda One Health Strategic Plan, 2021). Similarly, Uganda has implemented the Uganda One Health Strategic Plan (2018-2022) to strengthen cross-sectoral engagement and early warning systems for emerging zoonotic threats (Uganda One Health Strategic Plan, 2018). Tanzania and Kenya also have structured One Health strategies, aiming to integrate human, animal, and environmental health considerations into national policies (Tanzania National One Health Strategic Plan, 2022; Kenya One Health Strategic Plan, 2021).

In addition to One Health strategies, National Adaptation Programmes of Action (NAPAs) have been developed by all EAC member states to address climate change and its impact on socio-economic sectors. Rwanda's National Adaptation Plan (2021) focuses on ecosystem-based adaptation, agriculture resilience, and sustainable land management (Rwanda National Adaptation Plan, 2021). Uganda's adaptation plan emphasises disaster risk management and strengthening climate information systems (Uganda National Adaptation Programme, 2021). These national policies contribute to the broader regional goals of sustainability and policy harmonisation.

Out of the East African Regional block, frameworks like the European Green Deal serve as a model for integrating environmental sustainability across governance structures, particularly through its Just Transition Mechanism, which ensures equitable implementation of green policies (European Commission, 2022). The World Bank's Global Program on Sustainability (GPS) promotes the incorporation of natural capital valuation in policymaking, a model that could benefit EAC nations (World Bank, 2023). ECOWAS, another African regional bloc, has successfully implemented the One Health Zoonotic Disease Prioritization (OHZDP) framework, supporting policy harmonisation across West African states (ECOWAS, 2021).

2.2 Challenges in Policy Implementation

Despite the existence of strategic policies, implementation remains a significant challenge in East Africa. The main obstacles are fragmented governance structures and limited funding mechanisms for sustainability initiatives (EAC, 2021). Many countries rely on international climate finance sources, such as the Green Climate Fund and Multilateral Development Banks (MDBs), but access to these resources remains cumbersome (World Resources Institute, 2024). MDBs provided a record-high $125 billion in public climate finance in 2023, yet developing countries, including those in the EAC, received an insufficient share of adaptation funding (World Resources Institute, 2024).

Moreover, weak institutional coordination undermines policy enforcement. Unlike ASEAN's structured One Health Coordination Center, EAC member states lack a formalised multisectoral governance framework (ASEAN, 2023). Lessons from India's failed attempts to integrate One Health into national policies reveal the importance of sustained government commitment (Raj et al., 2022). Bureaucratic inefficiencies and political instability further hinder the region's ability to implement long-term sustainability projects (Kenya National Adaptation Programme, 2021).

Rwanda and Uganda have experienced similar challenges, with Uganda's efforts in transboundary disease management often hindered by inconsistent inter-ministerial coordination (Uganda One Health Strategic Plan, 2018). Rwanda, on the other hand, has faced difficulties in securing long-term financing for its green economy initiatives despite a strong policy framework (Rwanda One Health Strategic Plan, 2021).

Multisectoral Collaboration and Evidence-Based Policymaking

Stakeholder engagement is crucial in shaping effective policies. The integration of indigenous knowledge into environmental sustainability strategies remains underutilised in East Africa despite its potential for sustainable agriculture and ecosystem conservation (Burundi National Adaptation Programme, 2021). Public-private partnerships (PPPs) are gaining traction in green energy and eco-tourism but require stronger policy incentives to drive long-term investment (African Development Bank, 2021). Evidence-based policymaking remains a priority, particularly in climate resilience and disease surveillance. The Africa CDC One Health Framework enhances regional coordination for zoonotic disease management (Africa CDC, 2023). Meanwhile, initiatives like the World.

Bank Group's Environment Strategy (2012-2022) stress the importance of integrating sustainability into national economic planning (World Bank, 2023). The UNFCCC's Climate Finance Mobilization Strategy for Least Developed Countries in Asia demonstrates how streamlined access to international climate finance can benefit vulnerable economies, offering a model for East African nations (UNFCCC, 2024). Another promising approach to improving collaboration is the One Health High-Level Expert Panel (OHHLEP) Theory of Change (Mettenleiter et al., 2022), developed by FAO, UNEP7, WHO, and WOAH8. The framework aims to prevent, predict, detect, and respond to health threats through three main pathways: policy, advocacy, and financing; organisational development and sectoral integration; and data, evidence, education, and knowledge exchange. The framework also emphasises the "4 Cs" approach—collaboration, communication, coordination, and capacity building—which can guide One Health's implementation efforts within the EAC.

The successful integration of One Health and sustainable green development in the EAC depends on robust regional cooperation, improved financing mechanisms, and multisectoral governance. While significant policy frameworks exist, their implementation remains challenged by fragmented coordination, financial constraints, enforcement limitations, and disparities in policy adoption across member states.

Drawing from global best practices, including ASEAN's coordination models, ECOWAS's zoonotic disease prioritisation, and the European Green Deal, East Africa can strengthen its sustainability and health security initiatives. Moving forward, enhanced stakeholder engagement, stronger policy harmonisation, scientific evidence integration into policy-making, and targeted climate finance will be crucial in advancing regional resilience and long-term sustainability goals. By fostering cross-sector collaboration and adopting a holistic approach to health and environmental sustainability, East Africa can set a global precedent for One Health implementation.

8 World Organisation of Animal Health 7United Nations Environment Programme

3. Methodology

3.1 Scoping Review Approach

We employed a scoping review methodology to systematically identify and analyse EAC regional and national policies as well as research papers that integrate the One Health approach with Sustainable Green Development (OHSGD) within the East African Community (EAC). This approach allowed us to comprehensively map the existing literature and policy landscape, categorise key themes, and develop an overarching framework to understand how the One Health approach influences sustainable green development across EAC countries.

3.2 Search Strategy

A structured search was conducted using relevant OHSGD-related terms across multiple databases and policy repositories to identify documents published and implemented before December 20, 2024. The search terms were designed to capture policies explicitly discussing both One Health and Sustainable Green Development aspects across all EAC member states. We followed an iterative search process to ensure that the widest possible range of relevant policy documents was included.

3.3 Eligibility Criteria

Documents were considered eligible if they met the following criteria.

- Written in English or an official EAC language.
- Explicitly addressed aspects of both One Health and Sustainable Green Development.
- Published or implemented by governmental or recognised regional institutions within EAC.
- Available as full-text documents for review.
- Discussed policy measures within the East African Community with direct or indirect implications for environmental sustainability, public health, agriculture, or climate change mitigation within the One Health framework.

Exclusion criteria included documents that focused solely on health or environmental policies without an explicit connection to One Health, lacked sufficient detail to assess policy influence on Sustainable Green Development, and were opinion pieces or editorial reviews without empirical or policy-based backing.

3.4 Data Extraction

For each included document, we extracted key information such as:

- Policy name, year of implementation, and issuing authority.
- Thematic focus areas related to One Health and Sustainable Green Development.
- Geographic and sectoral scope within EAC.
- Stated objectives, strategies, and expected outcomes.
- References to multisectoral collaboration, climate change adaptation, and sustainable agricultural and environmental practices.

Data Synthesis and Framework Development

We employed the qualitative constant comparative technique to inductively code policy descriptions and examples of One Health aspects within the identified documents. The data was analysed using NVivo software with the aim of identifying recurring themes and policy mechanisms related to One Health and Sustainable Green Development. We then grouped the identified themes into overarching descriptive domains and developed a conceptual framework that positions these domains in relation to sustainable green development outcomes within EAC.

Through this process, we identified four key areas in which the One Health approach influences Sustainable Green Development in EAC, including (1) Integrated Health and Environmental Management, (2) Climate Change Mitigation and Adaptation, (3) Sustainable Agricultural Practices, and (4) Strengthening Multisectoral Collaboration. Through its emphasis on the interconnection of human, animal and environmental health, the One Health approach is intrinsically linked to the Sustainable Development Goals, particularly the following: SDG 3 (Good Health and Well-being), SDG 12 (Responsible Consumption and Production), SDG 13 (Climate Action), and SDG 17 (Partnerships for the Goals) (FAO, 2023). One Health promotes an integrated approach to disease surveillance and prevention, especially for cross-species (zoonotic) diseases, that would allow a faster and more effective response to outbreaks. This integrated approach is also applied to the evaluation and prevention of anti-microbial resistance (AMR) across species. Moreover, the One Health approach recognises the importance of environmental factors such as pollution, habitat destruction, and climate change on human and animal health. Thus, the One Health approach inspires good practices to preserve the environment and ensure healthy ecosystems that would ensure sustainable agriculture and mitigate climate change. Finally, the One Health approach highlights the importance of interdisciplinary collaboration among public health officials, environment scientists, policymakers, infrastructure specialists, etc. All the above-mentioned One Health aspects constitute a lesson to ensure that sustainable green development is conceptualised in a holistic manner.

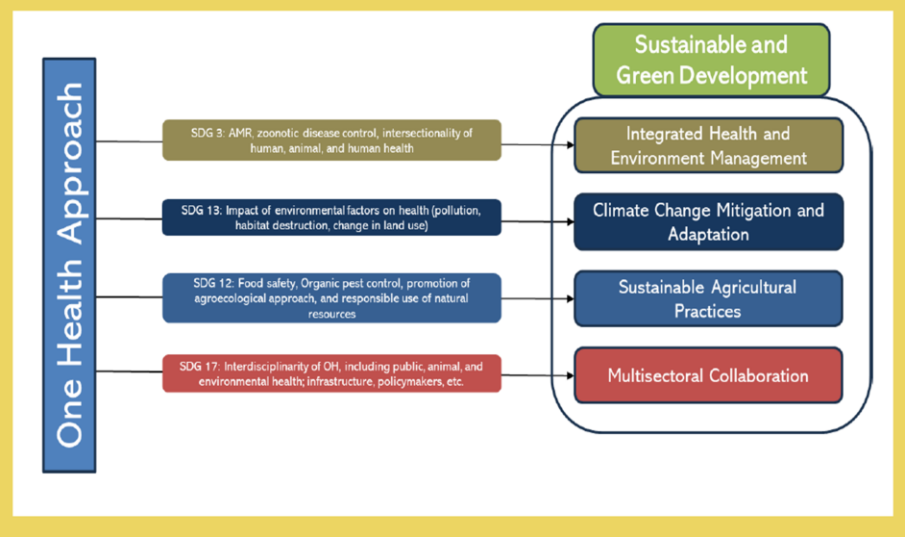

Figure 1. Conceptual Framework: One Health Approach's Influence on Sustainable Green Development

The framework highlights the relationships between these categories and their impact on sustainable green development, emphasising two critical focus areas for assessing the effectiveness of One Health policies in the EAC region's sustainable green development: (1) government and policy-driven interventions to health and environmental outcomes and (2) the extent to which these interventions address equity and sustainability concerns across diverse population groups.

4. Results

4.1 Characteristics of Articles Included in the Review

Following the screening process, a total of eight articles and fourteen policy documents from EAC member states were included in the analysis. More than half of the selected materials were conceptual, while the remaining combined qualitative and quantitative methodologies. These articles detailed governmental activities incorporating the One Health approach into policy frameworks across East African Community (EAC) countries.

Of the articles and policy documents included with a specific country focus, 72% of the documents originated from Rwanda's governmental initiatives incorporating One Health principles into national policy. Additionally, contributions from Uganda, Kenya, and Tanzania highlighted their respective efforts to align national policies with the One Health approach.

5. Discussions

5.1 Key Findings

5.1.1 Government Initiatives and Policy Implementation

Rwanda has taken a leading role in integrating One Health into national policies, with the Rwanda One Health Strategic Plan (2021-2026) playing a crucial role in disease surveillance, antimicrobial resistance management, and environmental conservation. Additionally, the Rwanda National Adaptation Plan (2021) underscores ecosystem-based adaptation strategies, promoting climate resilience through sustainable agricultural practices and natural resource management. Despite strong policy frameworks, challenges remain, particularly in securing long-term financing for these initiatives.

Uganda's One Health Strategic Plan (2018-2022) focused on strengthening cross-sectoral engagement, early warning systems for zoonotic diseases, and disaster risk management. The Uganda National Adaptation Programme (2021) emphasised the need for improved climate information systems to support sustainable green development. However, Uganda has faced difficulties in policy enforcement due to inconsistent inter-ministerial coordination, which has hindered its effectiveness in transboundary disease management.

Kenya's One Health Strategic Plan (2021) aims to integrate human, animal, and environmental health considerations into its national development policies. The Kenya National Adaptation Programme (2021) further aligns these objectives by addressing climate change adaptation and resilience-building strategies. However, fragmented governance structures and bureaucratic inefficiencies have posed obstacles to seamless policy execution.

Tanzania has developed its National One Health Strategic Plan (2022), focusing on the intersection of public health, environmental sustainability, and agricultural resilience. The plan aligns with the broader EAC Vision 2050 and the 6th EAC Development Strategy, which advocate for sustainable economic transformation. However, access to international climate finance, such as the Green Climate Fund, remains a significant barrier to full policy implementation.

Despite the absence of dedicated One Health Strategies in the Democratic Republic of the Congo (DRC), Somalia, South Sudan, and Burundi, their respective National Adaptation Programmes of Action (NAPAs) provide a framework for green and sustainable development. These plans align with broader One Health objectives, particularly in disease prevention, environmental conservation, and agricultural resilience.

In the DRC, the NAP (2022-2026) prioritises the conservation of forest ecosystems and biodiversity, integrated agriculture, water and sanitation management, and strategic action plans for implementation. The plan acknowledges that urban resilience must also be addressed due to cities' vulnerability to climate change impacts. Notably, indigenous populations are considered in adaptation priorities, including social clauses in negotiations with mining and forest operators to mitigate environmental damage.

Somalia’s NAPA (2013) was the first document outlining its urgent and immediate climate adaptation needs. It focuses on increasing community awareness, risk monitoring, and the adoption of government policy to improve resilience against climate risks. Additionally, Somalia’s Recovery and Resilience Framework (2018) aims to enhance sustainable management of natural resources, access to renewable energy, and disaster risk reduction, which are critical for mitigating disease outbreaks and food insecurity caused by climate variability .

South Sudan's NAPA (2016) highlights five priority thematic areas: environment, water resources, agriculture, disaster risk reduction, and policy/institutional frameworks. Specific adaptation measures include promoting climate-smart agriculture, wetland conservation, and establishing early warning systems for droughts and floods. The plan also underscores the need for institutional strengthening to integrate climate change into national policies .

Burundi's NAPA aligns closely with One Health principles by focusing on land degradation control, biodiversity conservation, and water resource management. The strategy includes promoting erosion control mechanisms, developing irrigation techniques, and encouraging sustainable agricultural practices to enhance food security and resilience against climate shocks.

5.1.2 Challenges and Opportunities in One Health and Green Development

While the East African Community (EAC) has established strong strategic policies to promote One Health and sustainable green development, several challenges hinder effective implementation. Fragmented governance, characterised by the absence of a formalised multi-sectoral framework, leads to inefficiencies in policy execution. Additionally, limited financing mechanisms remain a barrier. EAC nations rely heavily on international funding sources such as the Green Climate Fund and Multilateral Development Banks, yet face difficulties in accessing these funds, restricting the scalability of One Health initiatives. Weak institutional coordination further exacerbates these challenges, with case studies from Uganda and Rwanda highlighting how poor inter-ministerial collaboration hampers policy enforcement and resource allocation.

Despite these challenges, significant opportunities exist to strengthen One Health policies through enhanced multisectoral collaboration. Public-private partnerships (PPPs) have successfully advanced green energy projects and eco-tourism initiatives, showcasing thepotential for increased private sector engagement. Furthermore, integrating indigenous knowledge into environmental sustainability strategies remains an underutilised yet promising approach for promoting sustainable agriculture and conservation. Regional coordination efforts, such as the EAC Vision 2050, offer a pathway to improving policy harmonisation across member states, fostering a more cohesive and effective approach to One Health and sustainable green development.

6. Conclusion

The integration of One Health and sustainable green development in the EAC is progressing, albeit with challenges. While Rwanda, Uganda, Kenya, and Tanzania have established national frameworks aligning with the One Health approach, fragmented governance, financial constraints, and weak enforcement mechanisms continue to hinder effective implementation. Strengthening regional coordination, improving access to climate finance, and fostering multisectoral collaboration will be critical in advancing One Health initiatives across the region. Drawing on global best practices, such as ASEAN's structured coordination models and ECOWAS's policy harmonisation efforts, the EAC can enhance the sustainability and resilience of its health and environmental policies.

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3.4. One Health Theory of Change by One Health High-Level Expert Panel
3.5. Report on Pilot of the Short Course on: Pandemic Preparedness with a One Health Approach (by Dr. Adijah M.A Olubandwa)
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Sustainable human resource management practices in small and medium enterprises: A strategic imperative for achieving sustainable development in Zimbabwe

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ABSTRACT

With the quest for sustainable development increasingly becoming a persistent concern for countries and organisations both globally and locally, sustainable human resource management (SHRM) has emerged as a vital strategy for achieving sustainable development. The study underscores the imperative of integrating SHRM practices in Small and Medium Enterprises (SMEs) for the achievement of sustainable development goals in Zimbabwe. With SMEs in Zimbabwe facing a myriad of challenges, the study was aimed at understanding how SMEs may integrate SHRM practices into their businesses. Grounded in the Resource Based View (RBV) theory and the Sustainable HRM framework, the study contributes to the existing literature by providing insights into the ways of integrating sustainable HRM practices into Zimbabwean SMEs. A qualitative research approach was employed, where semi- structured interviews were used to gather data from 10 Human Resource Management practitioners and 12 Small and Medium Enterprise owners. Thematic analysis of data was done and the findings revealed that SMEs in Zimbabwe were aware of the importance of implementing SHRM practices, however, they faced several challenges. The study concluded that while SMEs face various challenges and have not done much in integrating SHRM practices into the business, they can gain significant economic, social and environmental outcomes from such an integration.

The study recommends SMEs to develop sustainability strategies, align SHRM practices with business goals, prioritise and focus on key areas, seek external expertise and support; capacitate SMEs owners and employees to be key players in implementing SHRM practices; and prioritise stakeholder engagement and partnerships in order to effectively integrate HRM practices into their businesses. The study underscores the potential of SHRM practices in enhancing the achievement of sustainable development where priority is given to the well-being of both people and the planet.

Key words: SHRM, sustainable development, SMEs, environmental sustainability, social sustainability; economic sustainability.

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1. Introduction

The pursuit for sustainable development has become a pressing concern for organisations globally (UN, 2020). As the world grapples with challenges of climate change, social inequality and economic stability, organisations are increasingly recognising the need to adopt sustainable practices that minimise their negative impact on the environment and the society (Baumgartner & Rauter, 2020).

In Zimbabwe where the economy has been facing significant challenges in recent years, the need for sustainable development is particularly acute (Mugova, 2020**).** Zimbabwe, like many other developing countries, is faced with numerous challenges that hinder its socio-economic development. The country has been experiencing economic instability, poverty, and inequality, which negatively impacted the lives of its citizens (Government of Zimbabwe, 2020). In order to address these challenges, Zimbabwe has committed to achieving the Sustainable Development Goals (SDGs), which are a set of 17 goals adopted by the United Nations (UN) in 2015 (UN, 2020).

The SDGs are aimed at promoting sustainable development. Sustainable development is defined as development that meets the needs of the present without compromising the ability of the future generations to meet their own needs (World Commission on Environment and Development, 1987). In order to achieve the SDGs, Zimbabwe has developed its own national development strategy, known as the National Development Strategy (NDS) 1, which outlines the country's development priorities and goals for the period 2021- 2025 (Government of Zimbabwe, 2021). One of the key areas of focus in the NDS 1 is the development of human capital, which is recognised as a critical factor in driving economic growth and development (Government of Zimbabwe, 2021). In order to develop human capital, organisations in

Zimbabwe need to adopt SHRM practices that prioritise the well- being and development of employees, while also promoting the sustainability of the organisation (Ehnert, 2009). SHRM has emerged as a vital strategy for enhancing environmental, social, and economic sustainability and organisations that adopt SHRM practices contribute to the attainment of sustainable goals (Ehnert, 2009). At the heart of an organisation's ability to contribute to sustainable development is its approach to human resource management (HRM). The way an organisation manages its human resources has a significant impact on its ability to achieve sustainable goals. This is because HRM practices influence employee behaviour, motivation, and productivity, all of which are critical factors in driving sustainability outcomes.

With SMEs constituting more than 80 percent of businesses in Zimbabwe (Mhlanga, 2024) and creating over 60 percent of employment opportunities (Tinarwo, 2016), SMEs are now recognized as fundamental components of the national economy. In many cases, these enterprises constitute a larger portion of the economic landscape than the more visible larger corporations, representing a critical element of economic development. (Jindal, Arora, Singla & Kaushal, 2024).

Despite the prevalence of SMEs in the economic landscape, the role of SHRM in these smaller businesses has not been comprehensively studied compared to their larger counterparts. Disregard in HRM research regarding SMEs is being countered by recent studies highlighting the crucial nature of effective HRM in ensuring the survival and success of these entities. Effective HRM in SMEs has been linked to significant organizational outcomes such as enhanced profitability, increased productivity, innovation rates, market share expansion, and improved environmental performance (Joseph & Shrivastava, 2024). These outcomes underscore the strategic value of HRM in contributing to the competitive advantage and sustainable development.

Despite the critical role that HRM plays in driving organisational success and contributing to sustainable development, many organisations in Zimbabwe face challenges in implementing SHRM practices that align with the principles of sustainable development and support the achievement of the SDGS and the NDS 1 goals (Government of Zimbabwe, 2021). Zimbabwe's economic instability, brain drain, and skills gap have further exacerbated the challenges faced by organisations in implementing effective HRM practices (Mlambo, 2018). Moreover, research has shown that Zimbabwean organisations have limited capacity to implement SHRM practices due to limited resources, inadequate infrastructure, and lack of expertise (Chiwunze, 2017). This is even more so for SMEs which are at a more disadvantage in terms of challenges compared to larger organisations.

Research has acknowledged that SMEs face unique challenges that are specific to them, and should therefore be considered separately from large organisations (Ndlovu & Ndhlovu, 2024). This study seeks to address the knowledge gap on how SHRM practices can be implemented and integrated into the overall business of Zimbabwean SMEs so as to achieve sustainability and support the achievement of SDGs and NDS 1 goals. This paper therefore explores how SMEs are integrating and implementing SHRM practices in driving environmental, social and economic sustainability to support sustainability goals in Zimbabwe.

In addressing the aim of the study, the key research question is: How can SHRM practices be integrated into the strategies of Zimbabwean SMEs to support the achievement of sustainable development? Sub questions are:

1) How are Zimbabwean SMEs integrating SHRM practices into their overall business strategy?
2) What are the key challenges that Zimbabwean SMEs face in implementing SHRM practices to achieve SDGs and NDS 1 goals?
3) What strategies can SMEs adopt to integrate and implement SHRM practices to achieve sustainable development?

The structure of this paper is organized as follows: Section 2 reviews the relevant literature, section 3 outlines the methodology that has been used to conduct this study, with section 4 presenting the results of the study, offering insights into the findings from the data gathered. Section 5 discusses these results, interpreting their implications in the context of existing literature. Section 6 concludes the paper by summarizing the key outcomes, sharing the limitations of this research, and suggesting recommendations and potential avenues for future research, with section 7 providing references of the sources used.

2. Literature Review

The concept of SHRM has gained significant attention in recent years, particularly in the context of achieving SDGs (Kramar, 2020). SHRM involves the adoption of HRM practices that support the organisation's sustainability goals, while also promoting the well- being and development of employees (Ehnert, 2009). This literature review provides an overview of the existing literature on SHRM and its implications to achievement of sustainable development in Zimbabwe. To have a better understanding of the concepts involved, the theoretical lenses from which the study was carried out is outlined first, then moving on to explain the concepts of the study.

2.1Theoretical background

SHRM has been addressed from various perspectives, such as institutional (Freeman, 1984), theory (Scott, 1987), stakeholder theory, a resource-based view (RBV) theory (Barney, 1991), the ability, motivation, and opportunity (AMO) theory (Appelbaum et al., 2000), and the Sustainable HRM framework (Ehnert, 2009). This study integrates the Sustainable HRM framework (Ehnert, 2009) and the (RBV) Theory (Barney, 1991). The framework explains how SHRM practices can contribute to the achievement of SDGs and NDS 1 goals in Zimbabwe, creating an imperative need for SMEs to integrate SHRM practices into their businesses.

The sustainable framework developed by Ehnert (2009), proposes that SHRM involves the adoption of HRM practices that support the organisation's sustainability goals, while also promoting the well-being and development of employees. The framework consists of three key components which are sustainable HRM practices; employee well- being and development; and organisational sustainability.

SHRM practices are those HRM practices that support sustainability goals, such as talent management; diversity and inclusion; employee engagement; and performance management (Ehnert, 2009). Employee well- being and development is the component that refers to the promotion of employee well -being and development through HRM practices such as training and development programmes, employee recognition and rewards systems; and work life balance initiatives (Ehnert, 2009). Organisational sustainability component refers to the organisation's ability to achieve its sustainability goals, such as reducing its environmental impact, promoting social responsibility, and ensuring economic viability (Ehnert, 2009).

The RBV of the firm (Barney, 1991), suggests that organisations can achieve sustainable competitive advantage by leveraging their internal resources and capabilities. The theory consists of two key components which are: valuable resources and capabilities. Valuable resources refer to resources that are valuable, rare, and difficult to imitate, such as human capita, organisational culture, and technology (Barney, 1991). Capabilities refer to the ability to utilise its resources effectively, such as its ability to innovate, adapt to change, and build relationships with stakeholders (Barney, 1991).

2.1.1 The Integrated Theoretical framework

The integrated theoretical framework proposes that SHRM practices can contribute to the achievement of sustainable development by leveraging the organisation's internal resources and capabilities. Thus, SHRM practices lead to employee well-being and development, which in turn contribute to organizational sustainability. Valuable resources (such as human capital, organizational culture, and technological capabilities) enable capabilities (such as innovation, adaptation to change, and building relationships with stakeholders), which in turn support sustainable HRM practices. Employee well-being and development contribute to organizational sustainability, which is enabled by capabilities. Organizational sustainability ultimately contributes to sustainable development (see figure 1 below).

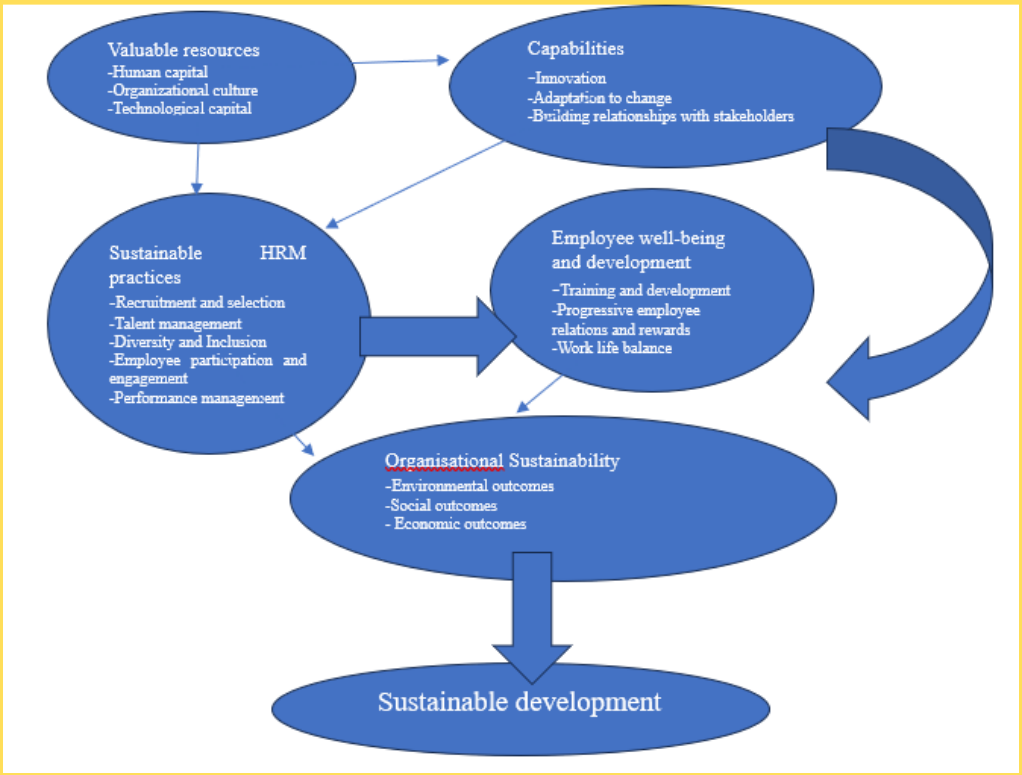

Figure 1: Conceptual framework (adapted from Barney, 1991: Ehnert, 2009)

2.2 Sustainable development

Sustainable development is now a globally recognized concern for societies and businesses (Ehnert, Harry, & Zink, 2014). It is a broader concept that not only encompasses environmental sustainability but also social and economic stability (UN, 2015). It involves balancing the economic, social and environmental dimensions of development to ensure that human well-being is improved while protecting the environment and the natural resources (Hopwood, Mellor, & O'Brien, 2005). The term sustainability, which is closely linked to, and sometimes used interchangeably with the term sustainable development is defined as the ability to meet current social, environmental and economic needs without negatively impacting the ability of future generations to meet their social, environmental and economic needs' (Brundtland Report for the World Commission on Environment and Development [WCED], 1987; Gachie, 2019; Sustainability is therefore a key aspect of sustainable development, with sustainable development being a more comprehensive and integrated concept that addresses the complex relationships between economic, social, and environmental factors. Although there is no universally accepted definition of sustainability (Ridsdale & Noble, 2016) to sustain' reflects that sustainability involves the management of the continuous existence of something over a long period (Burger & Middelberg, 2018; Dignen, 2000), with Purgał-Popiela (2024) contenting that sustainability concerns prolonging and protecting resources.

With the growing expectations and global awareness of sustainable development, the significance of sustainability therefore lies in three dimensions that support sustainable development at the firm level, namely, the economic, environmental and social dimensions (Yadav, Gupta, Rani, & Rawat, 2018). Research reveals that businesses that invest in sustainable practices have advantages of lowering risks, lowering costs, and possibly gain a competitive edge as the market for sustainable goods and services expands (Antonio et al., 2018; Hermundsdottir & Aspelund, 2021). Sustainability has also been found to attract human talent, reduce costs, and ultimately boost profits (Bodhanwala & Bodhanwala, 2018).

It should however be noted that it is those organisations with better resources that are at an advantage to tap into these benefits of sustainability. Therefore, large firms have been argued to have more resources and can therefore go further to protect and support sustainability goals, whereas small firms face constraints due to limited available resources. Large businesses have a variety of strategies to utilise resources and were the first to realise the issues of sustainability and start taking action (Yeganeh, McCoy, & Schenk, 2020). However, due to resource constraints, SMEs face challenges in protecting against economic, social, and environmental problems. If sustainability becomes an integral aspect of SMEs, these challenges can be resolved to a certain extent, enhancing sustainable development in Zimbabwe.

2.3 Sustainable Human Resource magegement (SHRM)

SHRM can be defined as "the adoption of HRM strategies and practices that enable the achievement of financial, social, and ecological goals, with an impact inside and outside of the organization and over a long-term time horizon while controlling for unintended side effects and negative feedback" (Ehnert, Parsa, Roper, Wagner, & Muller-Camen, 2016, p. 90). SHRM is therefore a strategic approach in managing human resources paying attention to economic, social and environmental aspects. SHRM is a key component of an organisation's sustainability strategy as it enables organisations to manage their human resource in a way that supports their sustainability goals (Ehnert, 2009).

According to Kramar (2020), it also involves the adoption of people management practices that support the organisation sustainability goals, while also promoting the well-being and development of employees. These practices include talent management, diversity and inclusion, employee engagement, performance management, well-being and health, learning and development, and employee voice (Clarke, 2020). Baumgart and Rauter (2020) argue that SHRM is an approach that recognises the critical role that employees play in driving sustainability outcomes.

SHRM therefore builds on strategic HRM and is seen an extension of strategic HRM (Stankevičiūtė & Savanevičienė, 2018). It presents a new approach to people management with the focus on long-term human resource development, regeneration, and renewal. Its main characteristics being long-term orientation, care of employees, care of environment, profitability, employee participation and social dialogue, employee development, external partnership, flexibility, compliance beyond labour regulations, employee cooperation, fairness, and equality (Stankevičiūtė & Savanevičienė, 2018).Just as strategic HRM included personnel management activities, SHRM includes strategic HRM (Krama, 2020).

