

ISSN 2669-0195 ONLINE
<http://doi.org/10.70132/b2656224558>

INSIGHTS INTO REGIONAL DEVELOPMENT

Volume 8 Number 2
June 2026



INSIGHTS INTO REGIONAL DEVELOPMENT

ISSN 2669-0195 (online) <https://jssidoi.org/ird/>

2026 Volume 8 Number 2 (June)

<http://doi.org/10.70132/b2656224558>



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Sustainability for Regions

Volume 8 Number 2 June 2026

INSIGHTS INTO REGIONAL DEVELOPMENT*

INSIGHTS INTO REGIONAL DEVELOPMENT ISSN 2669-0195 (online) is a peer-reviewed journal which publishes original research papers and case studies. It is an international journal published

** The journal was launched as a platform for dissemination of the project results, which has received funding from the European Union's Horizon 2020 research and innovation programme European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme Marie Skłodowska-Curie Research and Innovation Staff Exchanges ES H2020-MSCA-RISE-2014 CLUSDEVMED (2015-2019) Grant Agreement Number 645730730*



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Volume 8 Number 2 June 2026

CONTENTS

Lucia Almaksus VALUE-BEHAVIOR GAP IN DIGITALLY COMMUNICATED SUSTAINABILITY: EVIDENCE FROM THE FAST FASHION SEGMENT	10
Mandisi Matyana, Richard Mduduzi Mthethwa, Joana Katina A ROLE OF INDUSTRIAL DEVELOPMENT ZONES IN POVERTY ALLEVIATION: A CASE STUDY	20
Babalo Kundlwana, Samson Nambei Asoba, Nteboheng Patricia Mefi, Mateus Vicente Justino SOCIAL MEDIA PRESSURE AND ITS EFFECTS ON YOUTH BEHAVIOUR AND WELLBEING: A CASE STUDY FROM SOUTH AFRICA	33
Munashe Matambo, Dominique Emmanuel Uwizeyimana SOVEREIGN WEALTH FUNDS: A CONSEQUENCE OR CAUSE OF ECONOMIC PROSPERITY?	51
Tinashe Mukonavanhu, Danielle Nel-Sanders DECISION-MAKING PROCESSES WITH FOCUS ON WATER DEMAND PLANNING	66
Abongile Pindo DIGITAL GOVERNANCE FOR IMPROVING SERVICE DELIVERY AND MUNICIPALITIES' ACCOUNTABILITY: CONTEXT OF SOUTH AFRICA	82
Leonardo Piccinetti, Trevor Uyi Omoruyi, Donatella Santoro, Mohammed Mahgoub Hassan, Mohamed Ramadan A. Rezk FROM OPPORTUNITY TO STRATEGY: FUTURE SCENARIOS FOR NIGERIA–EU SCIENCE, TECHNOLOGY, AND INNOVATION COLLABORATION	95
Aaram Gwiza ROLE OF TRUST AND VALUE CREATION IN PUBLIC GOVERNANCE VIA LENSES OF PUBLIC VALUE THEORY	121

Ishmael Obaeko Iwara, Victor Ojakorotu GRADUATE UNEMPLOYMENT IN SOUTH AFRICA (2016-2025): TRENDS, DRIVERS AND POLICY MATRIX	136
Peter Isaac Msughter, Velisiwe Gasa ENTREPRENEURIAL EDUCATION IN SOUTH AFRICA: REVEALING CONTEXTUAL PECULIARITIES AND ADDRESSING STRUCTURAL CONSTRAINTS THROUGH STRATEGIC RECOMMENDATIONS	150
Sandile Blessing Mkhwanazi IS SOUTH AFRICA A BRICS WEAKEST LINK? AN APPRAISAL OF SOUTH AFRICAN INTERNAL POLITICAL DYNAMICS VIS-À-VIS ITS BRICS MEMBERSHIP	164
Bulelwa Nguza-Mduna, Anthony Kambi Masha PUBLIC BODIES' SUPPORT FOR THE SUSTAINABILITY OF SMALL-AND MEDIUM-SIZED TOURISM ENTERPRISES IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA	178
Ntokozo Gwala, Steven Kayambazinthu Msosa, Bright Mhlongo ENTREPRENEURSHIP EDUCATION IN THE TECHNICAL VOCATIONAL EDUCATION AND TRAINING (TVET) COLLEGE SECTOR	191
Ntando Elliot Mpahla EDUCATIONAL LEADERSHIP FOR PROMOTING SUSTAINABLE DEVELOPMENT: CASE OF THE FACULTY OF EDUCATION AT EASTERN CAPE UNIVERSITY, SOUTH AFRICA	204
Emmanuel Aondongusha Asue, Rafiu Adewale Aregbesholab YOUTH UNEMPLOYMENT CRISIS AND FOREIGN DIRECT INVESTMENT FLOWS IN SOUTH AFRICA	214
Sharon Mnena Abaver ROLE OF CREATIVITY AND INNOVATION IN MATHEMATICS LEARNING: A CASE OF SPECIAL EDUCATION	234