The recognition of sustainability as an inherent aspect of development across all domains, has therefore ignited the growing research interest in SHRM (Ehnert, Parsa, Roper, Wagner, & Muller-Camen, 2016; Kramar, 2022). SHRM approach has evolved over the past decade and is among the current embryonic topics (Esfahani et al., 2017). Thus, SHRM remains a forthcoming theme (Mazur, 2017) and is still in its developing stages (Stankeviciute & Savaneviciene, 2018), implying that it has not been widely researched yet (Mazur, 2017). The concept of HRM was predominantly associated with large corporations, implying that SHRM practices adopted by small and medium-sized enterprises (SMEs) has not yet been fully researched. Despite their acknowledged economic significance, the understanding of HR practices within SMEs remains surprisingly limited (Biea, Dinu, Bunica, & Jerdea, 2024).
Scholars have therefore revealed a chronic underrepresentation of SMEs in HRM research as noted by Biea et al. (2024), Khan and Mohiya (2020), Heneman et al. (2000), and Chandler and McEvoy (2000). These studies suggest that SMEs often lack dedicated HR departments, which complicates the implementation of sophisticated HR policies and practices. The absence of specialized HR personnel is a significant hindrance, limiting the strategic HRM that is crucial and a forerunner of SHRM. Key issues like employee turnover, job satisfaction, employee development, reward management, and organizational compliance needs specialised skills of HR practitioners.

The studies therefore suggest that enhancing effective HR practices can lead to prolonged employment and reduced turnover, which are critical for the stability and growth of SMEs. The attainable of SHRM in SMEs can therefore happen if HRM practices by are first and foremost strategic, and then also linked to sustainability goals.

2.3.1 Integrating and implementing SHRM in SMEs

The integration and application of SHRM is a strategic process that integrates economic, social and environmental principles into HRM as a way of dealing with the sustainability demands by the business 's external environment (Farida, 2023). There are therefore key actions that should be taken if the integration is to be effective. Baumgartner & Rauter, 2020) opined that it is key to develop a sustainability strategy, which helps in defining sustainability goals. The SHRM practices would then be aligned with the organization's overall sustainability strategy. Sustainability audit is also done to identify areas for improvement and develop a plan to address them (Klewitz & Hansen, 2020). The reviewing and revising of SHRM practices should also be done to ensure policies align with sustainability goals and promote SHRM practices (Ehnert, 2009). It is also key to communicate sustainability expectations and responsibilities to employees (Renwick et al., 2020). Awareness encourages SMEs players to understand and internalize sustainability values, including environmental protection, social responsibility and employee welfare.

Several authors also proffered different ways of integrating and implementing SHRM. Kramar (2020), opined that integration of SHRM practices requires the implementation of sustainable recruitment and selection practices which allows for the development of a diversity and inclusion strategy that foster a diverse and inclusive workplace culture. Some authors argue that it is essential to foster a culture of sustainability by providing sustainability training and development opportunities; educating employees on sustainability principles and practices (Sharma & Sharma, 2020); and encouraging employee participation and engagement by fostering a culture of sustainability through employee involvement and feedback (Aragon-Correa et al., 2020).

SHRM practices should also embed sustainability into performance management by integrating sustainability goals into performance management. This then allows employee performance to be aligned with sustainability objectives (Ehnert, 2009). Sustainability performance can then be evaluated by measuring and tracking sustainability performance (Klewitz & Hansen, 2020).

Other authors suggested the provision of incentives for sustainable behaviour where SMEs can recognize and reward employees for their contributions to sustainability (Renwick et al., 2020). Sustainable employee benefits and well-being programs that promote sustainable living, such as public transportation reimbursement or on-site fitness classes (Hahn et al., 2020) can also be offered. It is also crucial to engage with stakeholders and communicate sustainability progress by sharing sustainability achievements and progress with employees, customers, suppliers, and the wider community (Aragon-Correa et al., 2020). These different ways can help SMEs integrate sustainable human resource management practices into their businesses, contributing to a more sustainable future.

In Zimbabwe, the adoption of SHRM practices by SMEs is critical for achieving the SDGs and the NDS 1 goals. This is because SHRM practices can help SMEs to develop the human capital needed to drive economic growth and development, while also promoting the well-being and development of employees (Ehnert, 2009). Wang (2016) notes, in emerging and developing economies, owners of small and medium-sized enterprises (SMEs) are an integral part of economic development. This makes SMEs key players in the implementation of SHRM practices in these economies.

2.4 Challenges that SMEs face in implementing SHRM practices

In as much as SMEs are considered to be key in enhancing sustainable development, studies suggest that SMEs face a lot of challenges in implementing SHRM practices. SMEs often lack dedicated HR departments, which makes the implementation of sustainable HR policies and practices difficult (Biea et al., 2024; Khan & Mohiya, 2020).

The absence of specialized HR personnel is a significant limitation, obstructing the strategic HRM that is crucial for the integration on sustainability into HRM practices. Another key challenge is the need to balance the organisation's sustainability goals with the needs and interests of the employees (Ehnert, 2009; Kramar, 2020). This can be difficult to achieve in practice, especially in organisations where there may be conflicting priorities and interests. Thus, the need to develop HRM practices that support sustainability goals; while also promoting the well- being and development of employees requires HR practitioners to have a deep understanding of the organisation's sustainability goals, as well as the needs and interest of employees.

Additionally, implementing SHRM practices can be challenging due to lack of resources and support (Gollan, 2000). Many SMEs may not have the necessary resources or support to implement SHRM practices, particularly in developing countries where resources may be scarce (Hartel, Fujimoto & Strybosch, 2020). Furthermore, implementing SHRM can be challenging due to the need to change the organisational culture (Clarke, 2020). Accordingly, Baumgart and Rauter (2020) argue that this would require a fundamental shift in the way that organisations think and manage their human resources.

Other challenges that organisations may face when implementing SHRM practices include resistance from employees and managers (Ehnert, 2009); lack of awareness and understanding of sustainability issues (Kramar, 2020); difficulties in measuring and evaluating the impact of sustainable HRM practices (Gollan, 2000); limited availability of training and development programmes that focus on sustainability (Hartel et al. 2020) ; and the difficulties in integrating sustainability into performance management systems (Clarke, 2020). These challenges therefore need to be dealt with, if SHRM practices are to be integrated and implemented in SMEs to enhance sustainable development.

3. Methodology

This study employed a qualitative research approach, involving semi- structured interviews with human resource (HR) practitioners in SMEs and owners of SMEs in Zimbabwe. The interviews were conducted over a period of three months and were designed to gather data on how SMEs are integrating and implementing sustainable HRM practices to support their sustainable goals. A total of 20 semi- structured interviews involving 10 HR practitioners working in SMEs and 10 business owners were conducted, some in person and others using video, calls lasting approximately 45-60 minutes each. The interviews were recorded and transcribed, and the data was then analysed using thematic analysis. Pseudo names were then used to protect and maintain the respondents' anonymity, where HR 1-10 was used to represent HR practitioners with SMEO 1-10 also used to represent views from the SME owners. The analysis revealed several key themes related to SHRM practices in Zimbabwe**.**

4. Results

This report presents findings on SHRM practices in SMEs in Zimbabwe, based on interviews with 10 HR practitioners and 10 SME owners (who run as de-facto human resource practitioners in their business). The study aims to identify the current state of sustainable HR practices in SMEs, challenges faced, and strategies for achieving sustainability, which ultimately leads to sustainable development.

4.1 SHRM Practices being integrated and implemented in SMEs

The study revealed that most SMEs in Zimbabwe are not integrating SHRM practices into their businesses. While there is some awareness of the importance of integrating SHRM practices into their business, the findings revealed that most SMEs implement HRM practices to fulfill their operational needs.

The most common HRM practices being implemented included recruitment and selection; employee well-being and development, training and employee wellness programs and safe working practices. These were found to be mainly practiced to ensure employee safety and productivity. The findings also revealed that some few SMEs were now making efforts to integrating sustainable business practices such as reducing environmental impact, and promoting sustainability. Some of the respondents had this to say:

We are mainly implementing HR practices for productivity and survival reasons (SMEO 5).
We're integrating HRM practices by adopting safe working practices and providing employees with training and development opportunities (HR 2).
We're integrating SHRM practices by adopting sustainable energy practices and providing employees with training and development opportunities (SMEO 3).

While most respondents were in agreement that they do not focus mainly on sustainability but productivity and profitability, the findings revealed that the few that alluded to implementing some SHRM practices came from medium enterprises, which may imply that medium enterprises are in a better position to integrate and implement SHRM practices than the smaller enterprises.

Responding to how SHRM are being integrated into SMEs, most respondents revealed that most SMEs in Zimbabwe were not yet integrating SHRM practices into their business operations. They argued that SHRM is still a new management approach, and mainly implemented by large organisations. However, these SMEs highlighted some of the areas that they can integrate SHRM into their businesses. The findings revealed that SMEs may provide training and development programs that focus on sustainability, such as environmental awareness and social responsibility.

The findings further revealed that SMEs may integrate workforce diversity into their businesses by fostering a diverse workforce through recruiting employees from diverse backgrounds, ages, and abilities. The encouragement of employee participation in sustainability initiatives, such as environmental conservation, community development, and social responsibility projects; and communication of SHRM practices were also found to be ways of integrating sustainable HRM practices into the SMEs. Some of the respondents highlighted that:

> *The concept is still new but we can recruit people from a diverse background to try to have a mix of different people. (HR 10).*
>
> *We may re- focus our training and development programs to focus on sustainability by looking at both environmental issues and economic sustainability. We may also do diversity training programmes to promote diversity and inclusion (HR 7).*
>
> *As an owner, I can regularly solicit employee feedback on sustainability initiatives, using this feedback to improve and refine sustainability strategies (SMEO 8).*

4.2 Benefits of SHRM practices

The findings of this study highlighted several benefits of integrating SHRM practices into SMEs. Most respondents mentioned improved employee engagement; enhanced organizational reputation; and increased productivity as the main benefits of integrating sustainable HRM practices into their businesses. Some of the respondents alluded that:

We're gaining improved employee engagement, retention, and productivity (HR 1).

We're gaining a competitive edge, improved brand reputation, and enhanced employee experience (SMEO 1).

We're gaining improved employee safety and productivity, and enhanced organizational reputation. (SMEO 7).

The findings also highlighted better talent attraction and retention and improved environmental performance as benefits of integrating practices. It is interesting to also note that most respondents who reported improved employee engagement as a benefit also reported enhanced organizational reputation and increased productivity as major benefits of SHRM practices. Improved environmental performance was mostly reported by HR practitioners, who mainly argued that well-motivated and engaged employees go an extra mile to improve the business's environmental goals. It is important to note that the responses pointed to economic, social and environmental outcomes as benefits of implementing SHRM practices.

4.3 Challenges faced by SMEs in Zimbabwe when integrating sustainable HR practices

The findings revealed several challenges faced by SMEs in Zimbabwe in integrating sustainable HR practices. These challenges included limited resources where most respondents mentioned limited resources in the form of financial, human, and technological resources. The study further revealed the lack of expertise as another challenge with most respondents highlighting the lack of expertise and knowledge in SHRM practices as a major challenge. Thus, limited knowledge and understanding of SHRM practices, lack of training and development opportunities for employees and limited access to consultants and experts in SHRM practices resulted in this challenge. Some respondents outlined that:

Challenges include limited resources, lack of expertise, and competing priorities. We usually put more emphasis on profitability (SMEO 9).

We are small business owners with minimum expertise in specialised HRM work, so we work with the limited knowledge in that area. If I am to be frank with you, I do not even understand what these sustainable practices actually entail (SMEO 6).

Some respondents pointed to competing priorities as a challenge, citing the need to balance HRM practices with other business priorities. The findings revealed that it was difficult to balance short-term and long-term goals and at the same time managing trade-offs between different business priorities. One respondent argued that:

We usually put more emphasis on profitability against the well-being of people (HR 3).

Furthermore, resistance to change was also cited as another challenge with the findings revealing difficulties in changing the organizational culture and employee attitudes. Thus, resistance came mainly from employees, management and a rigid organisational culture. The findings further revealed difficulties in measuring the impact of SHRM practices on business outcomes as yet another challenge encountered by SMEs. Thus, limited access to data and metrics, difficulties in attributing business outcomes to SHRM practices; and limited understanding of how to measure the impact of sustainable HR resulted in most SMEs being reluctant to integrate SHRM practices into their businesses. Other challenges revealed by the findings also included limited support from government and regulatory bodies, limited access to funding and resources, and difficulties in finding and retaining employees with the necessary skills and expertise. Some of the responses were:

Challenges included measuring the impact of sustainable HR practices, limited resources, and competing priorities (HRM, 6).

Given our resource strain, we cannot sustain fully specialised HR practitioners, so we do what is need to be done on our own. We use the minimum skills we have to keep the business going (SMEO 2).

Adopting sustainable HRM practices means that we need to be flexible and embrace some changes in the way we are used to do things. This is usually difficult as people are more comfortable in their old comfort zones (HR 4).

It was also noted from the findings that most respondents who reported limited resources as a challenge also reported lack of expertise and competing priorities as challenges their challenge. Respondents who reported resistance to change as a challenge also reported difficulties in measuring the impact of SHRM practices. Furthermore, respondents from smaller enterprises (less than 50 employees) reflected more on limited resources and lack of expertise as challenges, whilst respondents from MEs (more than 50 employees) reported competing priorities and resistance to change as their main challenges. These findings therefore highlight the complex challenges faced by SMEs in Zimbabwe when integrating sustainable HR practices.

4.4 Strategies for effectively integrating and implementing SHRM practices in SMEs

The analysis of the findings revealed several ways of integrating SHRM effectively given the challenges facing SMEs. One of the recommendations was that SMEs have to align their HRM practices with organizational sustainability goals and objectives to enhance organizational performance and reputation. Another recommendation was for SME owners to seek external expertise and support, so as to reduce the skills gap. Furthermore, respondents recommended that SMEs should provide training and development opportunities for employees to enhance their skills and knowledge in sustainable HR practices.

It was also recommended that policymakers develop targeted policies and programs to support SMEs in integrating sustainable HR practices. Respondents also recommended that SMEs foster collaboration and partnerships with other organizations, including NGOs, government agencies, and industry associations, to support the integration of sustainable HRM practices into SMEs.

The findings therefore provide significant recommendations for supporting SMEs in integrating sustainable HR practices into their business. Some of the responses were:

We need resources and some training on sustainability issues if change is to be seen. To some of us, these are new concepts coming into business, and we do not have the know-how of how it is done (SMEO 3.)

The first important thing is to align all our HRM strategies with the organisational sustainability goal (HR5).

5. Discussion and findings

Findings from this study highlighted the importance of SHRM practices in driving sustainability outcomes in SMEs. The data analysis revealed that SMEs in Zimbabwe are aware of the importance and benefits to be accrued in implementing SHRM practices. These findings are in support of previous studies that have opined that effective HRM in SMEs contributes to significant organizational outcomes such as enhanced profitability, increased productivity, innovation rates, market share expansion, and improved environmental performance (Joseph & Shrivastava, 2024). These outcomes underscore the strategic value of HRM in contributing to the competitive advantage of SMEs and ultimately to sustainable development.

The findings also pointed to the various SHRM practices that can be incorporated into SMEs for sustainable development. These included talent management, diversity and inclusion, employee engagement, performance management, well-being and health, learning and development; and employee voice. These findings are consistent with literature where (Kramar, 2020) highlighted the importance these sustainable HRM practices in driving sustainable outcomes.

It should however be noted that in as much as the SMEs were aware of the value and contributing of SHRM practices to organisational sustainability and sustainable development, the study however revealed that little is being done to integrate these SHRM practices into SMEs. Thus, most HRM practices were implemented for short term gains with a short-term focus like profitability and survival without necessarily linking these practices with the sustainability principles. Contrary to these findings, Ehnert (2020) emphasised the importance of adopting a strategic approach to people management, one that recognises the crucial role of employees in driving sustainability outcomes.

It should however be noted that the findings of the study revealed that the major drawbacks in integrating SHRM into SMEs business were a series of challenges that SMEs were facing. These challenges included limited resources, resistance to change from employees and managers, lack of awareness and understanding of sustainability issues and the limited availability of training and development programmes that focus on sustainability.

These challenges made it difficult for SMEs to implement SHRM practices. The findings are consistent with the literature as argued by Chiwunze (2017) that SMEs have limited capacity to implement SHRM practices due to limited resources, inadequate infrastructure, and lack of expertise. Biea et al. (2024) also contented that SMEs often lack dedicated HR departments, which makes the implementation of SHRM policies and practices difficult. Furthermore, previous studies have acknowledged that SMEs face unique challenges that are specific to them (Ndlovu & Ndhlovu, 2024), highlighting the importance of addressing these challenges in order to successfully implement SHRM practices in SMEs.

As mitigatory measures to these challenges and to pave a way for the integration of sustainable HRM practices in SMEs, the findings of the study brought forth several ways of supporting SMEs in integrating sustainable HRM practices. These recommendations included providing training and development opportunities on sustainability and SHRM, develop sustainability strategy and aligning HRM practices with organizational sustainability goals, and fostering collaboration and partnerships.

These recommendations are consistent with recent literature, which emphasizes the importance of policy and regulatory support for SMEs (Klewitz et al., 2020) and the need for HRM practices to be aligned with organizational sustainability goals (Ehnert et al., 2020).

The findings of this study highlight the challenges and benefits associated with the integration of SHRM practices in SMEs in Zimbabwe. The study's findings are consistent with recent literature on SHRM and provide insights into the complexities of integrating and implementing SHRM practices in SMEs. The study's recommendations for supporting SMEs in integrating SHRM practices are also consistent with recent literature and provide a framework for policymakers, practitioners, and researchers seeking to support SMEs in integrating sustainable HRM practices.

6. Conclusions, recommendations and limitations

6.1 Conclusions

The study highlighted the importance of SHRM practices in SMEs for the achievement of sustainable development goals in Zimbabwe. Thus, practices such as talent management, diversity and inclusion, employee engagement, performance management, well-being and health, learning and development, and reward management are believed to enhance employee well-being and development, which are key to organisational sustainability in the form of economic, social and environmental outcomes.

Thus, organisational sustainability has been found to enhances the achievement of sustainable development goals. The study also concluded that while SMEs face various challenges and have not done much in integrating SHRM practices into the business, they can develop sustainability strategies, align SHRM with business goals, prioritise and focus on key areas, seek external expertise and support; and prioritise stakeholder engagement so as to gain significant benefits from SHRM integration with business.

6.2 Recommendations

6.2.1. SMEs should develop sustainability strategies that align with their business goals and objectives, and then align SHRM practices with these sustainability goals.

6.2.2. Given their limited resources, SMEs may prioritize and focus on key areas that align with business objectives. They may therefore develop a phased implementation plan that prioritizes sustainable HRM practices based on available resources and competing priorities.

6.2.3. To alleviate the limited expertise in HRM and sustainability, SMEs can seek external expertise and support from HR consultants, sustainability specialists, or industry associations to develop and implement sustainable HRM practices. Furthermore, they may also develop internal HR capacity by providing owners with basic HR training to equip them with essential HR knowledge.

6.2.4.SMEs to prioritize stakeholder engagement and partnerships. Universities through community service can help these SMEs with the needed training and development capacitation, businesses and NGOs may provide assistance with the needed financial resources, and the government can intervene through providing programmes and policies that support sustainability in SMEs.

6.2. 5. To deal with resistance to change, SMEs can engage employees in sustainability efforts through training and development programs to raise awareness and promote behaviour change.

6.3 Limitations and further research

The study had some limitations, including the sample size which was limited to 20 participants, which may not be representative of all SMEs in Zimbabwe. The qualitative research approach employed may not provide generalizable results. Also, the study focused on sustainable HRM practices in SMEs in Zimbabwe, which may not be applicable to other contexts or industries. Similar research can be done using a different methodology. Also, further research can be done to explore the impact of SHRM on SMEs in Zimbabwe, including the development of metrics and benchmarks to measure sustainability.

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A Synopsis of Green Energy Technology Implementation in South Africa

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Abstract

The implementation of green energy technologies in South Africa represents a pivotal strategy to address the nation's energy security challenges, mitigate climate change, and drive sustainable economic development. This study critically examines the adoption, diffusion, and scalability of green energy technologies, focusing on renewable energy sources such as solar, wind, and hydropower, as well as innovative energy storage and grid modernization initiatives. South Africa's energy landscape is notable for its reliance on coal, which contributes heavily to greenhouse gas emissions and environmental deterioration. However, regulatory initiatives like the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) have accelerated the integration of renewable energy into the national grid. This qualitative study employs a document review methodology to critically analyze the implementation of green energy technologies within the country's socio-economic and policy contexts. Drawing on a wide range of data sources, including government policies, energy sector reports, international agreements, and academic publications, the research explores the barriers, drivers, and impacts of transitioning to renewable energy systems. The study uses a thematic analytic methodology to find recurring trends and insights, with an emphasis on three key areas: policy formulation and execution, stakeholder collaboration, and the socioeconomic repercussions of green energy programs.

The findings reveal a dual narrative of progress and constraint: while initiatives like the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) have successfully mobilized private investment and increased renewable energy capacity, challenges such as policy inconsistency, insufficient grid infrastructure, and limited public participation remain. Furthermore, the study emphasizes the need for stronger alignment between green energy projects and the concepts of a just energy transition, particularly in terms of creating job opportunities, tackling energy poverty, and assisting communities that have historically relied on coal businesses. This research emphasizes the necessity of integrated, inclusive, and flexible policy frameworks for improving the scalability and sustainability of green energy technology. Through using document review as a primary data collection method, the study provides a nuanced understanding of South Africa's green energy transition, as well as recommendations to policymakers, industry stakeholders, and development practitioners to accelerate the country's transition to a low-carbon future. These findings add to the broader discussion of equitable energy transitions in the Global South, emphasizing the interplay of environmental, economic, and social concerns.

Keywords; Green energy, policy, projects, South Africa, technologies, climate change

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1. Introduction

According to Khan *et al.*, (2017), an estimated 520 quadrillion BTUs of energy were consumed worldwide in 2010, and by 2040, that number is expected to have increased by 56%. As things stand, energy consumption and demand exceed the amount of energy currently available, and by the end of the century, energy demand is likely to peak at more than six times the current capacity (Awasthi *et al*. Citation2019; Kothar, Tyagi, and Pathak 2010). The quest for renewable, clean, cheap, and sustainable energy resources has become inevitable. Moharir, Gautam, and Kumar (2019) add that the difficulty of disposing trash in a sustainable and environmentally sound manner faces developed as well as developing nations. Electricity generation, transmission, and use are major factors in a developing nation's socioeconomic and infrastructure development.

Thus, it should come as no surprise that South Africa, the continent's biggest energy consumer, is also one of the most developed countries (Ouedraogo, 458: 2017). South Africa is located on the southernmost tip of the African continent. The nation is endowed with an abundance of mineral resources, including gold, diamonds, platinum, and more (Erasmus *et al*, 2020), among these mineral resources, coal is found in South Africa, which ranks seventh globally in terms of coal production, according to the most recent edition of the International Energy Agency's (IEA) Energy Atlas (2022). According to Eskom (2002), more than 85% of South Africa's electricity is produced by coal, making it the nation's most abundant energy fuel. In addition to successfully contributing to the production of energy, coal has positioned South Africa among the top 10 global emitters of greenhouse gases.

In 2018, out of the three nations with the biggest economies—South Africa, Egypt, and Nigeria—it was determined that South Africa had the best plan for renewable energy (Aliyu *et al*, 2018). South Africa's need to diversify its energy mix, lower carbon emissions, and address issues with energy security has fueled the country's fast-growing green energy industry. According to Olusola *et al.*, (2021), there has been an attempt to diversify the nation's energy sources. Figure 1 illustrates the presence of solar PV, wind, biomass, and concentrated solar power (CSP) RE technologies in each of the country's provinces, according to the most recent data on renewable energy given by the South African Department of Energy (Olusola *et al*, 2021).

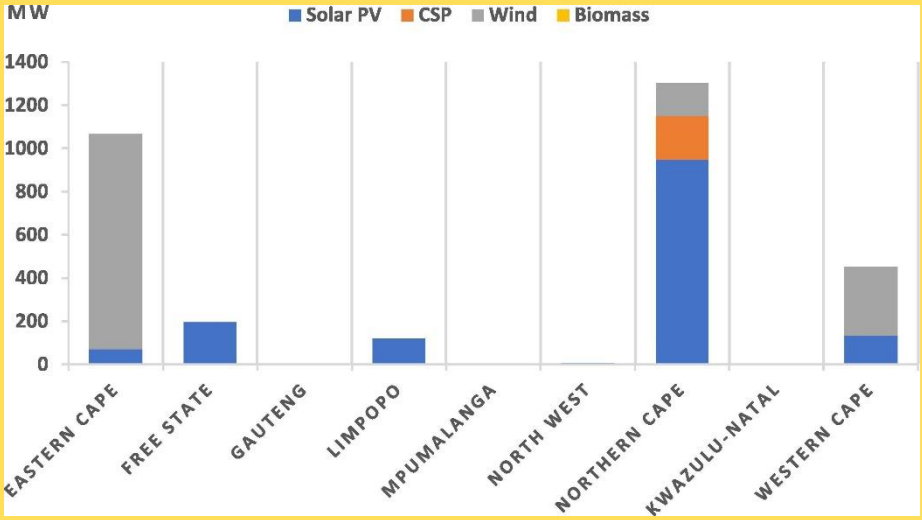

Figure1: South Africa’s electricity generation in TWh by different technologies.

Although South Africa was largely dependent on coal in the past, and it still generates about 80% of its electricity, however, a considerable push for renewable energy has been made because of environmental concerns, international climate commitments, and frequent power outages (load shedding). Olusola *et al.*, (2021) Indicates that like the majority of nations, South Africa recognizes the necessity of using renewable energy (RE) sources to supplement or replace its energy sector that is reliant on fossil fuels. Consequently, additional steps have been taken to diversify the nation's energy mix, such as the implementation of policy frameworks which shall be discussed in Section 3 of the paper.

A major factor in South Africa's energy shift is the efficient use of renewable technologies. In addition to hardware deployment, this entails addressing socioeconomic, infrastructure, and regulatory aspects to guarantee long-term acceptance. Additionally, the growth of the nation's renewable energy industry could lead to more employment openings and an improvement in the South African economy. South Africa also aims to increase the share of green energy technologies in total energy consumption by 15% by 2030 while adhering to national and international emission standards (IRENA,2020). However, only a brief overview of the difficulties and advancements in South Africa's adoption of green energy technology is provided. As a result, this paper expands upon earlier assessments to give readers a more thorough understanding of South Africa's advancements in green energy technologies.

2. Literature Review

2.1 Policy framework for green energy.

South Africa’s move towards a green energy economy is driven by a broad policy framework that backs the growth and use of renewable energy technologies. Over the past years, the country’s policy landscape has grown substantially with different legislation, regulations, and initiatives to reduce greenhouse gas emissions, increase energy security and stimulate economic growth.

This section gives an overview of the main policy frameworks that support South Africa’s green energy technology implementation. These frameworks have greatly contributed to the formation of the country’s renewable energy sector, as well as attracting investment and driving innovation.

2.2 South Africa's Nationally Determined Contribution (NDC) (2015)

According to United Nations Framework Convention on Climate Change (2022), the first Nationally Determined Contribution (NDC) for South Africa was submitted to the UNFCCC in October 2015. To this end it aimed to help the country address climate change through sustainable development, equity and science. The NDC details South Africa's commitments on greenhouse gas emissions reduction and a move to a low-carbon economy. Increasing the usage of renewable energy sources like solar and wind power is one way to meet the NDC's goal of a 42% decrease in greenhouse gas emissions by 2025 (South Africa, 2015). This target is in conformity with the Paris Agreement that the country has signed to reduce global warming to more than 2°C and as much as feasible to 1.5°C above the preindustrial levels (United Nations, 2015). Considering this, the NDC recommends, among other things, encouraging renewable energy projects, improving energy efficiency, and creating green jobs.

2.3 National Energy Act (2008)

According to Cliffe Dekker Hofmeyr (2023), the National Energy Act 34 of 2008 is a South African piece of legislation which aims at ensuring that there is a stable supply of energy through various sources at reasonable prices. The Energy Act of 2008 is a crucial piece of legislation that was passed to address South Africa's energy problem and guarantee a sufficient supply of energy (South Africa, 2008). With this comprehensive approach, the entire country will be able to develop a sustainable energy mix that considers its social, economic, and environmental concerns.

2.4 National Climate Change Response White Paper (2011)

In 2011, the South African government released a White Paper called "The National Climate Change Response White Paper," which essentially serves as their official national response to climate change. It lays out the country's strategy for a low-carbon, climate-resilient economy and society (Air Quality Lekgotla, 2012). According to AQL (2012) it further states that the Government adopted the National Climate Change Response Policy (NCCRP) in October 2011 and the policy was officially published as a White Paper in the Government Gazette (No. 34695, Notice No. 757). The policy highlights several strategic priorities, including the reduction of greenhouse gas emissions; promotion of renewable energy and energy efficiency; and the creation of climate-resilient infrastructure. Another goal of the NCCRP is to reduce greenhouse gas emissions in South Africa by 42% by 2025 (Department of Environmental Affairs, 2011).

2.5 Renewable Energy Independent Power Producer Procurement Programme (REIPPPP)

According to Naude and Eberhard (2016) the literature states that The Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) was launched by the South African government in 2011 to promote the development of renewable energy sources This public-private collaboration aims to reduce greenhouse gas emissions, boost renewable energy production in South Africa, and achieve the nation's sustainable development objectives (National Treasury, 2012). Increasing the amount of power generated from renewable energy sources, such as solar and wind, is one of the primary objectives of the REIPPPP. Additionally, the initiative promotes the use of renewable energy sources, which help fight climate change because they don't create greenhouse gases change (IPCC, 2018).

2.6 Integrated Resource Plan (IRP) 2010

South Africa's energy policy for the forty-year period from 2010 to 2030 was largely established by the Integrated Resource Plan (IRP) 2010. The IRP 2010 relied on a number of fundamental assumptions, such as demand forecasts, the efficiency of current power plants, the cost of technology, and plans for new plant commissioning and decommissioning (Department of Energy, 2010). Based on these presumptions, the Base Case served as a benchmark for comparing various situations that were discussed in the IRP 2010 document. Technology overnight costs, which acknowledged the interest expenses these technologies accrued over time, were effectively incorporated into the IRP 2010. The IRP 2010 examined fuel costs, paying particular emphasis to liquefied natural gas. The IRP 2010 identified advancing technology as a vital matter within the energy sector especially for renewable energy systems which demonstrated substantial cost reductions throughout the recent years (IRENA, 2019).

2.7 Technological innovations and challenges.

The feed-in tariff is the second phase of a strategy that South Africa (NERSA) launched to support the renewable energy sector (NERSA, 2009). The policy's objective was to provide incentives to businesses and private investors who support the nation's quest for green power generation. In support of this, South Africa published a white paper in 2003 outlining its plans to transition to renewable energy sources, including biomass, wind, solar, and small-scale hydropower, in order to produce 10 TWh of electricity (Olusola *et al.*, (2021).

2.8 Boimass energy.

Renewable energy that comes from organic materials, either directly or indirectly, is known as biomass energy. It can be found in solid, liquid, or gaseous form (Sanderson *et al,* 2020). Technologies for biomass energy are essential to South Africa's shift to renewable energy since they provide environmentally friendly options for heating, power generation, and the manufacture of biofuel. According to Jahns (2023), Over 100 GWh of energy were produced using biomass power in 2016, according to the South African Renewable Energy Data and Information Service; no numbers have been recorded since. However, with various plant layouts, modern technology has made it possible to burn biomass on a big scale to generate energy. Adding biofuels to South Africa's energy mix will help diversify the fuel supply for power generation and offer a substitute for the country's ongoing reliance on importing crude oil for transportation.

2.9 Wind energy.

In South Africa, wind has long been a source of energy. As early settlers, who were mostly farmers, utilized windmills to pump water for farming, this practice was partly responsible for the farmers' high levels of production (Van der Linde,1996). The country's wind energy potential was divided into three categories based on the findings: good, moderate, and low. According to Olusola *et al.,* (2021), the Western and Eastern Cape regions' coastline areas were deemed to have good wind energy potential due to their average annual speed of more than 4 m/s at 10 m above ground level. The foothills of Drakensburg, Kwazulu-Natal, and Bushmanland are categorized as having modest potential for wind generation. And lastly, the Bushveld basin and Cape Middleveld were designated as low wind potential zones.

2.10 Solar energy.

South Africa has a vast amount of solar energy potential, according to the World Bank Group's Global Solar Atlas in collaboration with Solargis, even though regional variations in irradiance exist. Findings indicate that scholars such as Bischof-Niemz & Trollip, (2019); Baker, (2015); and Roux-Rosier *et al.*, (2018) support that despite ongoing issues like policy uncertainty and grid integration, South Africa's enormous solar energy potential—fueled by the country's high solar radiation and bolstered by programs like the REIPPPP—has drawn substantial investment, encouraged technological advancements, and produced socioeconomic benefits. According to Edkins, Marquard, & Winkler, (2010), South Africa receives an average of 2,500 hours of sunshine each year, making it one of the countries with the highest levels of solar radiation worldwide.

This high solar insolation makes both photovoltaic (PV) and concentrated solar power (CSP) technologies highly viable. Mokwena *et al.*, (2018) examined the latest developments in PV efficiency and energy storage technologies in South Africa's solar industry and according to their research, hybrid systems that include solar and battery storage are essential for improving grid stability in isolated locations. Furthermore, Szewczuk (2017) wrote about how combining solar and microgrids has increased rural areas' access to electricity.

2.11 Challenges.

Lack of access to contemporary electricity results in less options for social services including water supply, healthcare, and educational facilities, all of which depend on contemporary energy sources. The development and utilization of green energy sources in South Africa are hindered by a number of obstacles. The following are some of the main challenges found when conducting this research:

- Human and technical capability limitations
- Governing the cost of power
- Political barriers
- Inadequate rural energy markets and infrastructure
- Lack of skilled manpower
- Lack of coherent and clear policies

In South Africa, the electrical sector is responsible for about half of greenhouse gas emissions (Smarte Anekwe *et al*, 2024). Eskom (2022) adds that over the course of the next three decades, the nation's 39 gigawatts (GW) of coal-fired power facilities will be decommissioned, with 22 GW expected to shut down by 2035. For the energy transition to succeed, these challenges need to be addressed. The stagnant green energy policy framework of the nation exacerbates these issues. Akinbami, Oke and Bodunrin (2021), revealed that the nation's strategy for integrating renewable energy into the energy mix is disjointed and devoid of the resources required to encourage the expansion of the usage of renewable energy in the nation.

2.12 Investments and financial mechanisms.

South Africa has many opportunities for investment in green energy technology due to government incentives and private sector as well as financial mechanisms' investments. This paper will discuss two (2) main investments which are Private Sectors Investments and Government Incentives.

2.13 Private Sector Investments

The development of the green energy sector in South Africa relies heavily on private sector financing. This paper presents information about several private sector companies that have made significant investments in renewable energy, particularly in solar and wind energy.

2.14 European Investment Bank (EIB) and Development Bank of South Africa (DBSA) Partnership.

For the purpose of assisting South Africa's renewable energy project development, the EIB and DBSA have reinforced their collaboration. A €100 million loan from the EIB was matched by the DBSA in order to increase the generation of clean energy and generate new jobs (EIB, 2023). This funding is part of the Global Gateway, a European external strategy for clean and sustainable infrastructure and is consistent with the Just Energy Transition Partnership (JETP) aims of supporting South Africa's decarbonization efforts (European Commission, 2022). *"We have just reached an exciting milestone in our exciting journey with the EIB as we increase our financial backing of renewable energy,*" added Boitumelo Mosako, CEO of DBSA and the partnership demonstrates the two groups' dedication to the environment and their mutually exclusive goals (DBSA, 2023).

2.15 Other Private Sector Investments.

In South Africa, various private sector businesses have also made investments in renewable energy projects. For example, the 96MW solar photovoltaic facility in the Northern Cape called the Jasper Power Project has received funding from Google (Google, 2013). The Jeffreys Bay Wind Farm, a 138MW wind farm in the Eastern Cape, is another investment made by Mainstream Renewable Power (Mainstream Renewable Power, 2014).

2.16 Government incentives.

The South African government has implemented several incentives, such as tax incentives, the Renewable Energy Master plan, and tax incentives for electric vehicles, to encourage investment in green energy technology. Different incentives have been implemented by the South African government to encourage the transition from conventional automobiles to electric and hydrogen-fueled vehicles. This follows the February announcement of the R500 million investment allowance for 2026–2027(National Treasury, 2023).

This incentive's enabling elements were incorporated into the draft Taxation Laws Amendment Bill (TLAB), which permits automakers to deduct 150% of their investments in new electric and hydrogen-powered fleets (TLAB, 2023). The government has also provided tax incentives to individuals and companies who buy electric or hydrogen fuel vehicles. The Taxation Laws Amendment Act, for example, permits buyers of electric or hydrogen-fueled vehicles to get a tax refund of up to R100,000 (Taxation Laws Amendment Act, 2022). In conclusion, the government's incentives are developed to enhance the development of the electric and hydrogen vehicle industry in South Africa, and to persuade companies to invest in the production of these vehicles.

2.17 Socioeconomic impacts of green energy.

Green energy sources like wind and solar power typically have positive socioeconomic effects, such as stimulating the economy and creating jobs, improving energy accessibility in developing regions, improving public health by reducing pollution, increasing energy access for everyone, and promoting social equity through distribution (IRENA, 2017). Although the specific effects can vary depending on the region and the method of implementation, there are certain obstacles, such as the high initial investment costs and job displacement in the fossil fuel industry. This section will address the following three (3) socioeconomic factors:

2.18 Employment Generation

Across the solar and wind energy value chains, South Africa stands out as the market leader for employment impact across Africa (Shortlist, 2023). The Forecasting Green Jobs in Africa report projects that the region will see the generation of between 2 and 3.3 million green jobs, with the greatest coming from renewable energy sources such as solar power (Shortlist, 2023).

According to Shortlist (2023), between 85,000 and 275,000 green employments are expected to be created in South Africa by 2030, with the main contributors coming from the energy and power production sector, as well as the agriculture and nature sectors.

Through proper training, apprenticeships, and job/skill matching programs, this goal can be accomplished (Breloff, 2023). The initiative outlined here has the potential to reveal the socio-political benefits of the renewable energy sector for South Africa's workforce and create new jobs for its residents.

2.19 Economic Growth

According to Shortlist (2023), with lowering energy costs, attracting foreign investors, developing domestic capabilities, and creating job possibilities, a green energy project can help South Africa achieve economic growth. This is especially crucial in South Africa because the country experiences both very high unemployment and slow economic growth (Stats SA, 2022). Therefore, the creation of new employment opportunities in the green energy sector may contribute to the improvement of the socioeconomic status of South Africa.

The International Renewable Energy Agency (IRENA) indicates that the renewable energy sector may create up to 24 million new jobs worldwide by 2030, with most of the jobs being created in Africa (IRENA, 2020). SAWEA (2022), further added as of this writing, South Africa's renewable energy industry has already generated thousands of jobs, with thousands more anticipated to be added in the upcoming years. Therefore, as the renewable energy sector is expected to grow further, it is crucial for South Africa to develop this sector in order to create more employment and boost economic growth.

2.20 Energy Access

For East and Southern Africa to achieve universal access to electricity by 2030, the rate of electrification must grow threefold (IEA, 2022). If the current rate of electrification does not increase substantially, more than 300 million people will continue to lack access to electricity in this region up to 2030. To bridge the energy access gap, both grid expansion and densification as well as distributed renewable energy (DRE) systems deployment must be scaled up.

Moreover, Geospatial modelling by EASE (2022) indicates that the quickest and most efficient approach to providing clean electricity to almost half of the unelectrified people in the region is through distributed energy generating. Expanding access to electricity will lead to an overall improvement in the lives of South Africa's citizens, especially in rural and poor areas. For universal energy access, South Africa can focus on several strategies.

2.21 Environmental sustainability and climate mitigation.

Climate change mitigation seems to be the most extraordinary and crucial issue facing economies in the upcoming decades, given the significant climate hazards posed by global warming to life on Earth (Abul and Satrovic 2021; Ahmad *et al.* 2021c). According to several research, man-made emissions are to blame for these disastrous climatic shifts (Adedoyin *et al.* 2021; Ahmad et al. 2022). Unmatched risks to human life, the environment, and development have been brought on by climate change brought on by greenhouse gases (GHGs).

According to South Africa's 2011 National Development Plan (NDP), the government has a duty to lower emissions by accelerating the use of renewable energy technology and in particular, South Africa's National Development Plan 2030 includes the transition to a green and climate-resilient economy (South Africa Government, 2012). It is commonly known that innovations in technology can reduce carbon emissions. However, some research has found that innovation raises CO2 emissions (Villanthenkodath and Mahalik 2022; Demir *et al.* 2020). Environmental harm results from South Africa's heavy reliance on fossil fuels, primarily coal and oil, for energy.

The implementation of green energy technologies in South Africa is essential for promoting environmental sustainability and combating the growing threats of climate change. As the country faces significant risks from climate-related hazards, there is an urgent need to reduce greenhouse gas emissions, which are largely driven by human activities and the heavy reliance on fossil fuels like coal and oil.

South Africa’s commitment to transitioning towards a green, climate-resilient economy, as outlined in its National Development Plan, highlights the role of renewable energy in reducing emissions and supporting sustainable development. However, while technological advancements have the potential to lower carbon emissions, they can also inadvertently contribute to environmental challenges if not managed effectively. Therefore, a balanced and strategic approach is crucial to ensure that green energy technologies truly support environmental goals while driving economic growth.

2.22 Barriers and opportunities.

Most literature has previously focused a lot of emphasis on barriers to energy efficiency, and strategies to overcome them have been examined in numerous studies and categorized in a variety of ways for decades s (Aboltins and Blumberga, 2019; Buettner *et al.* 2018; Sorrell *et al.* 2011; Thollander *et al.* 2010; Reddy, 1991, Schleich, 2009; Singh and Lalk 2016; UNIDO, 2006). Verbrugger *et al.*, (2010:852) defined barriers as the *"man-made factors or attributes that operate in between the actual and potential development or use*." Nonetheless, some academics offer a thorough analysis of the obstacles to South Africa's adoption of green energy and also suggest calculated remedies that combine legislative changes, financial incentives, technological advancements, and social concerns in order to promote a sustainable energy future. This section highlights the key barriers hindering the successful implementation of green energy technologies in South Africa as well as potential strategies and opportunities to overcome these barriers and accelerate green energy adoption

2.22.1 Technical Barriers.

The absence of infrastructure required to support the technologies and insufficient technology are technical factors that contribute to energy efficiency obstacles (Reddy, 2007:6; Shen *et al.* 2012:21). According to the literature, one of the main obstacles to people's willingness to invest in energy efficiency is technology (Sorrell et al. 2004:30; Singh and Lalk, 2016:290; Reddy, 1991:18).

In South Africa, the lack of sufficient infrastructure to support green energy technologies and a lack of technological advancements present major technical obstacles to their adoption. These factors limit the country's transition to sustainable energy solutions by impeding energy efficiency and eroding investor confidence in renewable energy projects.

2.22.2 Financial Constraints and High Initial Costs.

Pegels (2010) notes that the high capital costs of renewable energy technologies are a major obstacle in South Africa, and she also highlights that both large investors and small-scale energy entrepreneurs have difficulties due to the limited government subsidies and the absence of cheap financing options. Furthermore, Sovacool and Ryan (2016), provided an analysis that the high costs of technology such as energy storage devices and wind turbines are among the global obstacles to renewable energy. They contend that the adoption of renewable energy is constrained, particularly in developing nations, by a lack of financial incentives and risk-averse banking institutions.

2.22.3 Governance barriers

Fragments in the institutional structures, financial mechanisms, and legislative framework that should cooperate to promote the execution of energy efficiency policies, programs, and strategies are known as governance hurdles (Sorrell *et al.* 2011; Thollander *et al.* 2010: 46). The institutional theory behind governance barriers to energy efficiency states that a major obstacle to escalating electricity problems in any nation is a lack of sound governance inside an economy. Several research have interpreted governance constraints in energy efficiency using institutionalism (Blumstein *et al.* (1980), Hirst and Brown (1990); Stede (2017)).

2.23 Opportunities and potential strategies

2.23.1 Strengthening Policy and Regulatory Frameworks.

Stable, transparent green energy policies expedited approval procedures, and targeted policy incentives—like tax breaks, feed-in tariffs, and renewable energy credits—can all help to strengthen South Africa's regulatory and policy frameworks. This will boost investor confidence, cut down on red tape, and hasten the successful adoption of green energy technologies throughout the nation.

2.23.2 Enhancing Financial Support Mechanisms

The high initial costs of green energy technologies can be addressed by strengthening financial support mechanisms in South Africa through increased access to green financing, public-private partnerships, subsidies, and risk mitigation tools. This will make renewable energy more affordable for small businesses, rural communities, and companies while promoting sustainable growth in the industry.

2.23.3 Reducing Fossil Fuel Dependence and Promoting a Just Energy Transition

Diversifying the energy mix by increasing the share of renewable energy, investing in workforce skill development, and increasing public awareness to garner support for the green transition are all important steps in reducing South Africa's reliance on fossil fuels and fostering a just energy transition. This will ensure that communities that depend on fossil fuel industries can prosper in new, sustainable sectors while minimizing opposition from special interests.

3. Methodology.

This qualitative study utilizes a document review methodology to critically examine the implementation of green energy technologies, focusing on their integration within South Africa's socio-economic and policy frameworks. Bowen (2009) asserts that document review makes it easier to spot trends and themes, which makes it possible to comprehend complicated occurrences in their entirety. Using this method, policy documents, energy reports, and legislative frameworks pertaining to green energy in South Africa are critically examined. Merriam and Tisdell (2016) emphasized how documents aid in establishing contextual depth, which is essential for evaluating the ways in which past energy regulations impact present green energy projects.

Thematic analytic methodology is also deployed in this research paper. In their most recent work, Braun and Clarke (2019) highlight theme analysis as a versatile technique for gathering rich, detailed data that enables researchers to examine texts' explicit content as well as their underlying meanings.

4.0 Results and Discussion

4.1 Future directions

Thus, the research's novelty lies in providing an analysis of how green energy technologies and policies are being implemented in South Africa. While previous studies such as those of Atsu *et al.,* (2021); Udeagha & Muchapondwa, (2023a) and Udeagha *et al.,* (2024) have been more curious about the environmental effects of the technological advancements. Prior studies have improved our knowledge of how energy use and technological development affect environmental quality, but they have also failed to address several important issues such as addressing policy failures and technological failures. These components are included in the current study to significantly add to the expanding body of knowledge.

Even though this study has yielded solid empirical findings in the South African setting, it is important to recognize its limits so that future research initiatives can be guided. Two notable limitations are those of the research within the financial constraints as well as strengthening policy implementations. Future investigations could delve into these components and how South Africa can utilize the two to improve their green energy technology implementations.

4.2 Policy recommendations.

To accelerate the successful implementation of green energy technologies in South Africa, the following future policy recommendations are proposed:

- Just Energy Transition Policy
- Stakeholder Engagement and Public Awareness Policy
- Renewable Energy Research and Innovation Policy

- Green Financing and Climate Fund Policy
- 13th Five-Year Plan for Energy Development (2016–2020)

5. Conclusion.

In conclusion, a dynamic policy framework, changing technological advancements, and urgent environmental and socioeconomic imperatives have all influenced the complex process of implementing green energy technology in South Africa. Although the country's progressive policies, such the Integrated Resource Plan (IRP), have set the stage for a shift to sustainable energy sources, there are still issues with policy coherence and regulatory enforcement. Solar, wind, and bioenergy technologies show great promise, but large-scale adoption is still hampered by issues with funding, infrastructure, and technical capability.

Green energy has a significant socioeconomic influence in South Africa, providing chances for increased energy security, job creation, and economic diversification. Disparities in access to green technologies, however, as well as the transitional risks that communities reliant on traditional energy sectors confront, underscore the necessity of inclusive initiatives that advance social fairness. Furthermore, green energy is essential for environmental sustainability since it promotes cleaner industrial methods and lowers greenhouse gas emissions, which helps to mitigate climate change.In the future, overcoming obstacles including institutional slowness, low public awareness, and budgetary limitations will be essential to hastening the adoption of green energy.

Fostering public-private partnerships, improving research and development, and establishing an environment that encourages investment, and innovation should be the main goals of future policy approaches. In the face of a changing climate, South Africa can establish itself as a pioneer in green energy technology and promote socioeconomic growth and environmental resilience by coordinating national priorities with international sustainability goals.

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Humanitarian aid green technology innovations, Climate financing and sustainable development in Kenya

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Abstract

Climate change has many humanitarian impacts such as drought, floods, landslides, extreme weather conditions requiring urgent response that cost billions of dollars. On the other hand, humanitarian aid responds to these crises with little consideration to dangers posed by materials used during response and poor waste management. These exacerbate the risks associated with climate change in the poor developing Countries including Kenya. This study argues that there is need for humanitarian aid agencies in Kenya to use green technology and innovations in humanitarian response and also improve waste management strategies by collaborating with private sector. There is need for government and Non-Governmental organizations to finance and implement climate change friendly policies. Climate financing could reduce climate change related emergencies and significantly reduce humanitarian operations in the affected areas in Kenya particularly in Counties located in Northern Kenya such as West Pokot and Turkana. According to Sustainable Development Goals report 2018 the rate of global progress has not been keeping pace with the ambition of vision 2030, necessitating immediate action by stakeholders as guided by Paris agreement, SDG 13 on Climate Change and Sendai Framework for Disaster Risk Reduction 2015-2030. Also, UN Disaster Risk Reduction report stated that over the last two decades economic losses from extreme weather amounted to trillions of dollars. Financing implementation of Kenya climate ambition requires significant public and private finance. According to UNDP in 2020 an estimate of USD 40B was needed for the next ten years (2020-2030) to implement climate mitigation and adaptation action, so far little has been done.

The research was conducted using integrated literature review with the aim to assess, critique, and synthesize existing literature on a humanitarian aid green technology innovation, climate financing and climate change in a way that enables new theoretical frameworks and perspectives to emerge. Findings indicate that there is need for humanitarian aid organizations to integrate green technology innovation in the humanitarian response in order to reduce negative impact on climate change in Kenya. In the absence of clear policies on climate financing the challenge of climate change still exists and is likely to challenge the Africa Union Agenda 2063. There is need for collaboration and partnerships among the government, counties, NGOS as well as private sector in order to reverse the climate change trend.

Key words: Climate change, Kenya, climate finance, humanitarian aid green technology innovation, Private sector

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1. Introduction

The study focuses on humanitarian green technologies innovations in the digital era to combat the effects of climate change through climate financing. There has been increase in natural disasters in Northern Kenya counties that has called for humanitarian responders to offer their support to save lives. Some of the disasters include drought affecting both human and animals, sever hunger and lack of drinking water. According to Kenya Red Cross society, 2024 recorded 100,000 households affected by floods in March to April 2024 alone needing humanitarian assistance. It is becoming increasing difficult for humanitarian responders to continue ignoring the effects of their activities on environmental degradation due to the global importance of climate change Njora, B., & Yılmaz, H. (2022). Little is being done about it citing lack of funding among other challenges. The study has critically examined existing literature on humanitarian response projects and environmental degradation and climate change.

1.1 Humanitarian aid, climate change and sustainable development

Little has been in relation to humanitarian aid effect on climate change in Kenya, while Kenya has been a leader in addressing climate change and was one of the countries to enact a comprehensive law and policy to guide climate action. Currently, the entire humanitarian system, along with humanitarian organisations, is ill-prepared and lacking the necessary financial, technical and capacity resources to effectively address the multifaceted impacts of the climate crisis (Steinka, 2023). The climate change policy 2016, climate change Act 2016, climate change amendment Act 2023, National Climate change action plan iii 2023-2027, climate change (carbon markets) regulation 2024 and the long-term low emissions development strategy 2022-2050. Even with these good policies without climate financing it becomes difficult for the country to implement them and therefore difficult to combat the challenges posed by climate change.

These policies articulate Kenya's priorities that include climate adaptation, deforestation and forest degradation, landscape restoration, climate smart agriculture, energy efficiency, drought and flood risk management. When climate change root courses are addressed the humanitarian aid organizations would have less emergency response projects in these areas. Actions of humanitarians aid responders further make the situation even worse given the materials used during humanitarian aid response as well as poor waste management strategies. Seifer, Kunz and Gold (2023) argues that there is need for sustainable conditions for the refugees and operations innovations are needed to find sustainable solutions for refugee camps. During emergencies humanitarian supply chains need to respond swiftly, very often without time for good planning that may end up in excessive waste and emissions. Singh, 2024 argues that technology facilitated collaboration and agility can reduce operational cost and reduce the response time minimizing environmental impact. This short-term focus on saving people's lives during disaster responses may harm communities and the planet in the long-run.

Humanitarian responders interact with environment in many ways whether they are responding to natural disaster or conflicts. A lot is known about the damages caused by the environment such as earthquakes, tsunamis, hurricanes, floods, droughts, landslides, drought among other natural disasters as well as damages caused by conflicts, however little is known about how humanitarian responders contribute to damaging the environment while implementing humanitarian projects on the ground. Their activities contribute to environmental degradation that sometimes have short term or long-term effects to natural environment (Kelly, 2004). In Kenya clearance of land for habitation of refugees or internally displaced persons lead to cutting down of trees, drilling of boreholes close to each other contribute to depletion of underground water in some areas especially near refugee camps (Brown, 2018).

Continuous use of firewood and charcoal as a source of fuel by the displaced persons and refugees has lead to deforestation in many settlement areas in Kenya. Few or lack of latrines constructed close to clean water sources lead to poor sanitation that cause widespread disease. All these and others lead to direct or indirect damage to environment, surprisingly the fact that clearance of forest is being done for an act of humanity makes many people to believe it is right while it is not. This study embarks on making it clear how the humanitarian responders negatively affect the environment and what they can do to improve the current state of events in efforts to support the sustainable development goal 13 on Climate change.

1.2 Research Objective:

1.2.1 To examine the effect of humanitarian aid projects and climate change in Kenya

1.2.2 To determine the effect of humanitarian aid green technologies and climate change in Kenya.

1.3 Research Question

1.3.1 To what extent does humanitarian aid projects affect climate change in Kenya?

1.3.2 To what extent does humanitarian aid green technologies affect climate change in Kenya

2. Literature Review

Theory of obligation can be viewed as a theory of good that hold that actions are intrinsically right or wrong. The study is based on the theory of obligation often used in humanitarian contexts; obligation in part is defined as, what one should do. It is a deontological theory associated with a German Immanuel Kant (1724-1804) that maintains normative evaluations are rooted in some intrinsic features of an action which give rise to an obligation or duty. This theory fits in this research as humanitarian responders have an obligation to protect the environment and by doing so, save lives. The Humanitarian organizations need to be accountable for policies and their effects intended or not. Consequently, it is important to recognize pragmatism real world conditions that constraint actions and impact the results of those actions.

Sustainability is important one need to choose initiatives that are able to be sustained over time and this requires resources and committed staff. Because an emphasis on pragmatism implies a need to acknowledge the inability to solve all world problems at once. There need to be some mechanism determining where to apply scarce resources, where to triage activities. The ethical principle of obligation to assist can structure our response. Humanitarian organizations have an obligation to protect the environment because it is right to do so and they need to work towards this cause irrespective of reward or punishment. This because humanitarians know that their actions affect the environment in a negative way and their mere ignorance does not solve the problem in this era of focus on climate change. As such they are obliged to act in accordance with existing laws, regulations and policies that aim to improve the environment.

The research has also used Social Cognitive theory, this theory holds that portions of an individual knowledge acquisition can be directly related to observing others within the context of social interactions, experience and outside media influence. Social cognitive theory was advanced by Albert Bandura as an extension of social learning theory. The theory states that when people observe a model performing a behaviour and the consequences of that behaviour, they remember the sequence of events and use this information to guide subsequent behaviours (Bandura, 1986). Humanitarian organizations have been engaging in implementation of humanitarian aid projects for a long time and they have been able to view the consequences. As such they are able to learn that not supporting the environment is critical to their very work of saving lives.

In Countries where they took further steps after offering aid to plant trees there is lesser occurrence of floods or landslides reducing levels of emergencies. The theory argues that humans depend on replication of the actions of others depending on whether people are rewarded or punished for their behaviour and the outcome of their behaviour. More often than not funding of environmental mainstreaming is little or unavailable and organizations that may have utilized their own funding to support the environment may not replicate it due to lack of reward, in this case additional funding for the environment. As such many of them chose to engage in the core humanitarian activities and not concentrate on environment mainstreaming in their projects.

3. Methods

This study was conducted using integrative review with the aim to assess, critique, and synthesize the literature on a humanitarian technologies and climate change in a way that enables new theoretical frameworks and perspectives to emerge. Integrative review is good for emerging topics to enable create initial or conceptualization and theoretical models as argued by Covington, 2000; Gross, 1998; Mazumdar, Raj, & Sinha, 2005).

The basics steps involved in conducting a literature review using four phases; designing the review, conducting the review, analysis and writing up the review. This process was developed from practical experience and is a synthesis of and influenced by various standards and guidelines suggested for literature reviews (e.g., Liberati et al., 2009; Transfield et al., 2003; Wong et al., 2013).On search method for identification of studies, the researcher identified relevant studies in English (published, unpublished, in press and ongoing). Sources of data included peer reviewed journals, internet sources, organization reports, government reports and printed books. By building on and synthesizing these different types of literature reviews, this paper takes a broader view by summarizing and integrating the different perspectives on the topic of humanitarian technologies and climate change.

4. Results

4.1 Humanitarian action and climate change

Humanitarian aid activities are triggered by acts of nature or human that disrupts everyday lives. This is informing of natural disasters such as earthquakes, floods, tsunami, hurricanes, and landslides among others while human acts include conflicts that threaten people's lives. These activities trigger emergency need due to sudden lack of them at the onset of the disaster. As such they require swift response that sometimes ends up being quick fixes that negatively affect the environment soon after or years later.

Barret, Murfit and Venton (2007) argue that humanitarian projects primarily focus on reducing suffering and saving lives of people in distress. Response time is usually short, finances are limited and logistical infrastructure disrupted. Even in this confusion of events and pressure to prevent more deaths and suffering, humanitarian responder's actions impact on environment and they have a responsibility to protect it. As such failure to consider the environment when implementing can result to environmental damage with consequences for the very people the response is designed to assist (Njora & Yılmaz, 2022).

The way the humanitarian projects are managed at the disaster site is a big environmental issue as attested by response of disasters like earthquake in Haiti in 2010, Tsunami response in 2004 among other disasters. The way humanitarian workers respond to disasters has potential to impact on the environment positively or negatively. To some humanitarian responders, considering the environment during implementation of humanitarian aid projects seems against the norm of humanitarian assistance. However, taking few minutes to consider how organizations response impact on the environment could be the only thing that could save it years to come.

At asserted by Kelly (2004) in the heart of humanitarian crises may not look like the best time to start hugging trees, as trying to combine could jeopardize both.

Notably, environment contributes large part in origin of humanitarian crises both natural and manmade. This is because destroyed nature destroys humans and also human competition of natural resources results to conflicts. For example, as argued by Irish Aid (2007) competition for animal pastures and water among pastoralist communities is common in Sub-Sahara Africa including Kenya. If not addressed this competition for natural resources can lead to worsened or protracted conflict. Humanitarian actions have previously affected the environment negatively. For example, Kosovo refugees in Kukes in Albania exceeded local waste handling capacities and as a result refuse tips overflowed and raw waste was dumped into streams Njora, B., & Yılmaz, H. (2022).

Rwandan refugee camps in Tanzania and the displaced in Darfur the unmilled maize provided as food aid took longer to cook and led to more tree cutting for fuel and in Darfur women risked their lives collecting firewood. In post tsunami, Indonesia concerns about deforestation led to a general shift towards building in bricks after realising more volume of wood was needed to fire bricks than needed to rebuild wooden houses (Irish Aid, 2007). In Latin America post hurricane, shelter programmes were built in areas liable to flooding thereby increasing the risk of inhabitants of future hurricanes. For example, In Haiti in 2010 and Nepal 2015 earthquakes caused large scale challenges of waste and sanitation.

In Gaza 2008-2009 conflict caused an estimated $34 million in damage to its water infrastructure. Using these examples critiques argue that such cases are misrepresented and miss reported because they reflect poorly on relief providers. Seifer, Kunz and Gold (2023) argues that the disparity between intent and reality prevents sustainable conditions for the refugees and therefore operations innovations are needed to find sustainable solutions for refugee camps. Kenya is not an exception from these challenges Kakuma and Kalobei refugee camps in

Turkana suffers from inadequate liquid and solid waste disposal, immense demand for firewood commonly used for fuel leading to exploitation of existing wood lots creating tension with host community (Brown, 2018). According to Okereke (2007) deforestation contributes to 20% to Green House Gas emissions and is the largest source of emissions from developing countries. Avoiding deforestation has benefits such as biodiversity, soil conservation and watersheds.

There is therefore need to work towards planting more trees in refugee camp areas. Also, sanitation is a challenge because every family cannot be allocated a latrine compromising sanitation that could lead to disease outbreak. Unmitigated destruction of the already scanty vegetation has resulted to catastrophic consequences for instance in Fafi, Dadaab and Wajir South whose land is fast transforming into a desert. There are more than 40 boreholes drilled at the refugee camps by Humanitarian responders at Dadaab camp, this has been depleting underground water sources as the aquifer is not recharging at the same rate as the amount of water extracted per day.

Humanitarian activities bring about deforestation, chemical spillage, use of expired drugs, expired foods, construction of latrines near water sources, problems of quick fixes without minding the environment, use of firewood and charcoal, air pollution and disposal of waste and unsustainable use of natural resources as well as disposal of debris (Sparling and Vroom, 2007).

Floods can exacerbate by deforestation caused by Internally Displaced Persons and refugees. For example, in Niger in 2005 drought and food crises, the response was too slow questioning the quality of early warning systems, appropriateness of proposed responses and capacity and preparedness of the humanitarian responders to respond to what could have been termed as predictable crisis. Conflict has rises in relation to water shortage as some use it for irrigation upstream and others downstream cannot get water for domestic use (Humanitarian Policy Group, 2008).

This has happened in Nicaragua along calicoriver, Kenya Sagana River and other Countries. The reason is because over the long-term further depletion of natural resources such as water, farmland, pastureland and forest put vulnerable people at risk by reducing their livelihoods options and food availability. If not managed they have the potential to cause more damage to the environment. More displacement and suffering, forced migration, heightened social tensions.

4.2 Existing legal frameworks on climate change

There exist legal frameworks guiding how environment should be treated by humanitarian responders however in practice few organizations comply with these existing guidelines. More so due to existing barriers on mainstreaming. The International Humanitarian law article 55 provides for protection of the natural environment, stating in part, care shall be taken in warfare to protect the natural environment against widespread, long term and severe damage (UNEP, 2009). This protection includes prohibition of the use of methods or means of warfare which are intended or may be expected to cause damage to the natural environment thereby prejudicing the health or survival of the population. Sendai Framework for disaster risk reduction 2015-2030 which was adopted in 2015 in Japan set to complete the Hyogo framework for action 2005-2015 building the resilience of Nations and communities to disasters (UNDRR, 2015).

There was a commitment to address disaster risk reduction and the building of resilience to disaster with renewed sense of urgency within the contexts of sustainable development and poverty eradication and integrate as appropriate both disaster risk reduction and the building of resilience in to policies, plans, programmes and budgets at all levels and to consider both within relevant frameworks. Sustainable development goal 13 on climate change aims to take urgent action to tackle climate change and its impacts because climate change is caused by human activities and is threatening the way we live and the future of our planet (UN, 2018).

Severe weather and rising sea levels are affecting people and their properties in developed and developing countries from a small farmer in Murang'a to business man in Dubai. Climate change is affecting everyone and especially the vulnerable, the poor and the marginalized groups, like women, children and the elderly (Humanitarian Policy Group, 2008). The problem can be addressed but we have to put more efforts.

Even with existing framework environment mainstreaming in humanitarian action planning and response face barriers. More often than not practitioners are often not sure what environment rally means and what sought of impacts they should be considering when designing projects leading to lack of consideration of environmental issues (Barret, Murfit, and Venton, 2007). There is little recognition of environment as a lifesaving priority despite the fact that people's initial survival after a disaster is often based on natural resources such as water, food, firewood and shelter. There is lack of institutional commitment at all levels from implementer to donor, in fact in some cases when the implementer is willing to address environmental issues, very little funding is reserved for environment mainstreaming which leave agencies only to give relief aid (UNEP and OCHA, 2014). There are few environment champions in humanitarianism who are difficult to find. Notably practitioners have competing pressures particularly during proposal development and the integration of cross cutting issue do not receive same attention as core relief efforts. Another challenge is exclusion of government in project design which often lacks contact with the natural resource management in charge.

Lack of environmental expertise when screening proposals lead to the omission of the activity and lastly few agencies has the mandate to enforce the principle of environmental mainstreaming.

Agencies need to be engaged in environmental mainstreaming and the business-as-usual model by humanitarians need to change. Mainstream and strengthen humanitarian program cycle management. Recognition and endorsement of rapid environmental assessment, training and capacity building and establishment of an accountability mechanism to ensure compliance and validation (Barret, Murfit and Venton, 2007). Technical guidance and operational manuals could help in planning and integrating environment in projects. Mechanism of preparedness and response. With existing frame works the humanitarian responders need to interact with them and forge way forward to promote environmental management and sustainability. The barriers need to be addressed for improved better environment (UNEP/UNOCHA, 2014).

4.3 Humanitarian aid green technologies

Humanitarian aid organizations can use green technologies to support climate change even though Bag, et. al (2020) argue that Humanitarian supply chain by their very nature require urgent reactions to unforeseen needs which make it difficult to plan effectively. As such integrating sustainability in to the traditional humanitarian supply chain practices continue to be a challenge to governments and humanitarian responders. There is therefore need for close collaboration with private sectors who can find innovations that address these humanitarian challenges. Eco innovations, green investment and green technology and help to quickly reach the goal of sustainable development, to reduce harmful impact on environment and adopt innovations (Primov, 2023).

Blockchain Technology has the potential to provide substantial benefits in the humanitarian sector, such as protected data sharing, supply chain, donor financing, cash programmes and crowdfunding. By providing a decentralised, verifiable source of data, Blockchain Technology can enable a more transparent, efficient form of information and data management (ICHA, 2018).

The shift by humanitarians to support transition from relief to recovery to long term development and sustainable livelihood is necessary. Such support can reduce the impact of future crises and improve environmental management. Also important is the need to strengthen the capacity of communities to prevent, prepare for and mitigate crises by integrating environmental issues in humanitarian response. Also (Singh, 2024) states that technology facilitated collaboration and agility can reduce operational cost and reduce the response time minimizing environmental impact.

Humanitarian responders can improve the environment for example an intervention using food for work in a clean-up campaign can be a good way of improving the environment as argued by Kelly (2004). Recently there has been emphasis on green procurement, utilization of locally available materials to minimize travel and carbon emissions, selecting suppliers with certified safe and sustainable products and practices.

In Kakuma refugee camp in Kenya, some civil society groups work with local community to promote access to affordable solar powered alternative lighting, and other distribute indigenous tree seedlings to control land degradation. Another example is Tajikistan risk reduction efforts that included a mapping of potential landslides common in mountainous areas. The community was encouraged to initiate efforts to reduce the impact of these hazards through reforestation and improved land use. This environmental stewardship is good disaster risk reduction strategy. Investing in disaster preparedness and locally implemented early warning systems can save lives and reduce cost of crises OECD (2019).

It is estimated that US $ 4-10 for every US$1 spent on disaster mitigation. There have been efforts by the World Bank to integrate risk reduction into development programmes (Irish aid, 2007). To reduce cutting down of tree for Cooking caritas in collaboration with Pesitho company introduced the solar powered cookers for refugee communities in Bidibidi refugee camp Uganda. (Caritas, 2024)

Relief organizations can protect the environment to prevent future disasters. The world food programme has supported soil conservation and reforestation programmes in refugee camps. This has been instrumental in protection against flooding, landslides and other natural disasters. In Kenya, Organizations are helping communities build sand dams that retain water from seasonal rainfall improving the community resilience to drought and water shortage conflicts. In Kenya 3000 seedlings of mangroves were planted in port reitz area by Kenya maritime Authority together with the local community in order to conserve the endangered mangrove forest (KMA, 2019).

Mainstreaming environment into humanitarian assistance, while recognizing that saving lives and livelihoods is the humanitarian imperative, humanitarian responders can ensure that crisis relief has little negative impact on the environment (Barret, Murfit, and Venton, 2007). The complex interaction among humans, environment and crisis should be reflected in the needs assessments. Also, efforts should be made for rapid environmental screening even for the most urgent interventions. Proper coordination of humanitarian activities should be taken into consideration to ensure most of the agencies work towards better environment management during interventions. Besides the donors should be ready to fund activities to assess the environment before and after a disaster takes place (Irish aid, 2007). The community remaining behind after a disaster should be informed and trained on improving the environment thereafter for sustainability of their lives. Agencies and governments need to support conflict resolutions over natural resources so that the community can see the need for better environment.

According to UNOCHA/UNEP (2014) some recent emergencies benefited from Environmental Impact Assessment or Rapid Environmental Assessment however in some cases technical assistance may be required to initiate and coordinate this preliminary assessment but it should be done in conjunction with government, partners and in consultation with community members (Kelly, 2005).

The temporary nature of humanitarian engagement stands as a central parameter of necessary change-making. First and foremost, temporal aspects are important in terms of the operations undertaken, from being less reactive and more preventive, agile and anticipatory. Given the increasing protractedness of crisis exacerbated by climate change, humanitarian actors are well advised to consider adapting the timelines of their programming cycles (Steinka, 2023).

4.4 Climate financing

Climate Finance (CF) is critical to Kenya's full realisation of the policy goals as set out in the sustainable development goals (SDGs), the 2015 Paris Agreement and the African Union Agenda 2063. An effective response to the challenge of climate change requires robust financial mechanisms to put in place systems, initiatives and programmes supportive to mitigation and adaptation measures. As global climate policy implementation progresses under the Paris Agreement, there has been an increased realisation that developing African countries such as Kenya will require effective and enabling financial and technical support.

Financing the implementation of Kenya's climate ambitions requires significant public and private finance. Kenya's Financing Strategy for the NDC (UNDP, 2020) estimated USD 40 billion of new investment is needed for the next 10 years (2020 - 2030) to implement priority climate mitigation and adaptation actions. there is a need for heightened advocacy around climate because the most salient fact about climate commitments at both the global and national level is that they are often not implemented. In Kenya, the National Climate Change Action Plan has lapsed (2022) and has not been replaced by a new five-year plan.

Devolution of climate funds Devolution of climate funds remains a major component of climate financing in Kenya because it will help ensure that resources reach where they are needed most. County governments provide a good opportunity to create institutional linkages for devolving funds from the national to local. Counties have established the county climate change funds (CCCFs) but the linkage between these funds and the national system is still currently relatively underdeveloped.

5. Discussion

The existing literature reviewed on Humanitarian aid technologies management of humanitarian response projects and environmental degradation revel that, management of humanitarian aid projects indeed contributes to environmental degradation and climate change. The organizations often get in after a disaster happens without undertaking rapid environmental assessment due to the urgency to save lives emergency preparedness seem to be lacking in most humanitarian responders. As a result, little is often known about the environmental context of the disaster site such as location of ground water sources, history of the disaster site, location of latrines and other health and sanitation facilities. Also, they start their humanitarian activities without knowing how they will deal with air pollution from burning waste and possible chemical leakages to avoid further contamination which worsens the situation of those affected by disasters.

On arrival of the humanitarian responders they are keen on the natural environment resources available to save lives such as availability of drinking water, timber for shelter construction, source of firewood for fuel among other natural resources however as the literature indicates the humanitarian responders are blind to the after effects of their actions on deforestation, drilling of boreholes that can greatly reduce underground water levels, disposal of waste materials such as health waste that could end in rivers and other clean water sources. More often than not these facts are either ignored or assumed and the responders leave them unattended with intention that they have saved lives.

However, in the long term as we have seen in refugee camps and IDP camps, it does not take long before the natural resources are exhausted and severe problems arise again such as cholera, typhoid due to poor sanitation as it happened in Haiti after earthquake, where there were severe sanitation problems. The study also found out that even though majority do not do anything to improve the environment, some responders make efforts to encourage the communities to plant trees, use provide alternative source of fuel and construction materials. For instance, recently UNHCR is utilizing more sustainable construction materials than the usual tarpaulins that lasted for six months.

It was also noted that the humanitarian responders do not lack guidelines and policies on how to address environment issues as revealed by UNOCHA and UNEP (2014), Sphere project among other documents that guide on environmental mainstreaming for humanitarian responders. In their argument Barret, Murfit, and Venton, (2007) most responders argue that money is not available for preparedness or recovery and that leaves them to only address their core activities which are saving lives of the persons in distress.

There is need to influence and strengthen humanitarian programme cycle management: first engage in needs assessment and analysis, strategic planning, resource mobilization, implementation and monitoring and operational review and evaluation. These results mean that perhaps, it is time for humanitarian responders to focus more on environmental management and sustainability as it directly affects their aim of saving lives and contributes to environmental degradation in Kenya. Besides, humanitarians increased involvement will greatly contribute to achieving vision 2030 of greener safer environment in Kenya.

The refugee camps in Kenya have been a source of agony to host communities and there is need for immediate action to be taken by the humanitarian actors together with the government. If not controlled, the two camps can quickly become inhabitable as they become deserts and as the water table get depleted. Perhaps it time for the government to reconsider environmental challenges brought about the humanitarian act of housing refugees. And provide them with alternative fuel instead of firewood and charcoals as well as water sources and construction materials.

This study shows that probably it's time for the governments where the refugees originate need to put together and find ways of keeping camps environmental friendly and sustainable as well as the international community to appreciate Kenyans effort of being home to millions of refugees yet they are still putting efforts to ensure vegetation cover to achieve vision 2030. We cannot leave IDPs and refugees behind in efforts to climate change response. If we do so we risk increasing the desert rather than vegetation cover.

Seemingly environmental degradation in Kenya in areas occupied by refugees and IDPs are forgotten crises that we must bring back to the headlines in order for it to be discussed in national agenda. In fact probably we need to involve the home governments of the refugees, to contribute in sustaining the environment around the camps to help them continue being habitable for longer instead of leaving it only to the Kenyan government.

The recent development by UNHCR to provide longer lasting shelter materials mean that they are alive to the fact that the refugees will stay in the country for more than a decade and therefore while it is assumed refugees will finally go home it may take much longer just like is the case of Dadaab and Kakuma camps.

The results of this study fit in with the existing knowledge that humanitarian responders care less about their activities and how they contribute to environmental degradation in Kenya. This is in terms of their entry point with little historical knowledge about the disaster sites that has led to complications of coordination of projects, access, and acceptance by the communities (HPG, 2008).

The way they behave during the responding time in terms of waste management, chemical leakage, disposal of one-use plastic containers, handling of mobile toilets or latrines among other behaviours that are unfriendly to the environment. And lastly are the effects they leave behind after completion of their humanitarian activities. Important to note is that few or none of the humanitarian responders go back to check on the disaster site after they have left. What they fail to know is that they sometimes leave behind tonnes of waste that become environmental hazard. This however can be attributed to funding patterns of humanitarian activities as there are no funding set aside for preparedness or environmental checks after project completion. Even though we point fingers to the humanitarian responders it is important to note that sometimes they could be willing to do better on environment however their efforts are limited by the existing funding for environmental mainstreaming and preparedness.

The answer to the research questions has directed the study to the fact that management of humanitarian aid projects contribute to environmental degradation to a reasonable extent. This answer is reasonable because of how humanitarian responders behave before, during and after a disaster happens which has indicated that very little is done to improve the environment by majority of the responders. This answer fits in with other published work in Kenya and other countries as was evident in Virunga Forest Rwanda, Kakuma and Dadaab refugee camps among others.

The disadvantages of poor or lack of management of environment by the humanitarian responders is that while the other development organizations are working towards forest cover in the SDG the humanitarians are eating into the existing forest cover in the spirit of human protection and survival. There is therefore need for all players to put effort to play towards a common goal in order to achieve vision 2030 and the SDG 13.

Surprisingly there are many legal frameworks, policies and memos that require humanitarian responder to have environment as a cross-cutting issue when responding to any kind of a disasters. However, according to this study the shortage of funding, time available for resources and lack of humanitarian focal points in the organizations mean that not much effort is put to ensure this is complied to.

As such this study emphasizes that although the mandate of humanitarian responders is saving lives they should view environment as a means to their end and support it at all times to avoid degradation and negative effect to climate change. Humanitarian NGOs need to prioritize greening efforts and integrate them into their strategies and operations to mitigate their environmental impact. Increase their resilience to climate change, and enhance the long-term sustainability of their interventions.

Additionally, having institutional structures and policies that prioritize greening efforts, provide resources and capacity-building support, and advocate for the adoption of sustainable practices from local to global levels increases the chance of their implementation. This study has advanced on the seemingly hidden environmental crises in the area where is least expected; humanitarian aid activities. The study reveals that there is still much to be done by the humanitarian responders to save the environment and contribute to climate change Sustainable development goal 13 and Kenya vision 2030. Failure to address this problem will lead to unknowingly extending desertification in Kakuma, Dadaab and other refugee camps as well as worsen other disaster-prone areas in Kenya.

Humanitarian contexts keep getting complex year after year due to increasing number of crisis the magnitude of the crisis and the increasing number of victims. The issue has just gotten more complex by demanding humanitarians be accountable for environmental management during their implementation and after as their actions exacerbates the environmental degradation after a crisis happens.

The theory of obligations insist that humanitarians have a duty to play in improving the environment and social cognitive theory goes further to say that observing from others do it humanitarians can learn and replicate the actions of other responders to disasters and be able to improve the environment. There is need to do further research identifying ways in which humanitarian responders can contribute to improvement of the environment. Management of humanitarian aid projects affects the environmental degradation in Kenya.

6. Recommendations

The study recommends use of green technologies by the humanitarian actors including green procurement, addition on environmental specifications such as less packaging or recyclable/biodegradable packaging. The NGO should avoid using nature reserves to construct homes for refugees or expanding camps. Management of humanitarian projects including providing food that requires less time to cook or use energy saving or solar stoves.

In addition, high quality incinerators should be utilized during implementation of health projects. The government should take initiative to advise the non-governmental organizations to adhere to environmental, and climate change regulations so as to ensure that the country protects people from environmental challenges and that the activities of humanitarian aid activities do not exacerbate the crisis but rather positively assist the climate change. Further study should be conducted to find out how management of humanitarian aid projects should be incorporated in the climate change.

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Role of Public-Private Partnerships in Enhancing Sustainable Agricultural Projects in Rwanda

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Abstract

This study examines the role of public-private partnerships (PPPs) in enhancing sustainable agricultural projects in Rwanda, using the Twigire Muhinzi initiative as a case study. Adopting a mixed-methods approach, the research combined both quantitative data from structured questionnaires and qualitative data from key informant interviews. The study found that PPPs significantly contributed to the provision of agricultural inputs, capacity building, and the establishment of market linkages. However, challenges such as limited coordination, inadequate funding, and policy constraints hinder the full potential of PPPs. The study recommends improved coordination among stakeholders, increased financial investment, and policy reforms to enhance PPP effectiveness in agriculture.

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Keywords; Sustainable Agriculture, Public private partnership, projects, Rwanda, climate change

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1. Introduction

Agriculture remains a cornerstone of Rwanda's economy, contributing significantly to livelihoods and food security (MINECOFIN, 2021). Despite its importance, smallholder farmers face persistent challenges, including declining soil fertility, limited access to extension services, and inadequate adoption of improved agricultural technologies. To address these issues, the Twigire Muhinzi agricultural extension model was introduced as a homegrown solution, emphasizing decentralized, farmer-to-farmer knowledge sharing. However, achieving the full potential of this model requires effective collaboration among public and private stakeholders.

Public-private partnerships (PPPs) have gained global recognition for their potential to mobilize resources, enhance efficiency, and foster innovation in various sectors, including agriculture. By combining the strengths of public institutions and private entities, PPPs can overcome resource constraints and improve service delivery. In Rwanda, the Twigire Muhinzi project leverages PPPs, notably the collaboration between the Rwanda Agriculture and Animal Resources Development Board (RAB) and One Acre Fund (TUBURA). This partnership aims to enhance agricultural productivity through activity planning, stakeholder engagement, and technology transfer.

Previous studies highlight the role of PPPs in agriculture, including their impact on technology adoption and stakeholder participation. For instance, Ponnusamy (2016) and Kale et al. (2022) emphasize the need for inclusive partnerships to drive sustainable agricultural development. However, limited research exists on the specific contributions of PPPs to agricultural extension systems in Rwanda. This gap underscores the need for focused studies that explore how PPPs influence the performance of initiatives like Twigire Muhinzi.

This study seeks to evaluate the role of PPPs in improving the performance of the Twigire Muhinzi project, focusing on three dimensions: activity planning, stakeholder engagement, and technology transfer. By examining these factors, the research provides actionable insights for policymakers and practitioners aiming to enhance agricultural extension systems and foster sustainable development in Rwanda.

2. Literature Review

Public-private partnerships (PPPs) have emerged as a transformative approach in agricultural development, bridging resource and capacity gaps between the public and private sectors. This section examines key theoretical foundations and empirical studies that inform the role of PPPs in activity planning, stakeholder engagement, and technology transfer within agricultural projects.

2.1 Theoretical Foundations

Project planning theory highlights the importance of structured frameworks in ensuring project success. Fayol's early principles of planning emphasize setting goals, allocating resources, and coordinating activities to achieve desired outcomes. In the context of agricultural projects, effective planning aligns activities with seasonal cycles, stakeholder needs, and available resources, ensuring timely implementation and measurable impacts (Reijniers, 1994; Clifton & Duffield, 2006).

Freeman's stakeholder theory (1984) underlines the need to balance diverse stakeholder interests in project management. Engagement fosters collaboration, trust, and resource sharing, critical for achieving shared objectives. In agricultural PPPs, involving stakeholders such as farmers, agronomists, and private partners enhances project ownership and aligns activities with community needs (Kujala et al., 2022).

The TAM framework posits that perceived usefulness and ease of use drive technology adoption. In agriculture, technology transfer involves disseminating innovations that improve productivity, such as improved seeds or pest control methods. Successful technology adoption depends on tailored training and support systems that address farmer needs and capacities (Davis, 1989).

Studies consistently link effective activity planning with improved sustainable agricultural projects. Khodakarami and Esmaeli (2021) demonstrated that well-structured plans increase the likelihood of completing projects on time and within budget. In agriculture, timely planning is critical to aligning interventions with planting seasons and resource availability (Magassouba et al., 2019). However, gaps in participatory planning can lead to inefficiencies, as highlighted in East African PPPs, where top-down approaches often exclude local stakeholders (Adebayo et al., 2020).

Empirical evidence underscores the importance of stakeholder engagement in agricultural projects. Aranda et al. (2022) found that high levels of stakeholder participation correlate with successful project outcomes. However, challenges such as unequal power dynamics and limited capacity among stakeholders can hinder meaningful engagement. In Rwanda, studies by Musabyimana (2016) and Kabirigi (2022) emphasize the need for inclusive approaches that involve women, youth, and marginalized groups in agricultural extension systems.

The role of technology transfer in agricultural productivity is well-documented. Bhowmik and Sharma (2022) found that projects facilitating effective knowledge transfer had higher adoption rates of improved technologies among smallholder farmers. Similarly, Adhikari and Poudel (2022) showed that targeted training and accessible resources enhance the uptake of agricultural innovations. However, challenges such as inadequate training and resource constraints often limit the impact of technology transfer initiatives (Pandey et al., 2021).

While existing studies provide valuable insights, few examine the specific contributions of PPPs to agricultural extension systems in Rwanda. The Twigire Muhinzi model, as a decentralized farmer-to-farmer extension approach, presents a unique opportunity to assess the interplay between PPPs and agricultural sustainable agricultural projects. This study addresses this gap by evaluating how PPPs influence activity planning, stakeholder engagement, and technology transfer within the Twigire Muhinzi initiative.

3. Methodology

This study employed a descriptive-correlational design to examine the role of public-private partnerships (PPPs) in the performance of the Twigire Muhinzi agricultural project in Rwamagana District, Rwanda. The descriptive approach provided an overview of project characteristics, while the correlational analysis explored the relationships between activity planning, stakeholder engagement, technology transfer, and sustainable agricultural projects.

The target population consisted of 614 stakeholders involved in the Twigire Muhinzi initiative, including project coordinators, public agronomists, socio-economic development officers (SEDOs), farmer field school (FFS) facilitators, and farmer promoters. A sample size of 237 was determined using Taro Yamane's formula, ensuring representation across all stakeholder groups. Stratified random sampling was applied to ensure proportional representation, while census sampling was used for small categories like project coordinators and district agronomists.

Primary data were collected using structured questionnaires designed to capture respondents' views on PPP roles in activity planning, stakeholder engagement, and technology transfer. The questionnaire used a five-point Likert scale ranging from "Strongly Disagree" to "Strongly Agree." To enhance data quality, a pilot test involving 20 respondents was conducted, yielding a Cronbach's Alpha reliability score of 0.88. Secondary data were obtained from project

Quantitative data were analyzed using descriptive statistics (means, standard deviations) and inferential statistics, including correlation and multiple regression analyses. The regression model assessed the predictive influence of the independent variables—activity planning, stakeholder engagement, and technology transfer—on the dependent variable, sustainable agricultural projects. Analysis was conducted using R statistical software.

The regression equation was structured as:

$Y=\beta0+\beta1X1+\beta2X2+\beta3X3+eY = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 +$

$eY=\beta0+\beta1X1+\beta2X2+\beta3X3+e$

Where:

- YYY: Sustainable agricultural projects
- X1,X2,X3X_1, X_2, X_3X1,X2,X3: Activity planning, stakeholder engagement, and technology transfer
- β0,β1,β2,β3\beta_0, \beta_1, \beta_2, \beta_3β0,β1,β2,β3: Coefficients
- e: Error term

Ethical approval was obtained from the University of Kigali. Participation was voluntary, with respondents providing informed consent before data collection. Anonymity and confidentiality were ensured by coding responses and securely storing data. No respondents under the age of 18 were included. The study adhered to research ethics principles, including respect for participants and data integrity.

4. Results

A total of 237 respondents were sampled, with 231 valid responses received, representing a response rate of 97.47%. This high response rate ensures the reliability of the findings.

Table 1: Response rate

Respondent Category	Sample Size	Valid Responses	Response Rate (%)
District Agronomists	1	1	100
Farmer Field School Facilitators (FFS)	12	12	100
Farmer Promoters	195	189	97
Sector Agronomists	6	6	100
Socio-Economic Development Officers	20	20	100
Twigire Muhinzi Project Coordinators	3	3	100
Total	**237**	**231**	**97.47**

Source: Primary data (2024)

4.1 Descriptive Statistics

Table 2 summarizes the role of PPP in activity planning, stakeholder engagement, and technology transfer.

Table 2: Roles of PPP in activity planning, stakeholder engagement and technology transfer in summary

Statement	Mean	Standard Deviation
Seasonal activity planning is done on time.	4.26	0.57
Planning aligns with farmers' needs.	4.20	0.60
Information dissemination to stakeholders is clear and timely.	4.23	0.53
Data collection uses appropriate methods.	3.96	0.82
Stakeholder engagement improves project outcomes.	4.21	0.63
Technology transfer enhances agricultural productivity.	4.35	0.49

Source: Primary data (2024)

4.2.Inferential Statistics

4.2.1 Regression Analysis

A multiple regression analysis assessed the effect of PPP dimensions on sustainable agricultural projects.

Table 3: Multiple regression analysis in relation to the effect of PPP on sustainable agricultural projects

Variable	Coefficient (β)	p-value	Significance
Activity Planning	0.1788	0.0013	Significant
Stakeholder Engagement	0.1516	0.0087	Significant
Technology Transfer	0.5603	<0.0001	Significant

Source: Primary data (2024)

The model explained 60.39% of the variance in sustainable agricultural projects (R^2 = 0.6039). Technology transfer had the highest impact on sustainable agricultural projects, followed by activity planning and stakeholder engagement.

4.2.2 Correlation Analysis

Table 4: Correlation analysis

Variable Pair	Correlation Coefficient (r)	Significance
Activity Planning and Performance	0.42	Significant
Stakeholder Engagement and Performance	0.36	Significant
Technology Transfer and Performance	0.61	Significant

Source: Primary data (2024)

5. Discussion

The findings of this study reveal significant insights into the role of public-private partnerships (PPPs) in enhancing the performance of the Twigire Muhinzi agricultural project in Rwanda. These results align with existing literature while providing context-specific contributions to the understanding of PPP impacts in agricultural extension systems.

5.2.1 Activity Planning

The study demonstrates that activity planning significantly influences sustainable agricultural projects ($\beta = 0.1788$, $p = 0.0013$). This finding supports the conclusions of Khodakarami and Esmaeli (2021), who emphasized the importance of structured planning in achieving timely and cost-effective project outcomes. However, this study highlights the need for more participatory approaches in planning to ensure alignment with farmer needs and seasonal cycles. Gaps in timely input delivery and data collection methods suggest opportunities for improvement in coordination and resource allocation.

5.2.2 Stakeholder Engagement

Stakeholder engagement was found to have a moderate but significant impact on sustainable agricultural projects ($\beta = 0.1516$, $p = 0.0087$). This aligns with Aranda et al. (2022), who noted the importance of collaboration and trust in successful project outcomes. However, the study also revealed gaps in inclusivity, particularly the underrepresentation of women and youth. These findings echo the observations of Musabyimana (2016), who identified similar challenges in Rwanda's agricultural projects. Future efforts should focus on fostering inclusivity and addressing power imbalances among stakeholders to enhance engagement.

5.2.3 Technology Transfer

Technology transfer emerged as the most influential factor ($\beta = 0.5603$, $p < 0.0001$), underscoring its critical role in improving agricultural productivity and sustainable agricultural projects. This finding is consistent with Bhowmik and Sharma (2022), who found that effective knowledge transfer leads to higher adoption rates of agricultural technologies. The success of Twigire Muhinzi in disseminating improved seeds and farming practices demonstrates the potential of PPP-driven technology transfer initiatives. However, challenges such as inadequate training and limited accessibility to resources highlight areas for refinement.

5.2.4 Comparison with Existing Knowledge

The findings are consistent with studies emphasizing the role of PPPs in mobilizing resources, fostering innovation, and enhancing service delivery (Kale et al., 2022; Pandey et al., 2021). However, this study provides a unique contribution by focusing on the Twigire Muhinzi model, a farmer-to-farmer extension system that has received limited attention in previous research. The results underscore the importance of context-specific strategies in designing and implementing PPPs for agricultural extension.

6. Recommendations

Based on the findings of this study, the following recommendations are proposed to enhance the performance of the Twigire Muhinzi agricultural project and similar initiatives:

Activity Planning

- **Enhance Participatory Planning**: Involve stakeholders in the planning process such as seasonal planning meetings to ensure activities align with their needs and seasonal cycles.
- **Streamline Input Delivery**: Improve the logistics of input distribution, ensuring seeds and fertilizers reach farmers before the planting season begins.
- **Strengthen Data Collection Systems**: Adopt efficient and standardized data collection methods, such as digital tools, to improve accuracy and timeliness.

Stakeholder Engagement

- **Promote Inclusivity**: Actively encourage the participation of women, youth, and marginalized groups in all stages of the project to ensure broader representation and impact.
- **Improve Communication Channels**: Establish accessible, real-time communication platforms, such as SMS systems, to facilitate stakeholder updates and feedback.
- **Build Stakeholder Capacity**: Provide regular training sessions for farmer promoters and farmer field school facilitators to improve their effectiveness in delivering extension services.

Technology Transfer

- **Expand Training Programs**: Increase the frequency and coverage of training programs to ensure all farmers can access and adopt new technologies effectively.
- **Improve Accessibility to Resources**: Provide subsidized or affordable access to improved seeds, fertilizers, and other agricultural inputs.
- **Monitor Technology Adoption**: Conduct regular follow-ups to assess the adoption and effectiveness of transferred technologies, making adjustments as needed.

General Recommendations

- **Strengthen PPP Frameworks**: Develop clear roles, responsibilities, and accountability measures for public and private partners to enhance collaboration and resource mobilization.
- **Scale Successful Practices**: Expand the Twigire Muhinzi model to other districts, incorporating lessons learned to address identified gaps.
- **Leverage Digital Tools**: Integrate digital solutions into planning, monitoring, and communication processes to improve efficiency and reach.

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Community-led conservation efforts in Zimbabwe

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Abstract

Community-led conservation is a strategy that involves local communities and indigenous people taking the lead in managing and protecting natural resources. This approach aims to ensure sustainable use of resources and preservation of biodiversity. The objectives of this paper are to make an assessment of the state of Community-Led Conservation (CLC) effort in Zimbabwe. This paper argues that community-led conservation efforts can have a positive impact on local communities by supporting traditional ways of life and building political support for protected areas if done properly. Community-led approaches put communities in charge, allowing them to make key decisions. This study conducts a comprehensive literature review anchored by Ghana's Community Resource Management Areas Model (CREMA) to address the following issues: Role of community-led conservation, Reasons for supporting community-led conservation, Principles of community-led conservation, and Impact of Community-led conservation on biodiversity and ecosystem services. CREMA is a structured, democratic and legally supported approach to conservation that prioritizes community-led strategies. By integrating conservation practices into the daily lives of communities such as sustainable agriculture, responsible tourism, and habitat restoration, this model ensures that both humans and wildlife can thrive without compromising the delicate balance of ecosystems. This study utilise the interpretivist research philosophy and data were collected through focus group discussions with communities around three conservancies. Qualitative data was analyzed through thematic approach. The study found that CLC in Zimbabwe is in a state of paralysis, communities are no longer involved in conservation efforts and communities are no longer have buy-in in conservation. Human-wildlife conflict is increasing as new human settlements encroach into conservancies. This study recommends the resuscitation of CAMPIRE and the adoption of the CREMA model through

collaboration with local stakeholders to build awareness and support for conservation efforts and encourage local communities to use land sustainably to reduce human-wildlife conflict and improve ecosystem health.

Key words: Community-led Conservation, Community Resource Management Model, Biodiversity, Ecosystem.

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1. Introduction

Community-led conservation is a strategy that involves local communities and indigenous people taking the lead in managing and protecting natural resources. This approach aims to ensure sustainable use of resources and preservation of biodiversity. This method bridges the gap between conservation goals and socio-economic development, fostering a harmonious relationship between humans and nature for the generations to come. Collaborative decision-making processes plays a crucial role in community led conservation efforts. In these initiatives, involving local communities is essential because it taps into the knowledge, perspectives and experiences of those who live in and depend on the natural resources of the area.

Local communities possess valuable insights about the ecosystem, its biodiversity and its challenges. By including locals in decision-making, conservation efforts become more effective and sustainable. Moreover, engaging communities fosters a sense of ownership and responsibility, motivating individuals to actively participate in protecting their environment. This collaborative approach enhances the success of conservation projects and promotes social equity and ensures the benefits of conservation to be shared among those directly affected by the outcomes. In essence, community involvement is a cornerstone of successful and inclusive conservation strategies. The project contributes to the base of evidence that demonstrates the crucial role of indigenous peoples and communities in biodiversity conservation and sustainable use.

Community-led conservation initiatives are essential to sustainable natural resource management and biodiversity conservation. In Sub-Saharan Africa (SSA), specifically Ghana, these initiatives primarily occur through Community Resource Management Areas (CREMAs), vital in involving local communities in conservation activities to achieve conservation goals and enhance livelihoods.

CREMAs provide a platform for community members to demarcate traditional boundaries for the resource management area, including core and development zones (Baaweh, Baddianaah, & Baatuuwie, 2022). They establish committees such as the CREMA Executive Committee (CEC) and Community Resource Management Committee (CRMC) to oversee resource management. The government officially recognizes CREMAs by awarding them a certificate of devolution, granting communities legally binding authority over their resources. Together, these committees develop a comprehensive resource management plan that includes rules and regulations, monitoring activities, and enforcement (Wildlife Division Policy for Collaborative Community Based Wildlife Management, 2000).

Within CREMAs, various activities occur including ecosystem restoration and rehabilitation efforts, environmental awareness campaigns, regulating bushfires, hunting and logging practices. CREMAs also facilitate connections between producers such as farmers, Shea collectors and businesses that promote community initiatives while ensuring the procurement of high-quality products at fair prices. Conservation agreements may also be established where organizations contribute to a conservation fund to support conservation activities.

1.1 Objectives of the Study

To determine the role of Community-Led Conservation in the preservation of biodiversity and ecosystem services in Zimbabwe.

To identify the principles of CLC.

To assess the impact of CLC on the community wellbeing and livelihoods.

To apply the CREMA model on the Zimbabwean conservation efforts

2. Literature Review

Community-based conservation thrives to integrate culturally sensitive, socioeconomic development with nature conservation to catalyze benefits for both people and nature. It aims to foster stewardship of local ecosystems and biodiversity by enabling, championing and elevating local and collaborative governance systems as well as management practices A. Charles Ed, 2021; Mahajan, et al., 2021; Jupiter, et al, 2014). The discourse on community-based conservation evolved to embrace local value systems and knowledge, decolonize conservation, support human well-being and ensure the equitable distribution of benefits and costs from conservation (Guibrunet, et al, 2021). The practice of community-based conservation can either be grassroots driven or implemented top-down for example via government directives or policies of the funding institution (Mahajan, et al., 2021).

Community-led conservation allows people to live and actively manage a landscape to support themselves while protecting natural resources and species. CLC also known as "working lands" conservation which allows for a sustainable natural resource use. This differentiates it from many traditional conservation projects that have emphasized the establishment of protected areas with much stricter controls on human visitation, use, and impacts. Community-led conservation is not just a slogan; it's a seismic shift in how we approach environmental protection. Gone are the days when conservation meant fencing off areas and excluding local populations. Today, it's all about empowering communities to become stewards of their own environments.

Community-led conservation is based on the idea that sustainably managed, maintain biodiversity, provide goods and services for humanity and support the environmental conditions necessary for sustainability and resilience (Kremen & Merenlender, 2018). Community-led conservation attempts to strike a balance between protecting nature and supporting traditional communities' self-governance, rights, and economic development (Borges & Olander, 2020). It also champions traditional and indigenous ecological knowledge as a guide to sustainable use and management.

Community-led conservation has been shown in some cases to be more effective in the long-term for conserving carbon, biodiversity and natural resources than projects that don't allow active landscape management. Current studies shows that community-led conservation can be more effective than government measures over the long-term and tends to be less expensive (Schuster, et al., 2019). Indigenous lands have higher global biodiversity values and carbon stock (Rights and Resources Institute, et al. 2018) than anywhere else on earth. This is powerful evidence that traditional ecological knowledge and management practices are successful at delivering conservation outcomes (Rundle & Hannah., 2019). However indigenous and traditional communities are under tremendous pressure (Zwick, Bennett and Halla, 2020). Safeguarding this biodiversity and carbon is most likely to be accomplished through a community-led conservation approach that strengthens communities' capacity to secure their land rights, defend against illegal incursions, and manage natural resources sustainably (Forest Trends Association. Indigenous Territorial Governance in Latin America, 2019) Research has shown that deforestation and forest degradation is lower in forests where communities have secure tenure rights.

Community-led conservation complements and expands upon existing traditional conservation efforts necessary to reverse biodiversity loss. Greater investment in community-led conservation should be an increasingly important complement to traditional conservation projects. Places suitable for establishing new protected areas are becoming scarce, leaving options that are remote and not as beneficial to biodiversity or people (Erbaugh, 2020). Community-led conservation can complement new and existing strict protected areas. For example, a patchwork of protected areas and sustainable working landscapes together enhance habitat connectivity to promote the free movement of species, natural processes and ecosystem services (Kremen & Merenlender, 2018). The broad coalitions necessary to make community-led conservation work have greater potential to create a collective impact. Collaboration between communities, grassroots movements, NGOs, and sometimes public-private partners are more adaptable and better equipped to demand changes and drive lasting transformations, especially at government levels.

2.1 Community-Led Conservation strategies to support sustainable development

Community-Led Conservation allows benefits to be harvested by communities. Self-directed enterprises like agroforestry, sustainable timber, artisanal handcrafts and producing non-timber forest products, like acai, Brazil nuts, cocoa allow communities to sustain themselves and their land long-term. The planning, management and monitoring required for these activities also leads to more frequent land patrols which ultimately increases territorial protection (Borges & Olander, 2020). Forest Trends has supported communities with such efforts for over two decades and has observed the power and wide-ranging benefits of small investments in community-led forest enterprises first-hand (Forest Trends Association. Indigenous Territorial Governance in Latin America, 2019). These benefits are incentive for continued long-term stewardship. Demonstrated successes help to make a strong case for government support and recognition. Community-led conservation is also an investment in human rights and a solution that aligns the priorities of human well-being, sustainable development and preventing forest loss.

Indigenous peoples have developed sophisticated knowledge systems and management practices that enable them to live sustainably in their environments for many generations and in many cases and millennia. By giving them greater control over the management of natural resources, community-led conservation can ensure that these valuable traditions are preserved and that biodiversity is protected for future generations. Over the course of the project, this larger base of evidence will directly impact how much local and national governments recognize and support indigenous peoples' and local communities' beneficial roles in biodiversity protection. Consequently, this will also improve the level of protection and recognition of their underlying rights to land, resources and traditional knowledge.

These two aspects of the long-term impact are closely connected: sustaining community-led long-term management of natural resources is linked to the security of underlying tenure, yet in many of the project countries customary tenure is insufficiently recognized. By demonstrating the valuable contributions that these territories make to national biodiversity priorities, the project makes the case for increasing security of tenure over the longer-term.

2.2 Principles of Community Led Conservation

Community-led conservation is based on principles that emphasize the importance of local communities in protecting their natural resources (Baaweh, Baddianaah, & Baatuuwie, 2022). The first principle includes community participation. Community participation involve the community in the design and planning stages of conservation projects. Sustainability rule ensure that conservation efforts are sustainable and address the needs of the community. The third principle is inclusivity, in which policies of conservation make sure that the conservation efforts are inclusive and everyone in the community has a say. Local expertise also remains useful in CLC where there is active local community's knowledge and expertise to ensure that conservation practices are practical and culturally relevant. Empowerment builds the community's capacity to take action and implement conservation efforts on an ongoing basis. The last principle is ethical data collection. Collect data in a way that is ethical, reliable, and verifiable remains important. Community-led conservation efforts can lead to lasting success if they are based on these principles (Baaweh, Baddianaah, & Baatuuwie, 2022).

2.3 Impact of CLC on Biodiversity and Ecosystem

The principal benefits of the conservation policy have been the reduced depletion of natural resources and increased wildlife, achieved by providing alternative fuel wood, fodder and other energy supplies.

As a result of conservation policy, there has been an increase in fodder and fuel wood trees on private woodlots, regeneration of trees on degraded land, greatly increased local institutional development, an increase in forest cover, easier availability of fodder and fuel wood in the forest, improved water resources, an increase in wildlife populations, infrastructure development and improvements in health and sanitation. The major costs of conservation are increase in crop damage by wildlife, a decrease in fodder grass species in forests, a decrease in wild mushroom availability in forests and a decrease in crop production as a result of shading by the on-farm plantations of trees.

The major economic benefits received by local people are investments made to improve social services, agriculture and livestock improvement, development of employment opportunities and provision of various training schemes. Within CREMAs, various activities occur, including ecosystem restoration and rehabilitation efforts, environmental awareness campaigns, regulating bushfires, hunting and logging practices. CREMAs also facilitate connections between producers such as farmers and Shea collectors and businesses that promote community initiatives while ensuring the procurement of high-quality products at fair prices. Conservation agreements may also be established where organizations or companies contribute to a conservation fund to support conservation activities.

Studies have reported CREMA's benefits, including the potential to reduce emissions from deforestation and forest degradation (Asare, Kyei, & Mason, 2013) and support ecotourism activities (Bonye, Yiridomoh, & Dayour, 2022). They promote income diversity, which boosts local economies and further increases accountability and democratization at the grassroots level (United Nations Development Programme Wechiau Community Hippo Sanctuary, 2012). Communities in the CREMAs are reported to have access to natural resource goods as a source of food, fuel, medicine, flora and fauna (Baaweh, Baddianaah, & Baatuuwie, 2022).

CREMAs have also increased community and landowner rights to manage natural resources usually controlled by the government (Techno Serve Ghana agricultural and natural resource management project, 2018). However, despite its potential, the CREMA initiative has been criticized (O'Connor, Djoudi, & Zida, 2021). Some argue that, this policy and legal framework is state-centered and fails to fully consider the local community's holistic needs regarding to sustainable and effective forest as well as animal resource management (O'Connor, Djoudi, & Zida, 2021). Also (Pienaah, Batung, Saaka, Mohammed and Luginaah, 2023) argues that the CREMAs lack the financial support to operate their conservation funds system. They recommended establishing credit systems for women in CREMAs and non-CREMAs to support conservation efforts (Pienaah, Batung, Saaka, Mohammed, & Luginaah, 2023). Despite recognizing the importance of natural resources in CREMAs, there is little information available on the impact of CREMAs on the host communities.

3. Methodology

Literature search was conducted across multiple electronic databases, including Scopus, Web of Science, and Google Scholar. A combination of keywords and search terms was used to identify relevant studies. The search terms included: "Role of community-led conservation", "principles of CLC", "Impact of CLC on community wellbeing and livelihoods" and "CREMA". The search was limited to peer-reviewed journal articles, conference proceedings and reports published in English between 2000 and 2024. Focus Group Discussions (FGD) was used to collect data.

Three sets of FGD were held with communities around Gonarezhou National Park, Hwange National Game Reserve and Lake Chivero Conservancy. Each FGD had eight participants. Questions were derived from CREMA constructs following the Demarcation of traditional boundaries, Establishment of Executive Committees, Government recognition, Production of a Resources Management Plan and Conservation activities (ecosystem restoration, and rehabilitation efforts, environmental awareness campaigns, regulating bush fires, hunting, and logging practices, connecting producers to the market and conservation agreements for funding).

4. Results and Discussion

4.1 Gonarezhou National Park Community

4.1.1 Demarcation of traditional boundaries

We have clear boundaries that separate us from the animal conservancy. However, animals being animals, they freely roam around causing human-wildlife conflicts. We have learnt to coexist and we have developed some mechanisms to scare them away without causing unnecessary harm to both humans and wildlife.

4.1.2 Establishment of Executive Committees

We used to have very solid CAMPFIRE structures before the land reform program but now, we have nothing formal. Our gatherings are informal based on some understanding that our communities need to be protected from wild animals. Safari companies are however more organized, with clear formal committees. This is not surprising since all the licensed hunting takes place through them.

4.1.3 Government recognition.

Since we are not formally organized, Government has no mechanism of reaching us. It used to do so through CAMPFIRE programs. We know that Government is aware of the issues around human/wildlife conflicts but I think it is up to us to reorganize ourselves again if we expect to influence policy.

4.1.4 Production of a Resources Management Plan.

We have nothing to report on this, but we know for sure that Safari companies have them as a government requirement for being granted hunting licenses.

4.2 Conservation activities (ecosystem restoration, and rehabilitation efforts, environmental awareness campaigns, regulating bush fires, hunting, and logging practices, connecting producers to the market and conservation agreements for funding).

These activities seem to have died with the demise of CAMPFIRE. We are no longer actively and formally involved. Safari companies around this area have all these things in place. Remember these companies want to look good on environmentally conscious to their foreign hunting customers.

4.2.1 Hwange National Game Reserve

a) Demarcation of traditional boundaries

We know where we have been traditionally settled but new settlements are cropping up and encroaching into the reserve. It is not good optics at all.

b) Establishment of Executive Committees

These no longer exist since the time of CAMPFIRE. We are no longer organized at all. It is now free for all.

c) Government recognition

There is nothing to be recognized. We get arrested when we kill animals for food. The coexistence we used to have with wildlife has gone.

d) Production of a Resources Management Plan

We do not even know what that is about. My friend, there is chaos out there. Lawlessness. We heard a few months ago that Government had allowed Chinese companies to set up mining operations within the reserve. That is unacceptable.

4.3 Conservation activities (ecosystem restoration and rehabilitation efforts, environmental awareness campaigns, regulating bush fires, hunting and logging practices, connecting producers to the market and conservation agreements for funding).

Nothing of the sort happens around here. Some of those things you mention used to happen during the time when CAMPFIRE used to be active. Not anymore.

4.3.1 Lake Chivero Conservancy.

a) **Demarcation of traditional boundaries**

We are organized here. Remember we are very close to the capital city.

b) **Establishment of executive committees**

No, we are not involved at all. We are settled around here for a serene natural environment. The national parks people are always around doing their job.

c) **Government recognition**

No, there is nothing we need to be recognized for. The parks people are doing a wonderful job.

d) **Production of a Resources Management Plan**

All we want as a community is to see the natural environment being maintained because that was the reason we came here for in the first place. We hate it when we hear that rhinos and fish died as a result of toxic water. We hate to see the lake choking from hyacinth. We want to trust that the parks people have a plan to deal with all these issues.

4.4 Conservation activities (ecosystem restoration and rehabilitation efforts, environmental awareness campaigns, regulating bush fires, hunting and logging practices, connecting producers to the market and conservation agreements for funding).

Apparently as the surrounding community, we are not actively involved in any of these activities. We are however extremely concerned with the pollution of Lake Chivero where recently we lost 10 Rhinos and other animals due to water poisoning. The Lake is currently infested and clogged with water hyacinth which we believe is depriving oxygen for our marine animals. We also understand that the city of Harare is allowing untreated raw sewage into the water body contributing to the worsening of polluting the lake.

There are a number of issues here but we feel the responsible authorities should take appropriate action where it is needed.

5. Conclusions

The CREMA model has helped in assessing the state of CLC in selected wildlife protected areas in Zimbabwe. Although traditional boundaries exist, human activities are encroaching into conservancies increasing human-wildlife conflicts. Conservation committees no longer exist since the sad demise of CAMPFIRE. The communities surrounding conservancies are no longer actively involved in conservation. Since there are no organized structures, government has no mechanism to recognize CLC. The demise of CAMPIRE put paid to all conservation efforts. Communities no longer have any buy-in into conservation, they do not have any plans for it. CLC in Zimbabwe has collapsed and is in a state of paralysis. Some say it is as a result of the death of CAMPFIRE, others say it was the land reform program while others say it is due to multifaceted factors that include political, economic and social disintegration in Zimbabwe.

6. Recommendations

Zimbabwe has no choice but to resuscitate CLC either through a new robust community-centered CAMPIRE or adopt the Ghana CREMA Model.

There must be collaboration with local stakeholders to build awareness and support for conservation efforts and encourage local communities to use land sustainably to reduce human-wildlife conflict and improve ecosystem health.

There are five principles of community-centered conservation governance for the post-2020 framework:

6.1 Build multilevel networks and collaborative relationships needed to coproduce conservation solutions that provide social and ecological outcomes;

6.2 Promote equity and opportunity for all, recognizing specifically the role of women as agents of change in community-centered conservation;

6.3 Reframe conservation action through the lens of reconciliation and redress (e.g., injustices from land grabs and territorial enclosures);

6.4 Adopt a rights-based approach to conservation action in which community access and decision-making autonomy are emphasized; and

6.5 Revitalize the customary and local institutions that provide legitimate adaptive strategies for the stewardship of biodiversity.

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A model for enhancing franchisee effectiveness in the fast food industry

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Abstract

Franchising has become a popular strategy for firms pursuing internationalization. Owing to this, several businesses globally, are partnering with established brands in sectors such as manufacturing and retailing. In South Africa, the fast-food industry is experiencing exponential growth in the franchise business. For this reason, this study examined the effectiveness of franchisees in the fast-food industry in the City of Tshwane. While prior studies have examined success factors in South Africa's fast food franchise industry in general, there remains scant literature on the specific determinants of franchisee effectiveness in the city of Tshwane. Furthermore, despite the rapid expansion of the fast food franchise sector in Tshwane, franchisee closures remain alarmingly high with almost 10% failing in the early business stages. As a result, a study of this nature has become paramount. An understanding of the factors that influence franchisee effectiveness has become necessary to facilitate decision-making priorities in this sector. Following an interpretivism paradigm, the study uses a qualitative methodology. A descriptive research design with structured interviews was selected to gather in-depth data from participants, enabling a comprehensive understanding of franchisee effectiveness. The research population includes 140 fast food franchise outlets in Tshwane, with a purposive non-probability sampling method used to select a sample of 10 participants. Each participant has been interviewed using a semi structured interview guide and digitally transcribed. Data analysis is conducted using thematic analysis. The findings revealed that operational efficiency, strong franchisor support and customer service are key drivers of franchisee success in Tshwane's fast-food industry. Successful franchises excel in financial oversight, staff training and strategic

marketing while financial constraints, high operational costs and poor cash flow management contribute to failures. Additionally, location and market accessibility play a crucial role in franchise sustainability. The primary contribution is the development of a Franchisee Effectiveness Model which offers a structured framework to enhance franchisee performance. The model will provide actionable insight for franchisors, franchisees and policymakers, guiding targeted interventions such as enhanced and targeted training programs and strengthening franchisor-franchisee collaboration and market specific strategies to reduce failure rates and ensure long term sustainability.

Keywords: Franchise, effectiveness, fast-food, operational efficiency, franchisee-franchisor relationship

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1. Introduction

Franchising is a well-established business model where a franchisor grants a franchisee the rights to market and sell its products and services under the franchisor's brand name and operating system (International Franchising Association, 2023). This model provides franchisees with support in training, marketing, and operational management in exchange for fees and royalties (Hayes, 2023). In South Africa, franchising has played a crucial role in economic development, with the sector contributing 15% to the country's GDP in 2023, up from 13.9% in 2022 (Bulbulia, 2023). The industry supports over 500,000 jobs and spans 727 franchise systems with approximately 68,463 franchised outlets (MyPressportal Team, 2023; International Trade Administration, 2024). Furthermore, within the South African franchising system, the fast-food and restaurant sector represents the most significant and rapidly expanding category, accounting for 26% of the total franchise revenue (Constantaras, 2015; SME Guides, 2023).

Despite its significance, many franchisees face challenges that impact their effectiveness, including high operational costs, fluctuating consumer demand, and limited franchisor support (Mtsweni et al., 2018; Seid, 2024). While franchising offers structured business models, success is not guaranteed, and failure rates remain a concern. Recent studies indicate a 6.5% franchise failure rate within the first three years (FASA, 2022; Nedbank, 2023; Which Franchise, 2023). Understanding the factors influencing franchisee effectiveness is therefore essential for ensuring sustainability and growth within the industry.

Franchising as a business model has a long history, originating in the mid-19th century and gaining prominence in the 20th century (International Franchise Association, 2024). In South Africa specifically, the first franchise establishment happened in the mid-1960s with the introduction of brands such as Steers and Shoprite (Franchise Direct, 2011). Over the decades, the industry expanded rapidly, with fast-food brands like Nando's, Chicken Licken, and Debonairs Pizza becoming dominant players on the market (Franchise Direct, 2011). Gauteng province, particularly Tshwane, plays a key role in South Africa's franchising industry, accounting for 40% of franchises and serving as an essential economic hub (International Trade Administration, 2023).

However, despite the robust growth of franchising in South Africa, franchisees continue to encounter challenges that affect their long-term viability. It is evident that there is need for enhanced training, financial support, and regulatory considerations to ensure franchisee success (De Wet et al., 2021; Wingrove, 2017). By exploring franchisee effectiveness within Tshwane's fast-food sector, this paper aims to provide empirical insights by developing a Franchisee Effectiveness Model to inform better business strategies, contribute to economic growth, and enhance franchise sustainability in the region.

2. Literature Review

The success and effectiveness of franchisees are influenced by various theoretical perspectives that provide insights into the challenges and opportunities within the franchisor-franchisee relationship. This literature review synthesizes existing research to explore the key theoretical frameworks that inform franchisee effectiveness. By examining agency theory, resource scarcity theory, and trust theory, this review highlights the interplay of factors that contribute to franchisee performance. These frameworks offer a comprehensive understanding of franchise operations, guiding the development of strategies and policies that enhance franchisee success.

2.1 Theoretical Foundations

Understanding franchisee effectiveness requires a multi-theoretical approach that integrates perspectives from agency theory, resource scarcity theory, and trust theory. These frameworks collectively provide insights into franchisor-franchisee relationships, resource constraints, and the role of trust in business performance. The interplay between these theories offers a comprehensive lens through which to examine franchisee effectiveness, highlighting key challenges and informing policy recommendations.

2.1.1 Agency Theory

Agency theory provides a fundamental framework for understanding the franchisor-franchisee relationship, emphasizing the alignment of interests between both parties (Jensen & Meckling, 1976). The delegation of operational authority to franchisees introduces potential conflicts, as franchisees may prioritize short-term profits over the brand's long-term objectives (Eisenhart, 1989). This issue directly relates to the primary research objective of identifying factors that enhance franchisee effectiveness. By understanding how franchisors can mitigate agency-related conflicts, this study explores strategies for fostering alignment between franchisors and franchisees.

A major challenge within agency theory is the presence of moral hazard and information asymmetry. Franchisees may engage in cost-cutting measures that harm the brand, while franchisors struggle to monitor compliance effectively (Shane, 1996). Studies on South African fast-food franchises (Ekosse, 2017) illustrate how targeted monitoring and well-structured incentives can improve franchisee performance and reduce these risks.

Furthermore, agency theory informs the development of policies that address franchisee underperformance. Standardized performance metrics, regular audits, and balanced incentives serve as mechanisms to align franchisee efforts with the franchisor's long-term goals (Brickley & Dark, 1987). These strategies help maintain brand consistency and franchisee success, reinforcing the broader relevance of agency theory to franchise operations.

2.1.2 Resource Scarcity Theory

Resource scarcity theory explains franchising as a strategic response to capital, managerial expertise, and market knowledge constraints (Oxenfeldt & Kelly, 1969). Franchisors leverage franchisees' financial and operational resources to facilitate brand expansion. This perspective is critical for understanding franchisee effectiveness, as adequate resources enable adherence to brand standards, operational efficiency, and overall network success.

In regions where financial and managerial constraints are prevalent, franchisees face significant challenges. Mumbua's (2016) study of Kenyan fast-food franchises highlights that resource limitations often contribute to franchisee inefficiencies. This finding aligns with the secondary research objective of identifying common causes of underperformance.

Addressing these constraints requires policies that enhance franchisee access to resources. Financing options, bulk purchasing agreements, and additional training programs can mitigate resource-related challenges, fostering franchisee effectiveness and network sustainability (Combs & Ketchen, 1999). By integrating resource scarcity theory, this study underscores the importance of strategic resource allocation to franchise success.

2.1.3 Trust Theory

Trust theory highlights the role of trust in fostering productive franchisor-franchisee relationships. Strong trust dynamics reduce the need for costly monitoring and control mechanisms while promoting mutual commitment (Zaheer et al., 1998). For the primary research objective, trust theory provides a lens to examine how trust-based relationships contribute to franchisee effectiveness through compliance, collaboration, and performance.

Trust is instrumental in reducing conflicts and enhancing franchisee satisfaction. Research on Turkish fast-food franchises (Ester, 2012) reveals that trust in franchisors leads to higher operational standards, better customer satisfaction, and stronger brand loyalty. This underscores the significance of trust as a driver of franchisee success.

From the perspective of the secondary research objective, a lack of trust can result in disengagement, inconsistent service quality, and franchisee underperformance. To mitigate these issues, policy recommendations include transparent communication, equitable treatment of franchisees, and structured opportunities for franchisee input in decision-making (Chiou et al., 2004). Trust-based policies foster collaboration, reducing conflicts and ensuring long-term brand sustainability.

2.1.4 Integrating the Theories for a Holistic Understanding

While each theory provides unique insights, their integration offers a more comprehensive understanding of franchisee effectiveness. Agency theory highlights conflicts of interest, resource scarcity theory addresses financial and managerial constraints, and trust theory underscores the role of trust in fostering strong relationships. Together, these perspectives inform a multi-faceted approach to franchise management, emphasizing the importance of aligning incentives, ensuring resource availability, and building trust to drive franchisee success.

2.2 The Franchising Industry

Franchising has experienced significant international growth, driven largely by globalization (Alon et al., 2021). Well-established brands have successfully expanded into various markets by adapting their offerings to align with local cultures and consumer preferences (Braksator, 2021). A notable example is the McDonald's brand, which has customized its menu in different regions, such as introducing rice-based meals in some Asian countries (Brand2Global, 2016).

As a strategic business model, international franchising enables rapid expansion while mitigating financial risk for franchisors. By leveraging franchisees' local expertise and resources, franchisors can enter new markets with minimal capital investment (Alon et al., 2021:43). Standardization plays a crucial role in maintaining brand consistency and meeting customer expectations while allowing for necessary localized adaptations to ensure long-term success (Phase, 2023; Recker, 2023). However, despite these advantages, obtaining a franchise license does not guarantee success, as market conditions and operational challenges significantly impact franchisee performance (Welsh et al., 2011).

2.3 Fast-Food Franchising Industry

Over the past five decades, the fast-food and restaurant industry has experienced exponential growth, driven by evolving consumer lifestyles (Gikonyo et al., 2015). This expansion has been fueled by globalization and rising disposable incomes, particularly in developing nations where economic growth has created new markets for fast-food franchises (Mstweni et al., 2018; Tabassum & Rahman, 2012).

A similar trend is evident in South Africa, where the fast-food sector has expanded significantly (Negal, 2013). Furthermore, urbanization and increased population mobility have also shaped consumer behaviour, with more individuals commuting long distances for work (Schlosser, 2001). The rise in dual income households has further contributed to a growing reliance on quick service restaurants, as less time is available for home cooked meals (Gikonyo et al., 2015). As a result, franchising has become a cornerstone of the fast-food industry, offering standardized processes and efficient service models that enhance operational effectiveness (Sen, 1998; Lashley & Morrison, 2000).

The structured nature of fast-food franchising simplifies operations through standardized menus and streamlined service systems, making it an attractive business model (Lashley & Morrison, 2000). Leading brands such as McDonald's and KFC have leveraged franchising as a key growth strategy (Quinn & Alexander, 2002). Compared to independent fast-food establishments, franchises offer greater business feasibility and generate faster positive cash flows (Medelsohn, 2004). In South Africa, the fast-food and restaurant industry remains one of the largest franchising sectors, playing a vital role in job creation and economic growth (FASA, 2022).

2.4 Types of Franchising

Franchise models vary, with three primary types being (1) trade name franchising, (2) manufacturing franchising, and (3) business format franchising (Actioncoach, 2016). Each model offers distinct advantages and has varying degrees of success in different market conditions.

Trade name franchising, also referred to as traditional franchising, allows franchisees to use the franchisor's brand name, logo, and trademark to market products. Franchisees purchase and sell the franchisor's products without interference in daily operations, making it a cost-effective distribution model. Notable companies such as Pepsi and Coca-Cola adopt this approach (Ojo, 2022:1). Manufacturing franchising involves agreements where franchisees are permitted to manufacture and sell franchisor-branded products.

The franchisor provides production guidelines and trademarks, ensuring consistency in product quality. Companies like Nestlé utilize this model to extend their market reach while maintaining brand integrity (Tulane University, 2023; Ojo, 2022:2). Lastly, Business format franchising is the most prevalent and successful model, granting franchisees comprehensive business support, including operational procedures, marketing strategies, training, and quality control (Tulane University, 2023). Fast-food chains such as McDonald's and KFC employ this model, ensuring uniformity in product preparation and service delivery (Salami, 2009). Franchisees pay royalties and fees to access the franchisor's established business framework, benefiting from strong brand recognition and customer loyalty (Nibusinessinfo, 2023).

Additionally, several alternative franchising models exist, including conversion franchising, fractional franchising, master franchising, area development franchising, product distribution franchising, and joint venture franchising (Learn2Franchise, 2024). Conversion franchising allows existing businesses to transition into franchise outlets, leveraging the franchisor's brand identity and operational systems (Tardi, 2023; Learn2Franchise, 2024). Fractional franchising permits multiple franchisees to share a business operation, as seen with brands like Steers and Debonairs (Doussy & Grobler, 2017). Master franchising grants franchisees rights to sub-franchise within a designated region, acting as an intermediary between the franchisor and local franchisees (Dawson, 2017).

Area development franchising provides exclusive territorial rights to open multiple outlets within a specified timeframe (Businesses for Sale, 2024). Product distribution franchising allows franchisees to distribute products without adhering to a strict business format, focusing primarily on sales rather than operational systems (Drew, 2023). Finally, joint venture franchising involves a collaborative ownership structure between the franchisor and franchisee, sharing investment risks and rewards. This model fosters strategic partnerships that enhance market penetration and business sustainability (International Franchising Association, 2016; Clavell, 2022).

By analyzing these franchising models, businesses can make informed decisions regarding their expansion strategies, ensuring alignment with market conditions and operational objectives.

2.5 Regional Complexities in Franchise Operations: Cultural, Economic, and Technological Considerations

2.5.1 Competitive Advantage and Localization in Fast-Food Franchising

Ubale et al. (2024) examined how fast-food franchises sustain competitive advantages across diverse regions by leveraging local market knowledge to adapt to regional tastes and preferences. Their study identified key challenges, including the need to balance brand identity with local adaptation and mitigate franchisee dependence on centralized supply chains. The findings emphasize that collaboration between franchisors and franchisees in designing localized marketing strategies enhances operational efficiency and profitability.

2.5.2 Service Quality and Consumer Satisfaction

Service quality remains a critical determinant of customer satisfaction in fast-food franchises. Fatima et al., (2024) investigated the impact of service quality dimensions such as responsiveness, empathy, and reliability on consumer satisfaction in international fast-food franchises in Faisalabad, Pakistan. Their findings highlight the challenges of training staff to align with local consumer expectations, which often differ significantly from those in developed markets. The study underscores the role of cultural norms in shaping customer satisfaction and emphasizes the need for tailored service approaches to improve customer retention and loyalty.

2.5.3 Technology Adoption and Workplace Efficiency

The integration of advanced technologies has been explored as a means to enhance operational efficiency within fast-food franchises. Khan et al., (2024) studied the adoption of augmented reality (AR) technologies in Saudi Arabian fast-food franchises, focusing on their impact on workplace safety and employee engagement. Cultural factors, including employee roles and attitudes toward technology, were found to influence the effectiveness of AR implementation. The study also highlighted the role of employee volunteerism in promoting workplace safety, particularly in regions with stringent regulatory requirements. The research suggests that successful AR adoption requires culturally sensitive, localized training programs.

2.5.4 Hospitality Services and Religious Tourism

Beyond traditional fast-food franchising, the role of hospitality services in supporting religious tourism has also been explored. Abiola-Oke and Osiobe (2024) conducted a quantitative study at Redemption Resort, demonstrating that hospitality services enhance religious tourism by providing safe accommodations, organizing religious ceremonies, and incorporating regional cuisines. However, challenges remain in accommodating religious diversity while maintaining cultural authenticity in an evolving tourism landscape.

2.5.5 Site Selection and Market Optimization

The strategic placement of fast-food franchises is critical to their success. Khetarpaul et al., (2024) applied machine learning algorithms, particularly clustering techniques, to optimize franchise locations in emerging markets such as Turkey. Their findings suggest that incorporating regional data such as population density, purchasing power, and consumer behaviour enhances the accuracy of site selection and increases franchise success rates.

2.5.6 Post-COVID-19 Recovery Strategies

Franchise resilience and adaptability in response to economic disruptions have been key areas of research. Sastri et al., (2024) examined recovery strategies employed by Indonesian fast-food franchises in the post COVID-19 period. Their study highlights the role of regional tourism in driving franchise recovery, with franchises in high tourism areas recovering more rapidly than those in less visited regions. The findings underscore the importance of adjusting operations to local economic conditions, such as offering targeted promotions and discounts to encourage consumer spending.

2.5.7 Digital Solutions for Supply Chain Efficiency

Supply chain management is a critical component of fast-food franchising, particularly in globalized markets. Karanina et al., (2022) explored the role of e-commerce platforms in addressing regional supply chain inefficiencies. Their study, based on data from Russian franchises, demonstrated how digital solutions enhance consumer demand analysis and inventory management. The findings provide valuable insights into the role of digital tools in improving operational efficiency and customer satisfaction across diverse regional markets.

2.5.8 Synthesis and Future Directions in Regional Franchise Operations

The literature underscores the complex interplay of market adaptation, consumer behaviour, and technological advancements in shaping the success of fast-food franchise operations. A recurring theme is the necessity for franchises to balance global brand identity with localized adaptations.

Ubale et al., (2024) highlight the strategic advantages of leveraging regional market knowledge, while Fatima et al., (2024) emphasize that cultural differences in service expectations necessitate tailored customer engagement strategies. However, challenges remain, particularly in maintaining service consistency and aligning consumer satisfaction with franchise-wide operational standards.

Technological advancements, such as augmented reality (Khan et al., 2024) and e-commerce solutions for supply chain management (Karanina et al., 2022), offer promising avenues for improving efficiency and engagement. Yet, their effectiveness is often contingent on cultural and regulatory factors, underscoring the importance of localized implementation strategies. Similarly, post-pandemic recovery strategies demonstrate the significant role of external economic factors, with Sastri et al., (2024) finding that franchises in high-tourism areas recovered more swiftly than those in less visited regions.

Despite the wealth of research, gaps remain in understanding the long-term sustainability of these strategies. While Khetarpaul et al., (2024) advocate for machine learning in site selection, practical implementation challenges and real world success rates remain underexplored. Additionally, Abiola-Oke and Osiobe (2024) extend the discussion beyond fast food, illustrating how hospitality services influence regional tourism growth. Their findings highlight the broader economic and cultural implications of franchising, yet further research is needed to assess how these insights apply across different markets.

Overall, while existing studies provide valuable insights into regional challenges in franchise operations, the literature suggests that success is contingent upon a multidimensional approach that integrates market responsiveness, technological adaptation, and cultural sensitivity. Future research should focus on longitudinal studies and cross-regional comparisons to refine best practices for sustainable franchise growth in diverse markets.

2.5.9 Factors Influencing Franchisee Failure and Success

Franchisee failure is often attributed to a combination of internal and external factors, including poor location selection, inadequate market research, weak financial management, and insufficient franchisor support (Mtsweni et al., 2018; Seid, 2024). In particular, poor site selection, insufficient training, and undercapitalization significantly contribute to franchisee struggles (Franchiseek, 2024).

A lack of adequate financial planning can result in high debt obligations, ultimately leading to business failure (Mtsweni et al., 2018; Nedbank, 2023; Franchiseek, 2024; Jonker, 2024). Moreover, ineffective management and financial mismanagement have been identified as primary causes of small business and franchisee failure (Zimmer et al., 2008).

Conversely, franchisee success is closely linked to strong brand commitment, a proven business model, and comprehensive franchisor support (Franchise Fame, 2023; Management Consulting, 2023). A well-established brand fosters customer loyalty and enhances profitability, while a structured business model strengthens resilience during economic downturns (Franchise Fame, 2023; Rayfield, 2023). Additionally, franchisor support encompassing training, marketing assistance, and financial guidance plays a critical role in franchisee growth and sustainability (Management Consulting, 2023). Establishing a strong franchisor-franchisee relationship based on mutual trust further enhances long-term success (Rayfield, 2023).

Technological innovation has also emerged as a key driver of franchise success. The integration of artificial intelligence (AI), chatbots, and customer relationship management (CRM) systems optimizes operations and improves customer engagement (Franchise Fame, 2023). To remain competitive, franchisors must continuously monitor industry trends and ensure that technological advancements are effectively implemented across the franchise network (Franchise Fame, 2023).

2.6 Global Trends in Fast-Food Franchising

The fast-food industry has undergone significant transformation over the past few decades, with franchising playing a central role in its global expansion (Wingrove, 2017). In recent years, the industry has been defined by rapid innovation, intense competition, and shifting consumer preferences. Key factors shaping the future of fast-food franchising include technological advancements, evolving consumer health consciousness, sustainability initiatives, and regulatory changes. This section examines global and regional trends within the fast-food franchise sector, focusing on digital innovation, menu adaptation to health-conscious consumers, sustainability efforts, and the growing demand for customization.

2.6.1 Technological Innovations: Digital Ordering and AI

Technology has revolutionized the fast-food industry, enhancing both customer experience and operational efficiency. Digital ordering platforms, mobile apps, and AI have transformed how consumers engage with fast-food brands. Major players such as Domino's and McDonald's leverage AI for customer service, predictive ordering, and personalized marketing (Sahota, 2024). Self-service kiosks and mobile ordering apps streamline the ordering process, reducing wait times and increasing convenience. Additionally, AI-powered chatbots and voice assistants handle customer inquiries, provide recommendations, and facilitate seamless transactions (Shalimov, 2024). The rise of cloud kitchens, or ghost kitchens, is further reshaping the industry by enabling brands to expand rapidly without the overhead costs of physical storefronts (eTakeawayMax, 2023).

2.6.2 Health-Conscious Consumers and Menu Innovation

As consumers become more health-conscious, fast-food franchises are adapting their menus to meet changing dietary preferences. The increasing demand for plant-based and organic foods has led brands like Burger King and KFC to introduce plant-based alternatives to traditional meat products (Just Vegan, 2022). Concerns about obesity, heart disease, and other health risks associated with fast food have also prompted franchises to improve menu transparency, provide detailed nutritional information, and reduce artificial additives and preservatives (Pietrangelo, 2022; Holt, 2023).

2.6.3 Sustainability and Environmental Concerns

Sustainability has become a major focus for fast-food franchises as consumer demand for eco-friendly practices continues to rise. Companies such as McDonald's have committed to sourcing 100% of their coffee, palm oil, and fish from sustainable sources, with an ambitious goal of using only renewable or recycled packaging materials by 2025 (McDonald's Sustainability Report, 2022). The industry is also addressing food waste by implementing surplus food donation programs, improving inventory management through data-driven solutions, and reducing portion sizes (McMahon, 2024). Additionally, efforts to phase out single-use plastics in favor of biodegradable or recyclable materials are becoming more widespread (Stanford University, 2018).

2.6.4 Customization and Personalization

Modern consumers increasingly seek personalized dining experiences, prompting fast-food franchises to expand customization options. Brands like Chipotle and Subway have long championed build-your-own meal models, while others are now adopting similar approaches to cater to diverse preferences (Tapp, 2023). AI and data analytics play a crucial role in enhancing personalization by enabling targeted promotions and suggesting menu items based on consumer purchase history, ultimately fostering customer loyalty (Haleem, 2022).

2.6.5 Fast-Food Franchising Trends in South Africa

As the South African fast-food industry continues to evolve, key trends such as digital transformation, localization, and sustainability are shaping the growth and adaptation of franchise brands.

2.6.6 Growth in Delivery Services

The rapid expansion of food delivery services has significantly reshaped the fast-food franchise industry in South Africa. Platforms such as UberEATS and Mr. D have created new revenue opportunities, enabling franchises to reach both urban and rural consumers more effectively (The Competition Commission, 2022). The COVID-19 pandemic further accelerated this shift, driving widespread digital transformation. As a result, mobile apps, loyalty programs, and online ordering systems have become essential tools for enhancing customer experience and optimizing operational efficiency (Jiang, 2023; Knowmax, 2024).

2.6.7 Localization and Diverse Menu Offerings

Localization has become a key strategy for fast-food franchises in South Africa, as global brands modify their offerings to align with local consumer preferences. For instance, McDonald's introduced the Boerie Burger, inspired by traditional South African sausage, while KFC offers pap, a staple maize-based dish (McDonald's Fandom, 2024; KFC South Africa, 2022). Beyond menu adaptation, franchises are implementing culturally relevant marketing strategies to engage with South Africa's diverse population, strengthening brand loyalty and fostering deeper community connections.

2.6.8 Health and Sustainability Initiatives

Reflecting broader global trends, South African consumers are increasingly prioritizing health-conscious and environmentally sustainable dining options. In response, many fast-food franchises are expanding their menus to include healthier alternatives such as salads, grilled chicken, and plant-based meals (Franchise Seek, 2024). Sustainability efforts are also gaining momentum, with brands reducing plastic waste and implementing energy-efficient practices (Moshood et al., 2022). Notably, Nando's has emerged as a leader in sustainability, emphasizing locally sourced, free-range chicken and energy efficient store designs to minimize its environmental impact (Nando's South Africa, 2023).

In conclusion, the fast-food franchising landscape in South Africa is undergoing significant transformation, driven by advancements in technology, shifting consumer preferences, and growing environmental consciousness. As delivery services expand, localized menu offerings increase, and sustainability initiatives gain traction, franchises must continuously adapt to remain competitive. These evolving trends highlight the dynamic nature of the industry and the necessity for brands to innovate while maintaining relevance in an increasingly diverse and conscious market.

3. Methodology

To ensure systematic and credible research, this study employs a qualitative research methodology, detailing the research design, sampling approach, data collection methods, analysis techniques, and ethical considerations.

The researcher employed an interpretivist paradigm to explore the lived experiences and perceptions of franchisees regarding factors influencing the effectiveness of their enterprises. A qualitative research approach was selected, as it aligns with the objective of gaining in-depth insights into participants' perspectives (Denzin & Lincoln, 2011). Given the nature of the study, an inductive research approach was followed, allowing patterns and themes to emerge from the collected data rather than relying on predefined hypotheses (Saunders et al., 2016:74).

A descriptive research design was adopted to systematically capture and present the experiences of franchisees operating in Tshwane, South Africa. The study examined the determinants of effectiveness in franchise enterprises through semi-structured interviews with franchisee owners and managers. The semi-structured interview guide included open-ended questions to ensure consistency in data collection while allowing for analytical rigor (Bhat, 2023). The collected data was then interpreted to identify trends and common themes, providing a comprehensive understanding of franchise operations in the region (Durrheim, 2009).

The research strategy was centered on primary data collection through semi-structured interviews, facilitating direct engagement with participants and capturing relevant insights. The findings contribute to the existing knowledge on franchise management and provide practical implications for prospective entrepreneurs aiming to establish successful franchise businesses. The results also offer insights into the impact of the South African economic landscape on small business operations (Morgan, 2013).

The study investigated franchisees operating in the City of Tshwane. According to Tripadvisor (2024), the city hosts 140 fast-food restaurants, which formed the study's population. The target group comprised franchisees and branch managers with at least two years of operational experience under a franchise agreement. Access to participants was managed by mitigating challenges such as confidentiality concerns, research credibility, and alignment with business priorities (Saunders et al., 2009:169-170). The selected sample ensured relevant insights into franchise effectiveness while addressing potential barriers to participation (Mensah et al., 2017).

A non-probability, judgmental (purposive) sampling approach was adopted to recruit participants with relevant expertise (Seidman, 2013:54). This technique allowed for the selection of franchisees and branch managers with substantial industry experience (Bryman et al., 2021:224-225). The inclusion criteria ensured that participants provided meaningful insights into franchise operations and performance (Creswell, 2011).

Purposive sampling determined the sample size, prioritizing information richness over statistical representation (Nikolopoulou, 2023; Subedi, 2021). A total of 10 semi-structured interviews were conducted with franchisees and branch managers to achieve data saturation. The selection reflected a heterogeneous range of franchise experiences (Etikan et al., 2016).
Prior research indicates that qualitative sample sizes typically range between 5 and 30 interviews, depending on study objectives (Kuzel, 1992; Creswell, 2007; Saunders, 2012). Saturation was confirmed when no new themes emerged from subsequent interviews, ensuring data adequacy (Hennink & Kaiser, 2022). To enhance participant engagement, semi-structured interviews included a maximum of 10 open-ended questions (Mwita, 2022).

Data coding and analysis were conducted using thematic analysis. Interviews were transcribed and systematically coded to identify recurring patterns and themes (Bryman et al., 2015:337). Atlas.ti software facilitated the coding process, ensuring efficient organization and categorization of qualitative data (Atlas.ti, 2020). The Braun and Clarke (2006) six-phase framework was applied, guiding the thematic analysis in a structured manner: familiarizing with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the final analysis.

To ensure the trustworthiness of findings, validity and reliability measures were considered. Validity was addressed by ensuring that data collection methods accurately reflected franchisees' perspectives (Noble & Smith, 2015). Reliability was established by maintaining consistency in the data collection process to ensure replicability under similar conditions (Simkund & Babin, 2013). While the study does not aim for generalizability, its focus on dependability ensures that findings provide valuable insights into franchisee experiences within the South African context.

Prior to any participant engagement, ethical approval was obtained from the North West University. Participants were provided with consent forms before interviews, and data collection adhered to the university's code of conduct. Confidentiality and anonymity were maintained throughout the study to protect participants' identities. The North West University research code is founded on four core principles: honesty in all aspects of research, accountability in conducting the study, responsible stewardship of research on behalf of others, and fairness and professional courtesy in working with participants (NWU, 2024).

Participants were informed that their involvement was voluntary, with the option to withdraw at any time. No personal identifiable information was collected, ensuring that only aggregated demographic details, such as years in operation, were recorded. The study adhered to data protection laws, including the Protection of Personal Information Act (POPIA). The research did not focus on sensitive attributes such as gender or race, and there were no risks or incentives associated with participation.

4. Results and Discusssions

The study involved interviews with ten participants, including franchisee managers and owners operating successful fast-food franchises in Pretoria. These participants represented diverse fast-food categories, such as burgers, fat cakes, pizza, and chicken, located in various parts of Pretoria. This diversity enabled the researcher to gather comprehensive insights into the experiences of franchisee business owners across different fast-food segments in the region.

The interview guide consisted of two sections: Section A and B: Section A collected general information about the franchisees, including their location and the operational duration of their franchises, allowing the researcher to develop detailed profiles of each respondent. Section B was designed to gather primary data relevant to the study's objectives.

Key themes were identified from the interviews, organized into subthemes, and analyzed in line with the study's aims. To protect participant anonymity, each was assigned a code - FFMO (Fast-food Manager/Owner) accompanied by a number corresponding to the interview sequence (e.g., FFMO01 to FFMO10). This coding system ensured the confidentiality of participant identities.

4.1 Section A findings

The section below reflects the Section A findings that included general information about franchisees, including their location and operational duration of franchisees

4.1.1 Results of Franchisee Manager/Owner Experience

This section presents the results and discusses the findings based on participants' responses. Purpose of the Question: This question aimed to assess the franchise manager's or owner's level of experience in operating the franchise, providing insights into their professional backgrounds, challenges, and perceptions of the business.

Results: Table 1 presents the participants' responses regarding their experience in managing a fast-food franchise business.

Table 1: Experience of Franchisee Managers

Participant	Description
FFMO01	“Bad experience”
FFMO02	“The franchise has been operating for 13 years, and I’m satisfied with the business. This branch has been open since 2022.”
FFMO03	“This branch has existed since 2016, and I’ve been with it since then. We managed to survive COVID-19 because we’re in the CBD.”
FFMO04	“This franchise opened in 2018, but I was working in another store before that. It’s strict because it’s someone else’s brand, and you have to stick to their standards.”
FFMO05	"I started last year, and I’m still learning. It’s hard work, especially when dealing with customer complaints."
FFMO06	"I’ve worked in this industry for many years, and I’ve seen a lot of shops fail. You can’t overspend and expect to survive."
FFMO07	"I’ve been with the franchise group for eight years, and the business has been running for 11 years. It’s exciting but challenging because you have to deal with different characters."
FFMO08	"I’ve been here for almost a year. The franchise is almost two years old, but I worked for eight years for Checkers, which is also a much bigger franchise."
FFMO09	“This is the line I’ve been in for quite a while. This is still a good business. I enjoy it, and it’s been a long time here. This place has been here for four years now.”
FFMO10	“We operate an Asian-centric restaurant. We have been in business since 2016.”

Source: Compiled by the researcher

The responses indicate a diverse range of experiences among franchise managers, varying from newcomers to seasoned operators with over a decade in the industry. Some participants reported challenges, including adherence to strict brand standards and managing customer complaints. However, others expressed satisfaction and long-term commitment to the business, with resilience and financial prudence emerging as key factors for success. Additionally, participants with extensive industry backgrounds highlighted the importance of strategic financial management and adaptability in sustaining a successful franchise operation.

4.1.2 Results of Business Location

Purpose of the Question: The primary objective of this question was to ensure that franchisees met the inclusion criteria, which required that only those with at least two years of experience be interviewed.

Results: Table 2 presents the locations of the franchisees who participated in the study.

Participant	Location
FFMO01	Pretoria East – Hatfield
FFMO02	Pretoria East – Lynnwood Glen
FFMO03	Pretoria Central – CBD
FFMO04	Pretoria East – Hatfield
FFMO05	Pretoria East – Hatfield
FFMO06	Pretoria West – Mountain View
FFMO07	Pretoria East – Lynnwood Glen
FFMO08	Pretoria East – Lynnwood Glen
FFMO09	Pretoria West – Mountain View
FFMO10	Pretoria East – Lynnwood Ridge

Source: Compiled by the researcher.

The findings indicate that all participants were based in Pretoria. A notable concentration of participants was found in Hatfield (three participants) and Lynnwood Glen (three participants). Two participants operated in Mountain View, while the remaining two were located in different areas: one in Pretoria Central's CBD (FFMO03) and one in Lynnwood Ridge (FFMO10). These results suggest that the majority of franchisees operated in well-established commercial zones, potentially benefiting from high customer foot traffic and business visibility.

4.1.3 Results of Years in Operation

Purpose of the Question: The purpose of this section was to establish when the business was founded and to determine the number of years it has been in operation. Results: Table 3 presents the opening years and the number of years that each business has been operational.

Table 3: Years in Operation

Participant	**Opening Year (Operational Period)**
FFMO01	2020 (4 years)
FFMO02	2022 (2 years)
FFMO03	2016 (8 years)
FFMO04	2014 (10 years)
FFMO05	1970 (54 years)
FFMO06	2016 (8 years)
FFMO07	2019 (5 years)
FFMO08	2022 (2 years)
FFMO09	2016 (8 years)
FFMO10	2016 (8 years)

Source: Compiled by the researcher.

Table 3 shows that the businesses surveyed have been operational for periods ranging from 2 to 54 years. The study revealed that two businesses had been in operation for only two years, while one business significantly exceeded others with 54 years of operation. Additionally, four out of the ten franchisees had been operating for the same period of eight years. Overall, the findings demonstrate that the participants have substantial business experience, with an average operational period of 10.7 years.

4.1.4 Results of Food Type

Purpose of the Question: The purpose of this section was to determine the primary food items sold by the franchisees.

Results: Table 4 presents the food types offered by the participating franchisees.

Participant	**Type of Food (Main Business)**
FFMO01	Chicken
FFMO02	Burgers
FFMO03	Coffee
FFMO04	Pizza
FFMO05	Burgers
FFMO06	Pizza
FFMO07	Burgers
FFMO08	Chicken
FFMO09	Burgers
FFMO10	Asian

Source: Compiled by the researcher.

Table 4 indicates that the most common food type among participants was burgers, with four franchisees specializing in this category. This was followed by chicken and pizza, each with two franchisees. The remaining two participants specialized in coffee and Asian cuisine, representing unique offerings within the sample. While these businesses are recognized for their primary food items, they may also offer additional menu options that contribute to competition within the franchise sector.

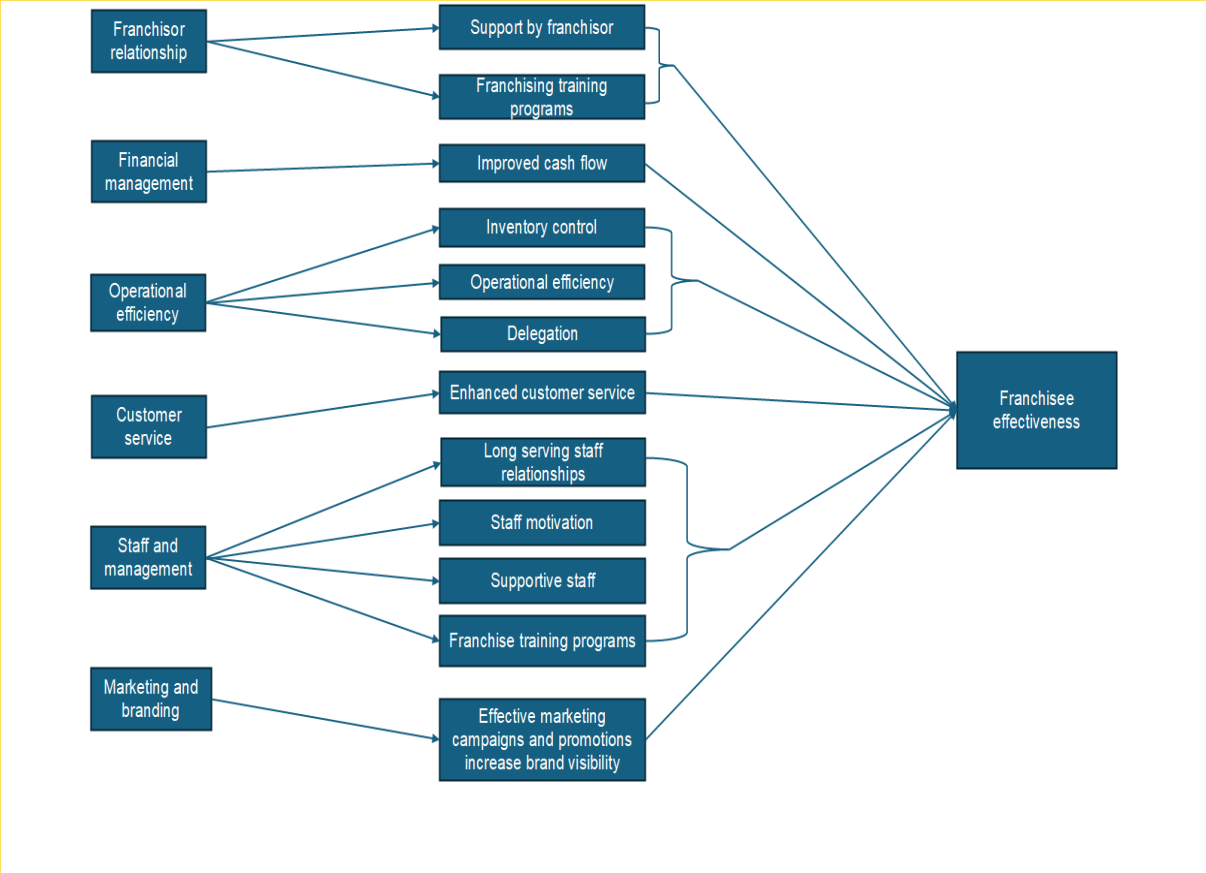
4.2 Section B Findings

Section B findings conducted through interviews with ten fast-food franchise owners and managers in the Tshwane region, identifying various factors influencing franchisee success and failure. The data analysis revealed eight primary themes: franchisor relationships, financial management, operational efficiency, customer service, location and market factors, staff and management, marketing and branding, and high operational costs.

The findings indicate that successful franchises maintain strong operational efficiency through practices such as daily stock management, effective staff training, and meticulous financial oversight. The franchisor-franchisee relationship emerged as a critical factor, with successful franchises benefiting from comprehensive franchisor support in training, marketing, and operational guidance. Customer service was identified as essential for building customer loyalty and ensuring long-term success. Additionally, effective staff management and training were consistently highlighted as vital contributors to operational efficiency.

Conversely, financial challenges, including insufficient capital, inadequate cash flow management, and high operational costs were linked to franchise failures. Accessibility and foot traffic were identified as crucial determinants of success. Furthermore, marketing and branding efforts, particularly those supported by the franchisor, were found to play a significant role in attracting and retaining customers.

Figure 1 Thematic Franchising Effectiveness Model



Source: Researcher's conceptualization

The Franchising Effectiveness Model shows positive factors, negative factors and situational factors that may vary due to context shown in green, red and orange respectively. Franchisee effectiveness is a multifaceted outcome, shaped by a complex interplay of internal and external factors. This model reveals that success hinges on cultivating positive influences across several key areas.

A supportive franchisor relationship, providing both resources and effective training, lays a crucial foundation. Coupled with sound financial management, including controlled costs and healthy cash flow, franchisees are better positioned for growth. Operational efficiency, encompassing effective inventory management and streamlined processes, further enhances performance. Critically, prioritizing excellent customer service, fostered by a positive and well-trained staff, drives customer loyalty and repeat business. Finally, strategic marketing efforts and the cultivation of brand loyalty amplify these positive effects. By focusing on these interconnected elements, franchisees can create a synergistic environment that maximizes their potential for success and long term viability.

Section B was primarily designed to collect raw data directly related to the study's objectives. The insights below demonstrate how each objective was achieved by systematically analyzing the collected data.

4.2.1 Primary Objective

The primary research objective of this study was to explore the factors contributing to the effectiveness of fast-food franchise businesses. Specifically, this objective sought to understand the key drivers of franchisee success and sustainability within the South African business environment. The achievement of this primary objective was contingent upon the fulfilment of the secondary objectives.

4.2.2 Secondary Objectives

To realise the primary objective, the following secondary objectives were formulated: Through a review of existing literature and previous research, the following secondary objectives were achieved:

- To identify the most common causes of franchisee ineffectiveness. This objective was accomplished through a comprehensive review of the literature, which examined the challenges contributing to the ineffectiveness and failure of franchise establishments.
- To gain insight into the factors enhancing franchisee performance. The literature explored critical elements such as franchisor support, training, and financial management, identifying these as pivotal to franchisee success.

Through an empirical investigation, the following secondary objective was achieved:

- To develop policy recommendations to reduce franchisee ineffectiveness. The recommendations section presents policy recommendations derived from the empirical findings, aimed at enhancing franchisee effectiveness within the fast-food industry.

The following secondary objectives informed the study's conclusions and recommendations:

- To propose strategic interventions to address the causes of franchisee ineffectiveness. Strategic recommendations were formulated based on the empirical findings discussed in analysis and discussions, providing actionable strategies to reduce inefficiencies in fast-food franchise operations.

4.2.3 Achievement of Secondary Objectives

The first secondary objective identifying the common causes of franchisee ineffectiveness was achieved through the literature review. The second secondary objective gaining insight into performance enhancing factors was also accomplished through an extensive review of the Literature. The final objective developing policy recommendations to mitigate franchisee ineffectiveness was realised through the analysis and discussions.

Based on the successful achievement of these secondary objectives, it is concluded that the primary objective of this study exploring factors contributing to the effectiveness of fast-food franchise businesses was effectively realised. Furthermore, the study's findings facilitated the development of policy recommendations aimed at improving franchisee performance and addressing common causes of ineffectiveness in franchise operations.

Data was collected through semi-structured interviews with ten franchisee managers and/or owners from Tshwane. The following section summarises the main findings related to the determinants of effectiveness in fast-food franchises. Conclusions drawn from the empirical study are categorised into the following areas: experience, location, opening date, food type, reasons for ineffectiveness, instances of struggles and primary causes, financial challenges, operational and management pitfalls, success factors, operational efficiency, franchisor relationship, marketing, branding, and customer service. Additionally, recommendations are provided for aspiring and prospective entrepreneurs considering entry into the fast-food franchise sector.

The analysis identified eight critical themes influencing franchisee effectiveness within the fast-food industry: franchisor relationships, financial management, operational efficiency, customer service, staff and management, location and market factors, marketing and branding, and high operational costs. These themes were consistently highlighted by participants. Additionally, customer service and staff management emerged as pivotal factors impacting the success or failure of fast-food franchises. Marketing and branding were also identified as essential for attracting and retaining customers.

4.2.4 Experience

The findings revealed that most participants had extensive experience in the fast-food franchise industry, ranging from 1 to 13 years, having managed both successful and unsuccessful businesses.

4.2.5 Location

The majority of participants' franchises were located in Pretoria East, particularly in areas such as Hatfield, Lynnwood Glen, and Lynnwood Ridge.

4.2.6 Opening Date

The average operational duration of the franchises was 10.7 years, with the youngest franchise being 2 years old and the oldest 54 years.

4.2.7 Food Type

Most participants sold burgers, followed by chicken and pizza. Additionally, one participant specialised in coffee, while another offered Asian cuisine.

4.2.8 Reasons for Ineffectiveness

Staff and management were identified as critical factors contributing to franchise failures. Specifically, poor staff management, inadequate operational oversight, lack of operational knowledge, ineffective business attitudes, unskilled staff, and weak management practices were highlighted as significant challenges, particularly during the initial stages of franchise operations.

4.2.9 Instances of Struggles and Primary Causes

Participants consistently identified staff and management issues, alongside high operational costs, as primary causes of franchise struggles and failures. Ineffective staff management, operational control failures, and deviations from brand standards were commonly cited. Additionally, rising stock prices and high rental costs contributed to financial strain, impacting profitability and overall business sustainability.

4.2.10 Financial Challenges

Financial challenges were primarily associated with operational inefficiencies, high costs, and inadequate financial management. Stock wastage, unplanned expenses due to cash flow constraints, lack of capital access, and theft by staff were identified as major financial risks affecting franchise sustainability.

4.2.11 Pitfalls in Operations and Management

The most prevalent theme was inadequate staff management, including poor training, ineffective business oversight, wastage, and deviations from the franchise business model. Ineffective stock management and failure to delegate responsibilities contributed to operational breakdowns, emphasising the need for rigorous operational controls.

4.2.12 Success Factors in Fast-Food Franchises

Effective staff management and customer service were consistently highlighted as critical success factors. Building positive relationships with staff, respecting employees, and implementing continuous training were recognised as key practices for maintaining high customer service standards and ensuring franchise success.

4.2.13 Operational Efficiency

Operational efficiency was achieved through effective staff management and stringent operational controls, including daily stock counts, variance checks, and active personal oversight. These practices minimised wastage and ensured smooth operational processes, directly contributing to profitability.

4.2.14 Franchisor Relationship

Mixed responses were observed regarding franchisor relationships. Some participants reported that strong franchisor support particularly in training, marketing, and operational guidance enhanced franchise success. However, others noted limited support, highlighting the importance of effective staff management and independent operational control.

4.2.15 Marketing, Branding, and Customer Service

Customer service was consistently identified as a critical determinant of success. While marketing and branding were recognised as essential for attracting customers, participants emphasised that positive customer experiences and satisfaction were more influential in securing repeat business and brand loyalty.

4.3 Summary of Findings

This study effectively addressed its research objectives by offering critical insights into the factors influencing the effectiveness and ineffectiveness of franchise establishments.

- Objective 1: Factors contributing to franchisee effectiveness included well trained staff, adherence to brand standards, efficient operational and financial management practices, strong franchisor-franchisee relationships, effective training and marketing support, and strategic location selection.
- Objective 2: Common causes of franchisee ineffectiveness were attributed to poor staff and management practices, inadequate financial oversight, deviations from brand standards, insufficient staff training, lack of operational controls, poor location choices, and limited franchisor support.
- Objective 3: Policy recommendations will be discussed in the subsequent section. These recommendations address identified causes of ineffectiveness and propose strategies to enhance franchisee performance and strengthen the fast-food franchise industry.

5. Recommendations

5.1 Recommendations for Prospective and Current Fast-Food Franchisees

5.1.1 Conduct Comprehensive Research on the Desired Franchise Type

Prospective entrepreneurs are encouraged to conduct thorough research on the specific type of fast-food franchise they wish to invest in. Although fast-food franchises are often perceived as straightforward business models, it is crucial to recognise that brand reputation alone does not guarantee success or profitability, particularly in the initial months of operation.

5.1.2 Strategic Location Selection

A careful assessment of potential locations should be conducted prior to establishing a franchise. The location significantly impacts customer volume and profitability, influenced by the demographic profile and disposable income of the target market. Franchises should strategically position themselves in high-traffic areas that align with the target customer base, such as near office parks or universities.

5.1.3 Enhance Operational Efficiency

Franchisees should implement robust operational controls to minimise wastage and theft. This includes systematic stock-taking through physical audits and inventory control systems, such as the Just-In-Time (JIT) system. By maintaining strict inventory management, financial losses can be minimised, thus enhancing service quality and operational efficiency.

5.1.4 Improve Customer Service Standards

Continuous staff training is essential to maintain high customer service standards and adapt to updates in the franchise model. A strong focus on customer relationship management is recommended by consistently collecting and acting on customer feedback. Franchises should leverage digital platforms such as social media (e.g., Facebook, Instagram) and review sites (e.g., Google Reviews) to engage with customers, demonstrating responsiveness to feedback and enhancing customer loyalty.

5.1.5 Invest in Staff Development and Motivation

Franchisees should prioritise ongoing staff development through regular training on operational and customer service skills. Additionally, employee morale and retention can be enhanced by implementing incentive schemes such as performance-based bonuses, overtime compensation, and recognition programs.

5.1.7 Monitor Internal and External Market Dynamics

Franchisees should proactively monitor both internal performance metrics and external market trends, including economic fluctuations. It is essential to communicate relevant market concerns to franchisors while preparing contingency plans to navigate potential business disruptions. For example, during the COVID-19 pandemic, reliance on in-person purchases significantly impacted financial performance, even with delivery platforms such as Mr D and UberEATS. Therefore, strategic contingency planning is critical to maintaining business continuity during challenging times.

5.2 Recommendations for Prospective and Current Fast-Food Franchisors

5.2.1 Enhance Management and Financial Literacy

Franchisors should provide comprehensive financial management training to franchisees. This initiative aims to improve franchisees' ability to manage cash flow efficiently, minimise theft risks, and optimise expenditures, thereby enhancing profitability and sustainability.

5.2.2 Strengthen Franchise Support Systems

Although franchisors provide business models and operational guidance, there is a need to enhance support systems by equipping franchisees with adequate resources in operational management, financial planning, and marketing strategies. For instance, during unforeseen global events such as pandemics, franchisors could offer short-term financial support to franchisees with sound financial standing, accompanied by reasonable repayment terms to avoid excessive financial strain.

5.2.3 Facilitate Effective Communication Channels

Establishing robust communication channels between franchisors and franchisees is imperative to ensure that franchisees' concerns are promptly addressed. Enhanced communication fosters improved collaboration and support in operational management, marketing initiatives, and staff training.

5.3 Policy Recommendations for the Fast-Food Franchise Industry

5.3.1 Mandatory Operational Audits

Franchisors should implement mandatory and more frequent operational audits to ensure compliance with brand standards and financial stability. Consistent updating of management accounts is recommended to facilitate seamless auditing processes.

5.3.2 Standardised Customer Service Programmes

Franchisors should introduce a uniform customer service training programme mandatory for all franchisees and their staff. Additionally, the implementation of "Mystery Shopper" initiatives would ensure consistent service quality across all franchises under the brand.

5.4 Policy Recommendations for Franchisors

5.4.1 Formalised Support Network

Franchisors should establish a structured support network encompassing mentorship programmes, operational audits, and marketing assistance. This support framework would enhance the operational efficiency and market competitiveness of franchisees.

5.4.2 Financial Management Training

It is recommended that franchisors mandate financial management workshops as part of the franchisees' initial onboarding and ongoing professional development programmes. This policy would ensure that franchisees are well-equipped to manage financial operations effectively.

5.4.3 Mandatory Refresher Training Sessions

Franchisors should introduce compulsory refresher training sessions for all franchisees and their staff, focusing on operational procedures, customer service best practices, and adherence to brand standards.

5.4.4 Structured Communication Systems

To enhance communication, franchisors should implement systematic communication channels, including regular check-ins, feedback loops, and franchise forums. Digital platforms could facilitate real-time communication, ensuring that franchisees receive timely support and guidance.

5.4.5 Proactive Market Trend Communication

Franchisors should engage in regular discussions with franchisees about external market trends and their potential impacts on the business model. By collaboratively developing contingency plans and crisis management frameworks, franchisors can better equip franchisees to navigate market fluctuations and business disruptions.

5.5 General Recommendations for Regulatory Bodies and Policymakers

5.5.1 Promotion of Financial Literacy Programmes

Regulatory bodies should incentivise franchisors to provide financial literacy training for franchisees. These programmes would enhance financial management competencies, reduce risks related to cash flow mismanagement, and encourage entrepreneurial growth within the fast-food franchise sector.

5.5.2 Encouragement of Sustainable Business Practices

Policymakers should advocate for the adoption of sustainable practices in the fast-food franchise industry. This could include incentives for eco-friendly initiatives such as sustainable packaging, waste management solutions, and energy-efficient operations. By aligning with global Sustainable Development Goals (SDGs), the industry can contribute to environmental sustainability while enhancing brand reputation and customer loyalty.

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Integrating Social Inclusion into Hospitality Education: Curriculum Gaps, Policy Enforcement, and Challenges

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Abstract

Kenya has resorted to maximizing and developing its tourism and hospitality industries. While advancements and investment in tourism and hospitality are essential, a key challenge is inclusion and, most importantly, social inclusion in the industry. There are social inclusion efforts; however, more can be done in social inclusion through hospitality education. Integration of social inclusion in hospitality education. The hospitality curriculum and hospitality examination still require some improvement. The study assesses the role of education in promoting social inclusion in the hospitality sector. The study will assess and evaluate social inclusion in education in the following aspects: curriculum design, faculty preparedness, policy effectiveness, and stakeholder perceptions. The study was taken in the Lake Region across an analysis of 12 hospitality institutions using mixed-method approaches that combined stakeholder interviews alongside curriculum analysis. Initial findings revealed that out of the 12 institutions, only three of them implemented structured inclusion strategies. All 12 institutions included aspects of sustainable inclusion and environmental sustainability in their curriculum and teaching methodology, but only the three had a structure of social inclusion. The study assessed some challenges associated with social inclusion, including faculty preparedness, where many educators lack formal training in inclusive teaching methods. On top of the faculty preparedness are institutional challenges and institutional bottlenecks that would limit the effectiveness of attempts to adopt social inclusion policies. The coldest for the study were Educators, students, and employers. All three stakeholders had wide margins of their perception of social inclusion,

with students perceiving their institutions as less inclusive than the faculty, administrators, and employers prioritizing workforce diversity over curriculum reforms.

The study highlights that social inclusion has undeniable benefits. Some highlighted benefits of social inclusion include programs that support students' financial needs, well-structured student support systems, and industry collaborations. On the flip side, two strategies have depicted the need for restrategizing. These are Faculty Diversity Training and curriculum integration initiatives. The findings represent the need for curriculum reforms, targeted faculty development, policy enforcement mechanisms and stronger collaboration between hospitality education and the hospitality industry. By addressing the gaps, this research promotes a more inclusive and sustainable hospitality education framework, ensuring that future managers and graduates are fully prepared and empowered to foster diversity, equity, and inclusion in the hospitality industry.

Keywords: Social Inclusion, Hospitality Education, Sustainability, Equity, Diversity

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1. Introduction

Hospitality is a vital sector that is a key contributor to economic growth across the world, employment opportunities, and the exchange of culture. However, it continues to be plagued with age-old issues of social exclusion, particularly towards individuals with disabilities, women, and impoverished young people. The COVID-19 pandemic, which hastened existing inequalities, means that there has never been greater need for inclusive and sustainable hospitality practices. Though hospitality education can be a bridge to work, it is under-emphasized in the manner in which it supports social inclusion with institutions paying less attention to social equity compared to environmental sustainability and operational effectiveness.

Sustainability in hospitality education has been debated extensively, mostly pertaining to the environment and matters such as reducing waste and conserving energy (Jones et al., 2018). Yet, the social aspect of sustainability, such as fair salaries, workers' rights, and recruitment inclusivity, has been less prioritized in hospitality education programs (Goodwin & Phillips, 2020). The literature emphasizes that hospitality curricula do not have organized content on diversity, disability, and gender-sensitive leadership (Kim & Baker, 2021), which makes graduates ill-equipped to address matters of inclusivity in the workplace.

The convergence of inclusivity and sustainability is an emerging agenda in international development frameworks, notably the United Nations Sustainable Development Goals (SDGs). SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities) all stress the role of inclusive education in equipping individuals for productive involvement in the labour market. Hospitality education has, nevertheless, been sluggish in adopting inclusivity-content-based content in its sustainability agenda.

This research explores how hospitality education can be reshaped to promote social inclusion, addressing curriculum design, staff readiness, stakeholder involvement, and policy efficacy. A mixed-methods strategy was employed, blending stakeholder interviews with educators, students, employers, and regulators with curriculum content analysis of institutions in the Lake Region of Kenya.

The results reveal evident disparities in the attainment of social inclusion policies. Just 3 out of the 12 institutions researched had clear social inclusion strategies, which suggests that implementing measures for inclusivity remains patchy between institutions. Secondly, although policies are in place in some institutions to promote inclusivity, a lack of enforcement mechanisms, bureaucratic hurdles, and resistance from institutional leadership undermine their impact. Lastly, faculty preparation is low, with most instructors having no formal training in inclusive pedagogic practices. Stakeholder attitudes differ considerably, too, with students perceiving their institutions as less inclusive than faculty members and administrators and employers being more interested in workforce diversity than curriculum inclusiveness.

The research adds to the emerging discourse on inclusive hospitality education by highlighting challenges and suggesting concrete solutions. The research calls for attention to curriculum reforms aimed at inclusivity, special faculty training modules, mechanisms for policy implementation, and greater academia-industry collaborations. By surmounting such challenges, hospitality education institutions can make learning spaces more inclusive, and their graduates are then better prepared with the competencies required to foster diversity and social inclusion in the sector.

2. Literature Review

2.1 Social Inclusion in Hospitality Training

Social inclusion is a significant topic of discussion in international education, especially in professional and vocational course training. Being a labor-intensive industry, hospitality has ample employment opportunities to provide to marginalized sections of society, such as women, persons with disabilities, and economically disadvantaged young people. Yet, research suggests that hospitality education has yet to incorporate principles of inclusivity, with a tendency to concentrate on operational competencies instead of creating fair learning environments (Baum, 2019). The inclusion of social inclusion in hospitality education is essential for the development of future professionals who can create diversity in their organizations.

Robinson and Brenner (2021) highlight that inclusive hospitality education must provide access to education and guarantee sufficient support for students during their learning. These encompass economic support, mentorship programs, and customized curriculums to suit students with various learning requirements. There are, however, disparities in the systematic application of these measures in most institutions (Kim & Baker, 2021).

Social inclusion of people with disabilities, and more so intellectual disabilities and challenging behaviours, is a complicated and little-understood phenomenon. Exclusion, bullying, and inaccessibility have been described by numerous students with disabilities in schools (Koller et al., 2018; Bigby, 2012). Though hospitality education can be an inclusive social discipline, existing curricula do not make adequate provisions forstudents with sensory, cognitive, and psychosocial disabilities (Gooding et al., 2017). Contemporary social inclusion studies are mainly concentrated in the areas of intellectual and cognitive disabilities, with minimal attention given to physical and sensory impairments, thus calling for extensive policy frameworks (Wright & Stickley, 2013).

2.2 Sustainable Hospitality Education and Social Dimensions

Sustainability in hospitality education has focused on the environmental aspects, for example, waste reduction, energy conservation, and green hotel management practices (Jones et al., 2018). Although these are important, researchers contend that social sustainability—like workers' rights, fair wages, gender equality, and diversity in hiring—has not been given the same level of consideration in hospitality education curricula (UNWTO, 2022).

Goodwin and Phillips (2020) make the case that hospitality education can be fully sustainable only if it incorporates elements of social inclusion so that its graduates are sensitive to and implement equitable policies in their future workplaces. This is aligned with the United Nations Sustainable Development Goals (SDGs), namely SDG 4 (Quality Education), SDG 8 (Decent Work and Economic Growth), and SDG 10 (Reduced Inequalities), which urge inclusive and accessible educational systems. Still, the majority of hospitality programs have not included those principles in the curricula, therefore graduating hospitality students who are ill-equipped to serve in multicultural workforces (McGhee & Greene, 2019).

2.3 Hospitality Education Curricula Deficits

Hospitality courses in most institutions have been criticized for their failure to prioritize inclusivity in course development. In a curriculum review by Kim and Baker (2021), hospitality courses in most institutions covered customer service and management competence, but few spoke specifically about cultural competence, disability inclusion, or gender-sensitive leadership. This implies that graduates in hospitality could go to the workplace with less information on how to apply diversity and inclusion policies in practice.

In addition, most hospitality companies address social inclusion as corporate social responsibility (CSR) initiatives instead of making it part of their core business strategies (D'Angelo & Carter, 2023). This discrepancy calls for the inclusion of extensive training in equity and inclusion in hospitality study programs so that the graduates can be better prepared to drive change within the industry. Wang and Lo (2016) support that hospitality curriculum must be responsive to the evolving demographics of the workforce and the emerging expectation of the inclusiveness of hospitality settings.

2.2.1 Best Practices for Social Inclusion Integration into Hospitality Education

There are a number of studies that offer frameworks for incorporating social inclusion in the hospitality education curriculum. Lockwood and Taylor (2020) offer experiential learning frameworks that subject students to heterogeneous work settings through internships, role-playing, and case studies of marginalized groups. Marquez and Hall (2021) propose the introduction of equity-based coursework that addresses labor rights, fair hiring practices, and marginalized group leadership development.

Also, collaborations between educational institutions and hospitality companies can promote more diversified internship programs to enable students from underprivileged backgrounds to gain industry exposure within the sector too. A World Economic Forum analysis (2023) observes that diversity policies in the workforce of hospitality companies need to be supplemented by educational reforms that equip students to function in diverse setups.

2.2.2 The Role of Industry Stakeholders and Policymakers

Government regulations and industry policy significantly determine the inclusiveness environment in hospitality education. It is the view of Brookes and McGowan (2018) that in the absence of explicit policies favouring diversity and equity, institutions of learning will retain their focus on operational training at the expense of social inclusion. Policymakers will be required to collaborate with institutions of learning and stakeholders in the industry to introduce scholarship programs, selective recruitment, and training programs that favour a more inclusive workforce (Holt & Haskins, 2019).

Mixed-methods studies involving stakeholder interviews with educators, regulators, students, and employers are needed to capture the varying viewpoints on social inclusion in hospitality education. Viewpoints on social inclusion and its applicability may differ considerably between these stakeholders. Educators, for instance, might vision the need for social inclusion but lack the frameworks to incorporate such content in their pedagogy (Brookes & McGowan, 2018). On the other hand, students and employers might cite the necessity for pragmatic approaches that connect academic theories of inclusivity with everyday practice (Holt & Haskins, 2019).

Contemporary literature demands a more inclusive hospitality education model. Since sustainability programs have traditionally prioritized environmental concerns, social inclusion must be included to equip balanced hospitality graduates. The lacunas in existing curricula outlined by this study necessitate novel pedagogical solutions,

including experiential learning, policy-based reform, and industry-academic collaboration, to create a sustainable and socially inclusive hospitality industry.

By bridging these gaps, hospitality education can move beyond theoretical discourse of inclusivity and produce measurable gains that allow all students, irrespective of background, to have an equal opportunity for education and career success. Future research must examine how social inclusion content might best be embedded within mainstream hospitality curricula and assess the long-term effects of inclusivity-driven educational change.

3. Methodology

In this research, mixed-methods research is applied to examine the integration of social inclusion in hospitality education. The research design encompasses a combination of qualitative and quantitative approaches to achieve an elaborate understanding of the current status of the hospitality curriculum and the perspective of the most important stakeholders from the education and hospitality sectors.

The mixed-method design provides an opportunity for data triangulation, increasing the validity and reliability of the results. By combining the quantitative and qualitative data, the research focuses on gaining insight into the complex experiences and emotions of the multiple stakeholders about social inclusion in hospitality education.

Interviews: In-depth, semi-structured interviews were held with the key stakeholders, such as hospitality educators, industry regulators, students, and employers. This qualitative aspect sought to determine their perception of social inclusion, challenges encountered, and recommendations on inclusivity in hospitality curricula. The interview questions were based on: Identification of the current state of social inclusion in hospitality education. Learning barriers to the adoption of inclusive practices in curricula. Learning about best practices and effective programs in advancing social inclusion. Sampling: Purposive sampling was employed in selecting participants with a background of experience and expertise in hospitality education and practice. A minimum of 20 interviews were carried out to obtain a variety of viewpoints.

Curriculum Analysis: A detailed analysis of hospitality curricula of institutions in the Lake region was conducted to determine the degree to which social inclusion was incorporated in sustainability content. The analysis entailed:

Gathering course syllabi, program descriptions, and learning outcomes from different hospitality programs. Creating a rubric to evaluate integrating social inclusion subjects, including cultural competence, disability inclusion, and gender-sensitive leadership, into the curricula. Surveys: An online survey of a larger student and hospitality program instructor sample was conducted to measure their attitudes regarding how vital social inclusion needed to be in the curriculum. The survey incorporated Likert scale questions to determine the following:
Awareness of issues relating to social inclusion. Satisfaction with existing curricula in terms of inclusiveness. Perceived obstacles to implementing inclusive practices.

The verbatim transcriptions were coded using thematic analysis. Coding enabled the identification of recurring themes and patterns specific to social inclusion in hospitality education. Coding was done using NVivo software to make coding more effortless and to categorize qualitative data systematically.

Curriculum analysis provided descriptive statistics on common social inclusion issues in hospitality courses. Survey responses were examined through statistical software (e.g., SPSS or R) to produce descriptive statistics and inferential tests, including chi-square tests, to investigate relationships among variables (e.g., demographics and social inclusion perceptions).

Ethical approval from the respective institutional review board was acquired before data collection began. The interviewees and participants in the survey were asked for informed consent, making them aware of the intention of the research and their ability to withdraw at any stage. The study upheld confidentiality and anonymity, and all identifying information was eliminated from the transcripts and data files.

As extensive as the mixed-methods design gave an overview of the research issue, some limitations must be recognized. The qualitative results might not be generalizable because of the purposive sampling of the participants, and quantitative analysis could be restricted by the survey response rate. The study was limited to Lake region-based institutions only, which might not be representative of a larger context for hospitality education globally.

This approach established a firm foundation for examining the integration of social inclusion in hospitality education in The Lake Region of Kenya. Through the use of a mixed-methods design, the study unearthed the existing challenges and opportunities in strengthening inclusivity in hospitality curricula, with the ultimate goal of informing more equitable and sustainable directions to the field.

4. Results

4.1 Comparative Analysis of Curriculum Content on Social Inclusion and Environmental Sustainability.

The degree to which social inclusion and environmental sustainability are incorporated into hospitality education curricula differs widely between institutions. While sustainability processes are generally highlighted, diversity topics, disability inclusion, and gender-sensitive leadership are not addressed. Table 1 illustrates findings from 12 institutions, anonymized by coding, indicating the proportion of curriculum space each has devoted to environmental sustainability, social inclusion, and associated inclusion-oriented topics.

Table 1. Coded Institutions' Curriculum Focus on Social Inclusion vs. Environmental Sustainability

Institution	Environmental Sustainability (%)	Social Inclusion (%)	Diversity Courses (%)	Disability Inclusion (%)	Gender-Sensitive Leadership (%)
Inst A	85%	30%	20%	10%	12%
Inst B	90%	25%	15%	8%	14%
Inst C	88%	28%	18%	7%	10%
Inst D	87%	32%	22%	9%	15%
Inst E	92%	35%	25%	12%	18%
Inst F	78%	22%	12%	6%	10%
Inst G	80%	27%	17%	9%	11%
Inst H	93%	38%	28%	15%	20%
Inst I	75%	20%	10%	5%	8%
Inst J	89%	33%	21%	13%	16%
Inst K	82%	26%	19%	11%	14%
Inst L	95%	39%	29%	18%	22%

Table 1 shows that all institutions strongly focus on environmental sustainability, with coverage ranging from 75% to 95%. This means that most programs are actively incorporating eco-friendly practices into their curricula. Social Inclusion Needs More Attention. On the flip side, topics related to social inclusion are not getting the same level of attention. The highest integration rate is only 39% at Institution L, while Institution I record just 20%. This indicates a significant gap in how these important issues are addressed. Diversity Courses Are Inconsistent When it comes to diversity courses, their inclusion varies widely across institutions, with only a few, like Institutions L and H, achieving a rate of 25% or more. Most institutions fall between 10% and 29%, showing that there's still a lot of room for improvement.

Disability inclusion is receiving very little attention, with coverage between 5% and 18%. This suggests that making hospitality education accessible for everyone is still a secondary concern. Training in gender-sensitive leadership is also lacking, with rates ranging from 8% to 22%. This is concerning, as such training is crucial for creating inclusive workplaces.

These findings highlight that while environmental sustainability is well-covered in hospitality education, social inclusion is still fragmented and inconsistently addressed. To better prepare graduates for diverse and inclusive work environments, it's essential to reform the curriculum to integrate social sustainability topics more effectively.

4.2 Faculty Preparedness in Teaching Social Inclusion

Social inclusion in hospitality education is highly reliant on teachers' willingness to implement inclusive pedagogies. Faculty training in diversity, disability inclusion, and gender-sensitive leadership is needed to enable students to learn and acquire knowledge and skills for inclusive hospitality practice. Empirical evidence, however, reveals considerable gaps in faculty training to teach social inclusion.

Figure 1 displays the percentage of professors who have had formal training in some of the priority fields for social inclusion, in which greater capacity-building interventions are essential.

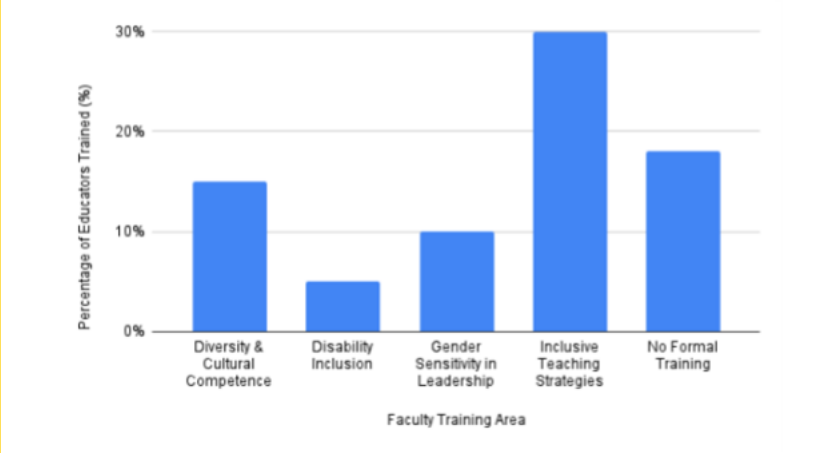

Figure 1: Faculty preparedness for teaching social inclusion in hospitality education

However, research indicates that there are significant gaps in faculty training regarding social inclusion. Figure 1 illustrates the percentage of faculty members who have received formal training in these key areas, underscoring where more support and development are needed.

4.2.1 : Perception of Social Inclusion

Figure 2 illustrates the perceptions of social inclusion in hospitality education among three key stakeholder groups: **educators, students, and employers**. The responses were categorized into five levels: *Very Inclusive (5), Inclusive (4), Neutral (3), Somewhat Inclusive (2), and Not Inclusive (1).*

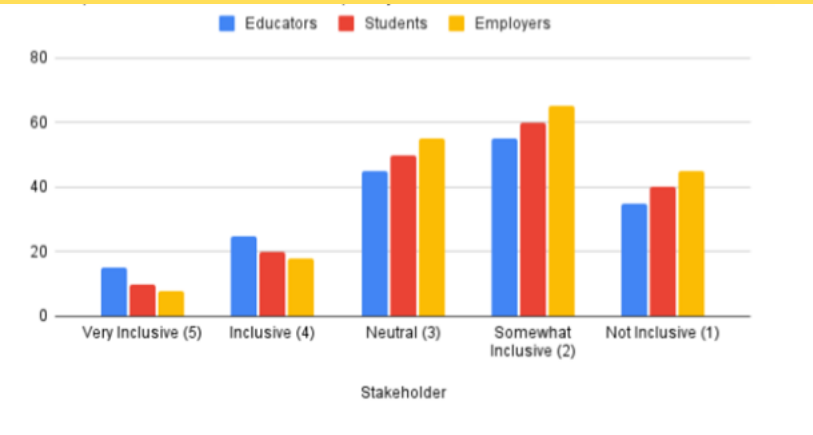

Figure 2: Perceptions of social inclusion in hospitality education

The majority of responses fall under the "Neutral," "Somewhat Inclusive," and "Not Inclusive" categories, suggesting that social inclusion in hospitality education remains inadequate.

Educators rated social inclusion more favourably than students and employers, with a higher percentage selecting *Inclusive (4) and Neutral (3).*

Students and employers reported the highest dissatisfaction, with a significant number perceiving inclusivity as *"Somewhat Inclusive (2)" or "Not Inclusive (1)"*.

Employers showed the highest percentage of "Not Inclusive (1)" ratings, indicating a potential disconnect between hospitality education efforts and industry expectations.

4.2.2 Stakeholders Perceptions to Barriers.

Hospitality education stakeholders—teachers, students, and employers—each hold varying views of the obstacles and barriers to social inclusion. Whereas teachers cite curriculum constraints and lack of training, students highlight inadequate levels of awareness, and employers refer to industry opposition to inclusivity. Figure 3 summarises stakeholder views of the most significant barriers to achieving social inclusion in hospitality education.

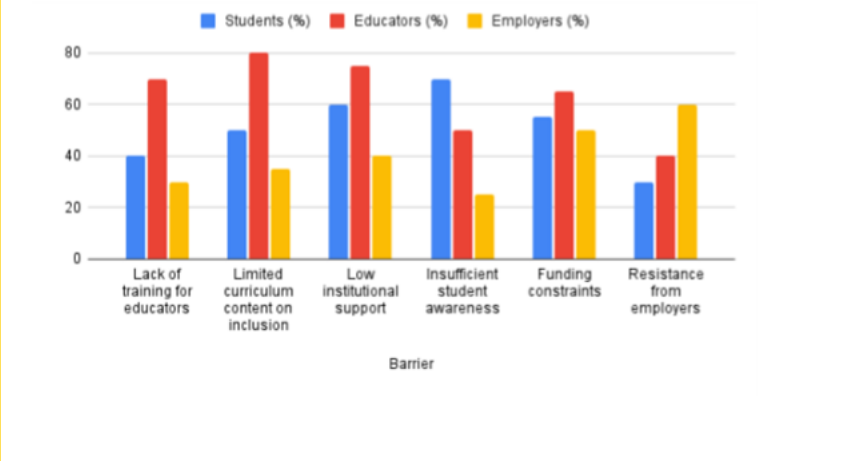

Figure 3: Comparative analysis: Stakeholder perception of barriers to social inclusion

Figure 3 data reflects apparent differences in stakeholders' perceptions of barriers to social inclusion.

Educators (80%) cited "Limited Curriculum Content on Inclusion" as the main problem, i.e., there are comprehensive reforms needed in hospitality educational programs.

Students (70%) cited "Insufficient Student Awareness" as a main obstacle, i.e., they have little exposure to inclusive policies and practices.

Employers (60%) cited "Resistance from Employers" as a main challenge, i.e., the hospitality sector, although familiar with inclusivity at a theoretical level, has still to adopt efficacious workplace policies.

The results indicate that hospitality education needs to tackle a variety of issues in parallel, ranging from curriculum change and staff development to student engagement and industry partnership. The diversity of stakeholder views confirms that targeted interventions need to be made to respond to the specific issues that each group faces in achieving a more diverse hospitality education system.

4.2.3 Strategies for Promoting Social Inclusion Strategies.

Social inclusion in hospitality education necessitates affirmative action on institutional needs, staff development, student support, and industry involvement. A good framework can bridge the gap between policy and practice, fostering an inclusive social learning environment. Appendix 1 identifies ten operationalization strategies for social inclusion in hospitality education, explaining how they can be operationalized and their predicted impact. They stretch from curriculum transformation, financial accessibility, staff development, and partnership with the industry towards developing a more inclusive education system.

Inclusive hospitality education needs to intervene at the level of institutional shortcomings, faculty training, student services, and industry partnerships. A strategic plan can close the gap between policy rhetoric and everyday practice and create an inclusive learning environment.

Appendix 1 presents ten priority strategies for promoting social inclusion in hospitality education, a brief explanation of how they might be implemented, and their probable effect. The strategies address curriculum change, financial accessibility, teacher preparation, and collaboration with industry to make the education system more inclusive.

4.2.4 Effectiveness of Social Inclusive Programs.

Although there has been heightened consciousness about the necessity of social inclusion within hospitality education, the result of this investigation indicates that only 3 of the 12 institutions addressed have formalized inclusion strategies. None of these institutions possesses formal policies, training, or specialist support services to implement inclusivity.

Among the three institutions that have taken steps toward social inclusion, their initiatives vary in effectiveness depending on implementation quality, institutional commitment, and available resources. Figure 4 presents the effectiveness scores (on a 1-10 scale) for different social inclusion policies and programs currently in place at these institutions, offering insights into which strategies yield the most impact in fostering inclusive learning environments.

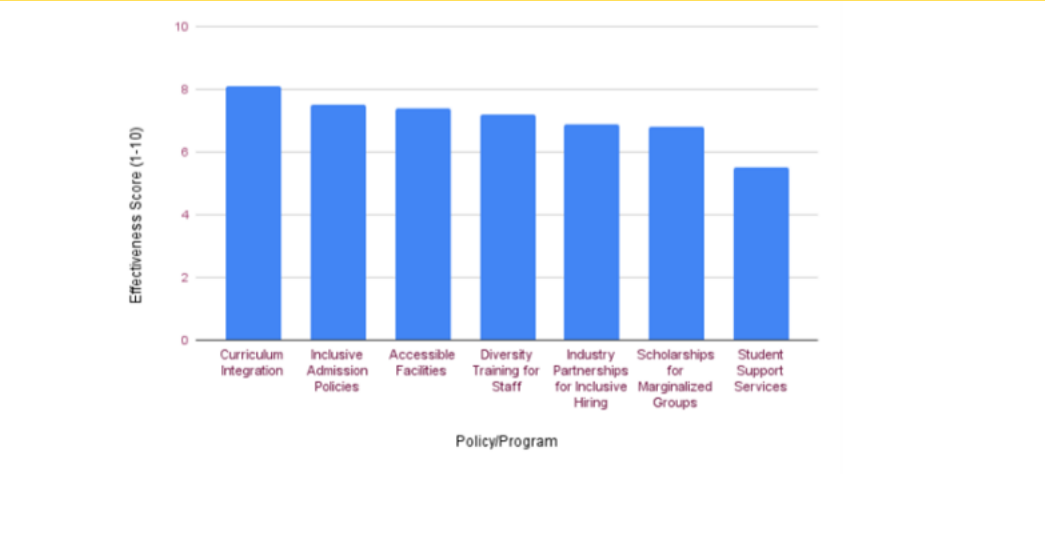

Figure 4: Effectiveness of social inclusion policies and programs among institutions with inclusion strategies

The results in **Figure 4** illustrate a **wide range of effectiveness** across the social inclusion initiatives implemented by the three institutions:

4.2.4.1 Curriculum Integration (8.1) is the most effective strategy, indicating that embedding inclusivity principles into hospitality courses has led to tangible improvements in awareness and student engagement.

4.2.4.2 Inclusive Admission Policies (7.5) and Accessible Facilities (7.4) rank high, reflecting their impact on fostering a diverse student body and ensuring physical accessibility for all students.

4.2.4.3 Diversity Training for Staff (7.2) is moderately effective, highlighting the importance of faculty and administrative training in sustaining inclusive practices.

4.2.4.4 Industry Partnerships for Inclusive Hiring (6.9) and Scholarships for Marginalized Groups (6.8) show moderate success, suggesting that while opportunities exist, barriers to access and awareness persist.

4.2.4.5 Student Support Services (5.5) received the lowest effectiveness score, indicating that institutions struggle to provide sufficient mentorship, counseling, and peer-support networks for underrepresented students.

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4.2.5: Student Success Rate

One of the key objectives of promoting social inclusion policies in hospitality education is to improve student success rates, particularly among marginalized and underrepresented groups. However, the effectiveness of different policies varies, depending on institutional commitment, funding, and student engagement.

Figure 5 presents the measured impact of various inclusion policies on student success rates (expressed as a percentage), based on data from institutions that have implemented such strategies. The findings highlight which policies have the greatest effect on student performance, retention, and completion rates in hospitality education.

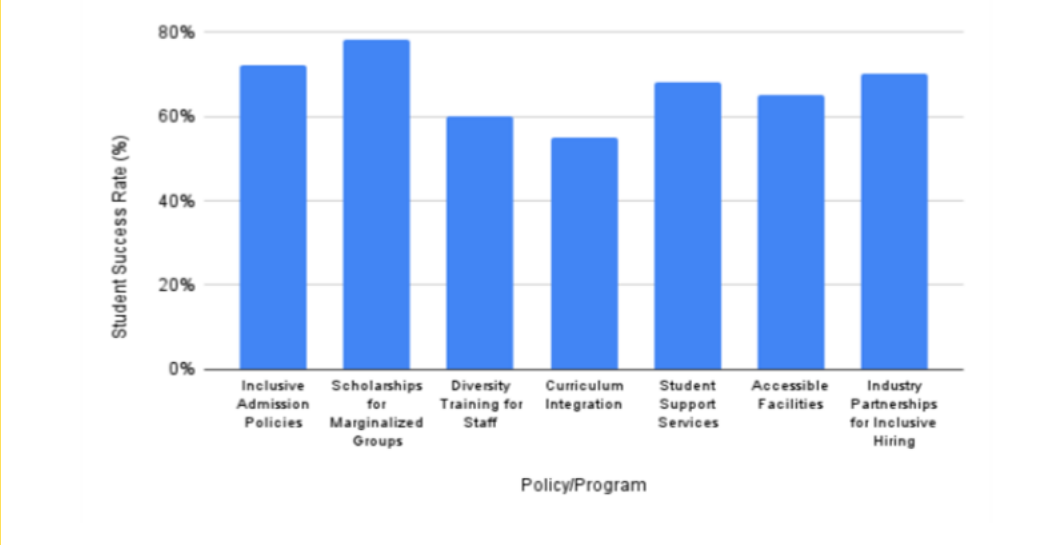

Figure 5: Impact of specific policies on student success rates

The results in Figure 5 reveal notable differences in the effectiveness of various inclusion policies in supporting student success:

4.2.4.6 Scholarships for Marginalized Groups (78%) had the highest impact, suggesting that financial support plays a crucial role in student retention and graduation rates.

4.2.4.7 Inclusive Admission Policies (72%) and Industry Partnerships for Inclusive Hiring (70%) also showed strong effectiveness, indicating that access to education and employment opportunities significantly enhance student outcomes.

4.2.4.8 Student Support Services (68%) ranked moderately, suggesting that while mentoring, peer support, and counseling services are beneficial, they may need more structured implementation to maximize impact.

4.2.4.9 Accessible Facilities (65%) were effective, but physical accessibility alone is not enough—additional academic and social support is required.

4.2.4.10 Diversity Training for Staff (60%) and Curriculum Integration (55%) had the lowest impact, likely due to inconsistencies in faculty adoption and gaps in execution across institutions.

5. Discussion

These results indicate that direct student support mechanisms (such as scholarships, mentorship programs, and job placement opportunities) have the highest measurable impact on success rates. However, policies such as curriculum integration and diversity training require stronger implementation frameworks to yield significant improvements.

Institutions seeking to enhance student success through social inclusion should prioritize financial aid programs, structured student support systems, and industry collaborations, while also strengthening the institutional execution of faculty training and curriculum reforms.

From the findings, it is clear that curriculum integration, faculty preparedness, stakeholder perceptions, policy effectiveness, and institutional resistance are divergent. Comparing the results to existing literature, it is clear that they some alignment between education equity and systematic barriers. This emphasizes the need for an all-around approach while promoting inclusivity. The discussion dissects the findings in comparison to Prior research while highlighting Observations drawn from the study

5.1 Institutional Resistance

The successful implementation of social inclusion policies in hospitality education is often hindered by systemic barriers and institutional resistance. While policies may be designed with good intentions, their execution is frequently obstructed by challenges related to leadership resistance, bureaucratic inefficiencies, and inadequate funding.

Figure 6 presents the most commonly cited barriers to policy implementation, as reported by respondents from various institutions. The data highlights the structural and administrative obstacles that must be addressed to ensure the effective adoption of social inclusion policies.

5.2 Curriculum Integration: Social Inclusion as a Secondary Priority

A key finding is that social inclusion topics remain Marginalised in the hospitality curriculum, and institutions prioritise environmental sustainability. This mirrors trends in sustainability education, where ecological concerns transcend social inclusion. (Sloan et al., 2020). United Nations' sustainable development goals have done an impeccable job of promoting social inclusivity; however, the study suggests that Hospitality institutions are yet to adopt that aspect in the curriculum fully.

The syllabi review depicted that diversity and inclusion topics are often optional rather than core components of the hospitality programs. In instances where they are core components, the content is shallow and ineffective. This supports initial Studies by Gretzel et al. in 2021. The absence of a well-curated inclusivity forecast coursework suggests that graduates are not fully equipped and empowered on inclusivity challenges and best practices while graduating to the workforce it would be Paramount to have further examinations for institutions that are fully adopted successful integration of social inclusion modules with those that have not. Protensive research will be done as well to track how curriculum changes affect graduate employability in an all-inclusive Hospitality workplace

5.3 Faculty Preparedness: Training Gaps and Institutional Challenges

The study portrayed that many Educators in the hospitality industry lack formal training in diversity disability, inclusion, and gender sensitivity leadership. This aligns with Eriksen & Ahmad (2020), Who noted that faculty training is still an essential aspect of implementing social inclusion policies in education

Institutional resistance, funding shortages, and lack of awareness among faculty members are still significant barriers to impactful training. The findings are aligned with Ryan & Strachan (2021), Who demonstrated that when faculty trainings are undertaken, implementation remains low due to time constraints, lack of institutional support and incentives, and weak implementation and enforcement plans

The study also found that while a number of Institutions streamed their staff on inclusivity principles, this did not reflect in students' perception of a Feeling of a more inclusive environment. This caused the arguments made by Parker et al. (2019), Who attested that training alone is insufficient without institutional reforms.

Intervention-based studies could be beneficial in assessing different faculty training models and their impact on student experiences. Educators' attitude assessment can also provide insight into how incentive-based programs' inclusivity

5.4 Stakeholder Perceptions: Divergent Priorities and Definitions of Inclusion

The research identified a considerable difference in the understanding of social inclusion in hospitality education among students, educators, and employers. Students ranked their institutions as less inclusive than administrators and faculty, aligning with research from Dyer & Singh (2021) that students view inclusivity initiatives as performative rather than substantive.
Employers focused less on curriculum change and more on inclusive hiring practices. This corroborates research by Brown et al. (2022) that although business leaders have adopted workforce diversity, they anticipate that universities will provide the training graduates need. Employer involvement with curriculum change is still low, which aligns with previous work by Cunningham & Wilson (2020), which found that industry-academia collaboration on social inclusion is limited.

Future research can contrast the various stakeholders' “effective inclusivity” definition and determine the role of student-led inclusion initiatives in contributing to institutional policy formation.

5.5 Social Inclusion Policies' Effectiveness: Varied Impact on Student Success

The study found that specific policies, such as scholarships for underrepresented students and inclusive admissions policies, significantly impacted student success more than faculty diversity training. These findings align with contemporary higher education scholarship, in which financial accessibility is consistently linked with improved retention rates (Liu et al., 2021).
However, student support services and faculty diversity training were rated as the least effective policies. This contradicts a study conducted by O'Neill & Johnson (2020), which asserted that regular mentorship programs considerably enhance feelings of inclusivity. The lower effectiveness ratings in this research could mean that student support services are in place but may not be well-organized or visible.

Further research must focus on longitudinal studies tracing the impact of scholarships and inclusion policies on graduate labour market rates. Comparative studies on institutions with high-impact support programs and those with less robust ones would also be insightful.

5.4.1 Institutional Resistance and Systemic Barriers: Policy Failure Factors

In spite of existing social inclusion policies, the research revealed that the enforcement structures were still in abeyance. Bureaucratic lag, unaccountability, and institutional leadership resistance were highlighted as key deterrents to policy execution.
These findings are consistent with Singh & Patel's (2022) study that found institutions adopting diversity policies to gain accreditation and not so much a desire for transformation. Dawson & Richards (2020) also argue that hospitality education is highly hierarchical, and thus, it is difficult to affect systemic change without regulatory pressure.
Additional research should address case studies of organizations that effectively defeated resistance to inclusivity policies and policy effect assessments to establish what regulatory interventions stimulate greater enforcement.

6. Conclusions and recommendations

6.1 Conclusions

The research offers insights into gaps, challenges, and promising solutions for advancing social inclusion in hospitality education. Nonetheless, it also underlines the demand for more stringent enforcement instruments, enhanced industry-academia partnerships, and more significant structuring of faculty training. Whereas some policies, i.e., scholarships and diversity admissions policies, have been measurable in their effect, others, i.e., student support services and diversity training, need to be better targeted to be even more effective. These results still affirm the necessity of systemic change, stakeholder involvement, and ongoing review to make hospitality education more inclusive and equitable to all students.

6.2 Recommendations

Based on the findings of this study, the following are proposed to be put in place to enhance social inclusion in hospitality education:

6.2.1 Curriculum Integration

Diversity, disability inclusion, and gender-sensitive leadership should be integrated modules of hospitality education by universities.

Course accrediting bodies ought to encourage minimum standards of social inclusion curriculum content in hospitality.

6.2.2 Faculty Training and Development

Universities ought to develop mandatory training programs on inclusive teaching practices for hospitality instructors.

Institutional policies must incentivize faculty members to undergo diversity and inclusion training.

6.2.3 Strengthening Student Support Services

Institutions must reorganize student support services to be more responsive and accessible to marginalized communities.

Peer mentoring programs must be introduced to facilitate a sense of belonging for underrepresented students.

6.2.4 Enhancing Industry-Academia Collaboration

Hospitality businesses must play an active role in developing inclusive curricula and providing practical exposure to students.

Industry partners must develop formal internship programs with priority for marginalized students.

6.2.5 Strengthening Policy Implementation Mechanisms

There should be institutional mechanisms for monitoring to be established to provide regular enforcement of inclusivity policies.

Compliance measures should be established by government and accrediting agencies to hold institutions accountable for diversity initiatives.

6.2.6 Financial and Structural Accessibility

More scholarship opportunities should be made available for marginalized groups by institutions and equal access to financial support should be promoted.

Learning environments need to be made accessible for students with disabilities, including structural and assistive technologies.

6.2.7 Longitudinal Tracking and Research

More research is needed to monitor the long-term effect of inclusion policies on the achievements and labor market integration of students.

Comparative research needs to investigate best practices in schools that have been successful in adopting comprehensive social inclusion approaches.

Implementing these recommendations will create a fairer and more inclusive hospitality education system. By eliminating structural barriers and participating in collaborations between the academic and hospitality sectors, graduates will be well-equipped to pursue socially accountable careers within the ever more diverse hospitality industry.

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Appendix 1: *Strategies for Promoting Social Inclusion in Hospitality Education*

Strategy	**Implementation Approach**
Develop Inclusive Curriculum	Integrate social inclusion topics (diversity, disability inclusion, gender equity) into hospitality education. Ensure these are core components rather than optional courses.
Provide Diversity Training for Staff	Conduct workshops and continuous learning programs to equip educators with inclusive teaching practices. Include cultural competency and bias awareness.
Offer Financial Aid to Marginalized Groups	Establish scholarships and grants for students from underrepresented backgrounds, including women, people with disabilities, and low-income groups.
Enhance Accessibility in Learning Environments	Improve infrastructure (ramps, assistive technology, alternative learning formats) to accommodate students with disabilities and special needs.
Create Industry Partnerships for Inclusive Hiring	Collaborate with hospitality businesses to develop inclusive recruitment programs and offer work placements for marginalized students.
Strengthen Anti-Discrimination Policies	Implement clear institutional policies that prevent discrimination and harassment in educational and workplace settings. Establish reporting mechanisms.
Increase Awareness Campaigns on Inclusion	Organize social inclusion campaigns, conferences, and student-led initiatives to promote a culture of inclusivity and equal opportunity.

Establish Student Support Services	Develop mentorship programs, peer counseling, and student-led inclusion committees to support underrepresented students throughout their studies.
Integrate Gender-Sensitive Leadership Training	Introduce leadership courses that address gender biases in hospitality management, encouraging more women and underrepresented groups in leadership roles.
Encourage Inclusive Work-Based Learning	Ensure internships, apprenticeships, and on-the-job training programs prioritize diverse student participation by partnering with inclusive employers.

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The economic Relations between the Balkan Countries and Rwanda (with a Focus on Bulgaria): Current Trends and Future Opportunities

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Abstract

This paper explores the economic relationship between Bulgaria and Rwanda within the broader context of Balkan interactions with Sub-Saharan Africa. It analyzes current trends and identifies potential growth opportunities through detailed statistical data on bilateral trade. Rwanda's Vision 2050 agenda, aimed at fostering economic transformation and sustainable development, aligns well with Bulgaria's strengths in technology, agriculture, and renewable energy, creating a conducive environment for meaningful collaboration. Despite the modest volume of bilateral trade, recent years have shown an upward trajectory, with Bulgaria emerging as a leading player among Balkan countries in trade with Rwanda. Insights from an in-depth interview with a Bulgarian entrepreneur developing a residential complex in Kigali highlight the challenges and opportunities faced by businesses in this evolving partnership. By examining key dimensions such as trade dynamics and potential sectors for collaboration, this paper aims to illustrate the prospects for robust economic cooperation that benefits both nations. Ultimately, through strategic initiatives and investment in knowledge exchange, Bulgaria and Rwanda can leverage their unique strengths to drive economic progress and foster regional stability in a changing global landscape.

Keywords: Economic Collaboration, Trade Dynamics, Bulgaria-Rwanda Relations, Balkan-SSA Trade

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1. Introduction

In an increasingly interconnected global landscape, economic collaborations between geographically diverse regions offer valuable insights into the dynamics of international trade and development. The evolving economic relationship between Bulgaria and Rwanda, highlighted within the broader framework of Balkan and Sub-Saharan African interactions, exemplifies the potential for cross-continental partnerships that drive mutual growth and shared prosperity.

Historically, economic interactions between the Balkan countries and Rwanda have been limited. However, recent developments illustrate a shift toward increased engagement, spurred by shared economic goals and complementary strengths. With Rwanda pursuing its ambitious Vision 2050 agenda – focusing on transforming its economy through advancements in infrastructure, technology, and sustainable development – Bulgaria could emerge as a key strategic partner. As the leading Balkan nation in trade with Rwanda, Bulgaria is well-positioned to contribute expertise in technology, agriculture, and renewable energy.

Despite a relatively low baseline, the volume of bilateral trade between Bulgaria and Rwanda is on an upward trajectory, reflecting a growing economic partnership. This increase is bolstered by Bulgaria's proactive approach to strengthening its ties with African markets, seeking avenues for investment and collaboration that align with Rwandan priorities.

Furthermore, practical insights into this burgeoning partnership can be gleaned from real-world examples, such as the initiatives of Bulgarian entrepreneurs actively investing in the Rwandan market. These efforts provide a microcosm of the opportunities and challenges inherent in fostering deeper economic linkages.

The paper seeks to explore the dynamics of economic relations between Bulgaria and Rwanda, focusing on current trends, opportunities for growth, and the roles of key sectors. By examining trade data and entrepreneurial insights, the paper underscores the importance of Bulgaria and Rwanda as emerging partners within the broader context of Balkan-African economic collaboration. The analysis aims to provide a comprehensive understanding of the economic potential and challenges in the Bulgaria-Rwanda partnership, offering strategic insights for policymakers, investors, and businesses.

2. Literature Review

2.1 Evolving trade dynamics: Bulgaria's position in Sub-Saharan Africa and Rwanda

The trade dynamics between the Balkans and Sub-Saharan Africa (SSA) and specifically between Bulgaria and Rwanda indicate a developing economic relationship marked by both growth potential and current limitations. Beginning with the overall trade in the Balkans, trade with SSA increased considerably from $2.15 billion in 2009 to $4.58 billion in 2023.

The trade figures highlighted a consistent upward trajectory, although fluctuations occurred, particularly in 2020 when the trade value dipped to $2.78 billion due to global economic disruptions. The rebound to $4.36 billion in 2022 indicates resilience and a recovery in trade activities (Figure 1).

When focusing on Bulgaria’s trade with SSA, the figures paint a compelling picture of increasing engagement. Bulgarian trade with SSA started at $385.7 million in 2009 and showed significant growth, peaking at $845.8 million in 2022 before settling at around $680.2 million in 2023. This growth reflects Bulgaria's strategic intent to deepen economic ties within SSA, benefiting from its European Union membership and geographical positioning that acts as a bridge between Europe and emerging markets in Africa.

Bulgaria's share of the total Balkans-SSA trade fluctuated notably over the years, maintaining a range between 13.6% and 26.0% from 2009 to 2023. This indicates that, while Bulgaria has a significant role within the Balkans' overall trade with SSA, there is room for further expansion. As Bulgaria continues to solidify its trade relationships, its contributions remain essential for enhancing the Balkans' presence in SSA.

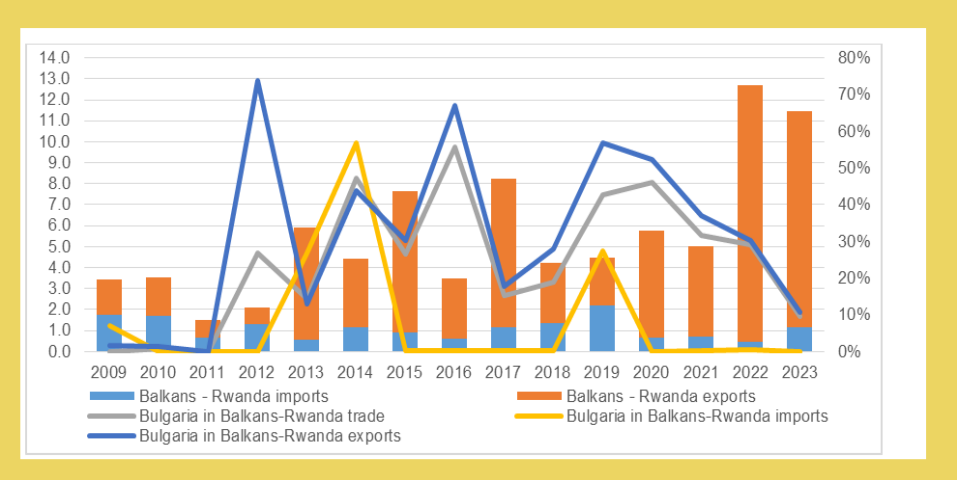

Figure 1. Balkans trade with Sub-Saharan Africa (million USD) and Bulgaria's place in it (%)*Source: Own calculations based on ITC Trademap data.*

Examining the specific relationship with Rwanda, trade levels have historically remained low, with total trade increasing from $3.4 million in 2009 to $11.5 million in 2023. Bulgarian trade with Rwanda began at a mere $0.2 million in 2009, demonstrating the nascent stage of economic interactions. However, Bulgaria's exports to Rwanda have shown capacity for growth, peaking at $3.7 million in 2022 before declining to an estimated $1.1 million in 2023 (Figure 2). This volatility indicates challenges in sustaining consistent trade flows but also reflects the emerging nature of the partnership.

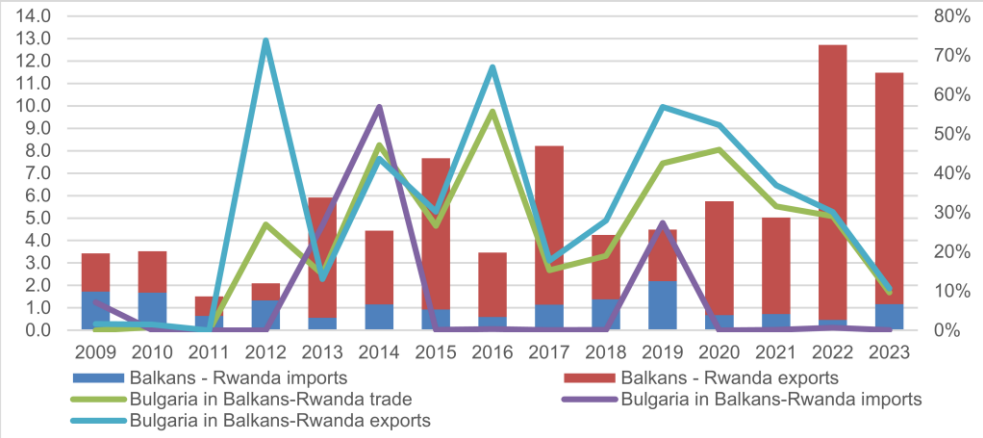

Figure 2. Balkans trade with Rwanda (million USD) and Bulgaria's place in it (%)

Source: Own calculations based on ITC Trademap data.

The commodity structure of trade between Bulgaria and Rwanda illustrates a limited yet evolving exchange that reflects the emerging economic relationship between the two nations. On the import side, Bulgaria's purchases from Rwanda have been minimal, largely consisting of sporadic shipments. For instance, in 2017, Bulgaria imported a small quantity of electrical machinery valued at $1,000, which represents the only notable entry in this category during the reviewed period. The data indicates that Bulgarian imports from Rwanda primarily consist of goods not extensively categorized, with no significant volumes consistently recorded over the years, signaling a lack of diverse import sources from Rwanda.

Conversely, Bulgaria's exports to Rwanda reveal a more dynamic structure, showcasing Bulgaria’s industrial strengths, particularly in machinery and mechanical appliances (Figure 3). Exports peaked dramatically in 2014, with $1.13 million in nuclear reactors and machinery, dropping slightly in subsequent years but maintaining a robust presence, reaching $2.02 million again in 2022. Additionally, exports of electrical machinery experienced a substantial surge, reaching $1.33 million in 2022, underscoring Bulgaria's capacity to provide advanced technological equipment and machinery.

Other categories, such as pharmaceuticals, also emerged intermittently, highlighting the potential for growth across varied sectors. This is indicative of Bulgaria's advanced industrial capacity and its ability to provide essential technologies that support Rwanda's development initiatives.

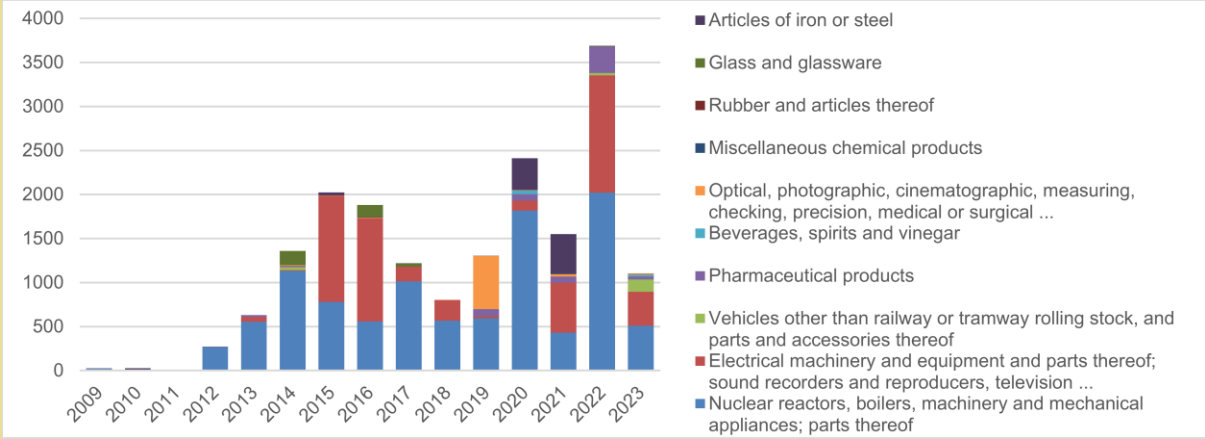

Figure 3. Bulgaria's exports to Rwanda (tsnd. USD).

Source: Own calculations based on ITC Trademap data.

Particularly noteworthy is Bulgaria's share in the Balkans-Rwanda trade, which achieved a peak of 55.7% in 2016, highlighting its potential leadership role among Balkan nations in fostering trade with Rwanda. This substantial share illustrates how Bulgaria has taken initiatives to position itself at the forefront of the economic relationship with Rwanda, although this has varied over the years. By 2023, its share narrowed to 9.6%, emphasizing the need for strategic revitalization to strengthen this economic pathway. In conclusion, bilateral trade between Rwanda and the Balkan nations has seen gradual growth, with Bulgaria emerging as a significant contributor.

Rwanda's strategic initiatives aimed at boosting exports, including agricultural products like coffee, tea, and handicrafts, have found receptive markets in Bulgaria and neighboring countries. Conversely, Bulgaria has been actively exporting machinery, chemical products, and pharmaceuticals to Rwanda, thus diversifying the trading partnership.

3. Methodology

The research is conducted through a comprehensive analysis of bilateral trade data on trade between the Balkan countries (and specifically Bulgaria) and Sub-Saharan Africa (and specifically Rwanda), a semi-structured interview with a Bulgarian entrepreneur operating in Rwanda and examination of relevant economic reports.

By analyzing current trends, and identifying key growth opportunities, this article seeks to illuminate the prospects for a robust economic relationship between Bulgaria and Rwanda. Through strategic initiatives, both nations have the potential to harness their unique strengths, propelling forward not only their own economic futures but also contributing to regional stability and development. As they navigate this collaborative path, Bulgaria and Rwanda offer a promising example of how diverse regions can effectively work together to achieve common objectives in a rapidly changing world.

4. Results and discussion

4.1 Entrepreneurial Insights: Interview Excerpt

The following insights stem from a semi-structured interview with Georgi Shopov, the managing director of Tobo Group, a Bulgarian construction company making significant strides in Rwanda. Tobo Group is currently constructing a residential complex and shopping center in Kigali, reflecting the company's commitment to expanding into new markets. During the interview, Shopov shared his perspectives on the opportunities and challenges of investing in Rwanda's evolving market.

Shopov emphasized that the decision to invest in Africa was motivated by the continent's youthful demographics and rapid development. "We chose Africa because it's a new market with a very young population, and everything is evolving quickly," he stated, noting that Rwanda's median age is just 21 years compared to nearly double in Europe.

Tobo Group assumes multiple roles, acting as landowner, designer, builder, and seller. Their first project includes 100 residential units with a total built area of 14,000 square meters, situated in a prestigious location in Kigali. Shopov anticipates that the project will be completed within a year and a half.

The appeal of Rwanda for investment is further reinforced by observing successful companies operating there. "We do not have the resources to conduct a comprehensive political-economic study of Africa, but we see what big companies like Volkswagen are doing," he shared, noting their investment in a significant automotive plant. Indirect indicators, such as increased flight connections and improved infrastructure, demonstrate Rwanda's potential.

Shopov highlighted Rwanda's reputation as the "Switzerland of Africa," which he attributed to government policies that strongly encourage economic growth and innovation. "In many respects, they are ahead of us," he commented, citing their advancements in sustainability, including one of Africa's largest solar parks and initiatives against plastic usage.

A notable aspect of Rwanda's business environment is the efficiency of its investment process. "You start with an investment intention supported by technical and financial parameters, reviewed by a public institution that assesses the project's benefits for the state," he explained, contrasting this with Bulgaria's bureaucratic focus on minor details.

The permitting process in Kigali is remarkably swift—taking only two weeks from submission to approval—while it often takes six to nine months in Sofia. Shopov praised Rwanda's electronic regulatory systems, which streamline workflows.

Rwanda's climate also influences housing design. With temperatures consistently between 18 and 24 degrees Celsius, apartments in Rwanda are designed without extensive insulation or heating systems. "Families are large, and the apartments need to accommodate that," he noted, emphasizing functional layouts without unnecessary hallways.

While construction materials are easily accessible, Shopov noted their higher prices due to import tariffs. "Concrete costs almost twice as much as in Bulgaria," he stated, while labor remains significantly more affordable. Shopov believes that the growing demand for improved living conditions among government officials and NGOs reflects Rwanda's economic growth. "Rwanda has four times less land area than Bulgaria, but its population is twice as large—about 13.5 million," he explained, underlining a rising standard of living.

Through his insights, Shopov demonstrates the potential for residential construction in Rwanda, emphasizing market opportunities driven by demographic growth and increasing living standards. As Bulgaria seeks to deepen its economic relationship with Rwanda, Shopov's experiences illuminate the opportunities and strategic considerations pivotal for successful ventures in this promising market.

4.2 Opportunities and considerations

Bulgaria, as one of the key players in the Balkan region, holds a distinctive position in fostering economic relations with Rwanda. Its strategic location at the crossroads of Europe and Asia, coupled with its European Union membership, provides Bulgaria with significant leverage in trade and investment initiatives, making it an attractive partner for Rwanda.

Particular sectors offer bright prospects for collaboration between Bulgaria and Rwanda.

4.2.1 Information and Communication Technology (ICT):

Bulgaria is recognized for its burgeoning tech industry, which has gained traction in recent years. Rwandan initiatives focused on becoming a regional tech hub, such as the Kigali Innovation City project, present opportunities for Bulgarian tech firms to partner in knowledge transfer and investment. Collaborative projects in software development, digital services, and tech training programs could bolster Rwanda's digital economy.

4.2.2 Agriculture and Agro-Processing

Agriculture remains a significant pillar of Rwanda’s economy. Bulgarian expertise in agro-technology, including greenhouse solutions and sustainable farming practices, can contribute to enhancing productivity in Rwanda’s agricultural sector. Initiatives to promote joint ventures in agro-processing can help value addition to Rwandan agricultural products, benefiting farmers and local economies.

4.2.3 Tourism Development:

Bulgaria's rich cultural heritage and experience in tourism can be valuable for Rwanda, which boasts stunning landscapes and diverse wildlife. Joint efforts to promote tourism could include creating packages that appeal to European tourists, as well as knowledge exchange in hospitality training and sustainable tourism practices.

4.2.4 Renewable Energy:

Both countries are increasingly recognizing the importance of sustainability. Bulgaria has advanced in renewable energy solutions, such as solar and wind power. Collaborations in this sector can support Rwanda's initiatives in energy diversification and sustainability, aligning with global trends towards cleaner energy.

4.2.4 Educational and Cultural Exchanges:

Moreover, educational and cultural exchange programs between Bulgaria and Rwanda are gaining momentum. Scholarships and training programs can facilitate knowledge sharing and capacity building. Initiatives to foster cultural understanding and cooperation through art, literature, and sports can deepen ties beyond mere economic transactions, promoting goodwill and mutual respect.

As Rwanda and Bulgaria continue to strengthen their economic relations, several key areas present significant opportunities for growth and collaboration. Identifying these avenues requires a forward-looking approach that considers both regions' strengths, ambitions, and market needs. Below are the promising sectors and potential initiatives that can enhance the economic partnership between these nations.

4.2.5 Technology and Innovation: The intersection of technology and innovation stands out as one of the most dynamic areas ripe for cooperation. Rwanda has set ambitious goals to transition into a knowledge-based economy, evident in initiatives such as the Kigali Innovation City. Bulgarian tech firms could play an instrumental role in this transformation by offering expertise in software development, cybersecurity, and smart city technologies. Establishing joint tech incubators or innovation hubs could foster an exchange of ideas and skills, nurturing local entrepreneurs in Rwanda while providing Bulgarian companies access to emerging markets. Additionally, participation in tech fairs and conferences could serve as platforms for promoting cross-border collaborations.

4.2.6 Agriculture and Food Security: Bulgaria's advanced agricultural practices and technologies can contribute significantly to Rwanda's agricultural strategy, aimed at enhancing productivity and ensuring food security. Opportunities for collaboration include:

4.2.7 Agro-Technology Transfers: Bulgarian firms specializing in advanced farming techniques—such as precision agriculture, irrigation systems, and organic farming—can assist in boosting yields and sustainability among Rwandan farmers.

4.2.8 Joint Ventures in Agro-Processing: By investing in agro-processing facilities in Rwanda, Bulgarian companies can help add value to raw agricultural products. This would not only improve farmers' incomes but also create job opportunities and stimulate local economies.

4.2.9 Sustainable Tourism: Both countries recognize the potential of tourism as a vehicle for economic growth and cultural exchange. Bulgaria’s experience in diversifying its tourism offerings can be leveraged to enhance Rwanda’s tourism sector. Collaborative opportunities include:

4.2.10 Cultural Exchange Programs:

Developing cultural exchange initiatives that provide Rwandan and Bulgarian nationals with opportunities to explore each other's heritage can foster mutual understanding and attract tourists from both regions.

4.2.11 Tourism Infrastructure Development:

Bulgarian companies can contribute to improving tourism infrastructure in Rwanda, including hotels, resorts, and eco-friendly lodges that align with Rwanda's commitment to sustainable tourism.

4.2.12 Renewable Energy Projects:

In the context of global climate change and the urgent need for sustainable practices, collaborations in renewable energy present a vital opportunity. Bulgaria's advancements in renewable energy technologies, particularly in solar and wind power, can aid Rwanda's aim to diversify its energy sources. Potential initiatives include:

4.2.13 Joint Renewable Energy Projects:

Collaborative projects focusing on solar energy installations or wind farm developments can help Rwanda increase its energy capacity, aligning with its national strategy of ensuring energy access for all citizens.

4.2.14 Capacity Building Initiatives:

Training programs aimed at equipping Rwandan engineers and technicians with knowledge in renewable energy technologies could help foster local expertise and innovation.

4.2.15 Trade Missions and Business Forums: To fully harness these opportunities, fostering direct business connections through trade missions, business forums, and networking events is essential. Organizing annual Rwanda-Bulgaria Business Forums can bring together stakeholders from both regions to share insights, discuss challenges, and explore collaboration avenues. These platforms can facilitate matchmaking opportunities for businesses and encourage dialogue between government officials, enhancing the overall economic partnership.

The relationship between Rwanda and Bulgaria holds immense potential for growth across multiple sectors. By capitalizing on their unique strengths and addressing shared challenges, both nations can cultivate a prosperous and sustainable economic partnership that not only benefits their respective economies but also contributes to broader regional stability and development. As they navigate this journey together, the focus on innovation, sustainability, and shared growth will play a crucial role in shaping their collective future.

While the economic relations between Rwanda and Bulgaria present promising opportunities, several challenges must be addressed to ensure the successful realization of their collaborative potential. Understanding these challenges is critical for both countries to navigate complexities and enhance their partnership effectively.

4.2.16 Geopolitical Factors:

Geopolitical dynamics can significantly impact international relations. The historical context of the Balkan region, including ongoing regional tensions and past conflicts, may deter some investors from fully engaging with Rwanda. Additionally, political stability in Rwanda, while strong in recent years, is essential to maintaining investor confidence. Both countries need to be proactive in managing geopolitical risks by fostering open dialogue and transparent communication.

4.2.17 Market Dynamics and Economic Variability:

Differences in market maturity, combined with economic variability, can pose challenges. The Rwandan economy, while rapidly growing, is still developing; this might limit the capacity to engage in high-value collaborations initially. Bulgarian businesses may need to adapt their expectations and strategies to align with Rwanda's unique socio-economic landscape. Understanding local market conditions, consumer preferences, and regulatory environments is crucial for Bulgarian companies aiming to enter Rwandan markets.

4.2.18 Regulatory Hurdles:

Navigating the regulatory framework of each country can present obstacles. Bulgarian businesses may face challenges related to the complexity of Rwandan laws, customs regulations, and tax policies. Conversely, Rwandan companies looking to operate in Bulgaria may encounter bureaucratic layers and an unfamiliar regulatory landscape. To mitigate these hurdles, both countries should consider establishing clearer guidelines and frameworks for foreign investors, focusing on transparency and efficiency.

4.2.18 Infrastructure and Connectivity:

Infrastructure limitations in Rwanda – particularly in key areas such as transport, energy, and telecommunications – can restrict the full potential of economic engagement. While Rwanda has made substantial investments in infrastructure development, the pace may not yet meet the needs of expanding businesses. Bulgarian firms should take these challenges into account when planning investments and may consider engaging in collaborative infrastructure projects.

4.2.19 Cultural and Language Differences:

Cultural differences and language barriers can complicate business interactions. Understanding local customs, negotiating styles, and the business culture in Rwanda is essential for successful partnerships. Additionally, while English is increasingly prevalent in Rwanda, language differences may still create communication challenges. To overcome this, fostering cultural exchange programs and language training can enhance mutual understanding and cooperation.

Addressing these challenges requires a collaborative approach. Bilateral dialogues should be encouraged to discuss and devise solutions to these issues. Diplomatic channels can facilitate the establishment of frameworks that support businesses in navigating regulatory environments effectively. Joint efforts in capacity building, knowledge sharing, and stakeholder engagement can pave the way for a more robust economic partnership.

Both countries should remain committed to fostering a conducive environment for investment and collaboration, acknowledging that overcoming obstacles will ultimately strengthen their economic ties. By leveraging their unique strengths and addressing these challenges collaboratively, Rwanda and Bulgaria can cultivate a lasting and mutually beneficial economic relationship.

5. Conclusion

As the global economy becomes increasingly interconnected, the economic relationship between Rwanda and Bulgaria exemplifies the potential for fruitful collaboration between regions with distinct historical contexts and economic structures. This evolving partnership, characterized by trade, investment, and mutual ambition, highlights the growing opportunities for both nations to build sustainable economic futures.

The analysis of trade dynamics reveals that while overall trade between the Balkans and Sub-Saharan Africa has increased significantly, Bulgaria's trade with Rwanda remains modest yet is on an upward trajectory. Specifically, Bulgarian trade with Rwanda has grown from $0.2 million in 2009 to $11.5 million in 2023, demonstrating an emerging relationship despite historical limitations. Bulgaria has shown its potential to become a key player in the Balkans' trade with Rwanda, with noteworthy peaks in exports primarily centered on machinery, electrical equipment, and other industrial products.

Rwanda's Vision 2050 agenda aligns well with Bulgaria's strengths in technology, agricultural innovation, and renewable energy, positioning Bulgaria as a strategic partner. The findings further illustrate the importance of key sectors such as information and communication technology (ICT), agriculture, tourism, and renewable energy, as areas ripe for collaboration. Initiatives and insights from Bulgarian entrepreneurs operating in Rwanda highlight the dynamic nature of opportunities and challenges faced in the Rwandan market, underscoring the need for continued investment and knowledge exchange.

However, the partnership is not without challenges. Issues such as geopolitical dynamics, regulatory hurdles, and cultural differences necessitate proactive strategies and open communication to foster a conducive environment for collaboration. By addressing these challenges and leveraging their unique strengths, Bulgaria and Rwanda can cultivate a lasting and mutually beneficial economic relationship.

Looking ahead, the potential within sectors like technology, agriculture, sustainable tourism, and renewable energy underscores a pathway for enhancing the quality of life for citizens in both countries. Establishing joint ventures, engaging in knowledge transfer, and participating in bilateral forums can further solidify the relationship, paving the way for a prosperous future.

In conclusion, the growing economic relationship between Rwanda and Bulgaria serves as a compelling model for intercontinental partnerships. Through strategic collaboration and a shared commitment to growth, these nations can unlock new avenues for development, contributing to broader regional prosperity, stability, and resilience in an ever-changing global landscape.

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