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VALUE-BEHAVIOR GAP IN DIGITALLY COMMUNICATED SUSTAINABILITY: EVIDENCE FROM THE FAST FASHION SEGMENT***Lucia Almaksus***Bratislava University of Economics and Management, Furdekova 16, Bratislava, Slovakia**E-mail: lucia.almaksus@gmail.com**Received 11 February 2026; accepted 18 April 2026; published 30 June 2026*

Abstract. The article focuses on the analysis of the value conflict among consumers in the fast fashion segment in the context of digitally communicated sustainability. The objective of the research was to examine the relationship between the declared importance of brand value attributes and their actual role in the purchasing decisions of digitally active consumers. The research was conducted through an electronic questionnaire on a sample of 2,210 respondents. The findings indicate a significant discrepancy between the normative evaluation of authenticity and the systematic interest in sustainability, while value attributes do not occupy a dominant position among the determinants of purchasing behavior. The results suggest that in the price-oriented fast fashion segment, the decision-making process is strongly influenced by pragmatic and economic factors. The study, therefore, contributes to the discussion on the limits of the effectiveness of digitally communicated sustainability under conditions of market economic rationality.

Keywords: value-behavior gap; sustainable consumption; digital marketing; fast fashion; economic rationality; price sensitivity

Reference to this paper should be made as follows: Almaksus. L. 2026. Value-behavior gap in digitally communicated sustainability: evidence from the fast fashion segment. *Insights into Regional Development*, 8(2), 10-19. <http://doi.org/10.70132/a9973545399>

JEL Classifications: M3, Q01, Z0

Additional disciplines: sociology; psychology

1. Introduction

The expansion of electronic commerce represents one of the most significant phenomena of the modern digital economy in the 21st century. Due to the development of the internet, mobile technologies, and online payment systems over the last two decades, shopping activities have increasingly shifted from traditional brick-and-mortar stores to virtual environments. Consumers are now able to purchase products and services anytime and from anywhere, which significantly increases convenience and market accessibility. For businesses, e-commerce creates opportunities to reach a wider audience, reduce operational costs, and respond more flexibly to the demands of current and potential customers.

However, the growth of electronic commerce is closely connected with the issue of business sustainability. On the one hand, e-commerce may reduce the need for physical retail outlets, thereby lowering energy consumption and operational costs, as the digitalization of processes limits the use of paper documentation. On the other hand, the expansion of online shopping increases transportation, packaging, and logistics activities, which may lead to higher emissions and packaging waste. Sustainable e-commerce, therefore, involves the use of environmentally

* This research was carried out within the framework of the project 3/2025 - International project. Artificial Intelligence and its impact on the Smart City strategy for the private and public sector, Slovakia

friendly packaging, optimization of logistics processes, support for local suppliers, and the implementation of energy-efficient technologies. The issue of sustainability in consumer behavior currently represents one of the most widely discussed topics in environmental economics, marketing management, and corporate strategy. Within the fashion industry, particularly in the fast fashion segment, environmental and social responsibility often come into tension with price affordability and the high frequency of consumption (Anh, 2025; Arriaga et al., 2025). The fast fashion model is characterized by rapid production, short product life cycles, and price accessibility, which creates an inherent conflict between sustainability principles and consumer economic rationality (Hageman et al., 2023; Herold & Prokop, 2023, Baena, 2024; Al Aghbari et al., 2025).

Digital marketing plays a key role in this process. Brands use online communication channels to build an image of social responsibility, present environmental initiatives, and declare commitments to sustainable development (Ma & Yong, 2025). At the same time, they operate in a highly competitive environment in which price elasticity of demand and consumer price sensitivity represent crucial determinants of purchasing behavior (Kotler et al., 2021; 2025).

In the literature, this contradiction is described as the “**value-behavior gap**,” referring to the discrepancy between consumers’ declared values and their actual purchasing behavior. Consumers often express support for environmental principles, ethical production, and supply chain transparency; however, in specific purchasing situations they tend to prefer cheaper alternatives (Essiz et al., 2023). This phenomenon raises questions regarding the effectiveness of sustainability communication in digital marketing and its actual influence on firms’ market performance (Pelikanová & Sani, 2023; Serrat et al., 2025). Electronic commerce also brings several risks, including cybersecurity threats such as personal data theft, payment fraud, or attacks on e-shop databases. Another risk involves insufficient consumer protection when dealing with unverified sellers, problems with product quality, or complicated complaint procedures. Strong competition in online markets may also disadvantage smaller businesses.

Overall, electronic commerce represents an important component of the modern economy and its significance will likely continue to grow. However, its long-term and responsible development requires addressing environmental issues, improving online security, and ensuring fair conditions for both consumers and businesses. Cherednichenko et al. (2023) emphasize that the implementation of information technologies is associated with risks, particularly in the area of personal data protection.

The empirical part of the article is based on quantitative research conducted on a sample of 2,210 respondents. The results indicate that active monitoring of brand value attributes, including sustainability, represents a minority behavior, whereas price rationality and other pragmatic factors play a dominant role in the purchasing process.

The findings are further discussed in the context of the economic performance of the analyzed companies, enabling a broader interpretation of the effectiveness of sustainability-oriented marketing strategies. The research focuses on digitally communicated sustainability and its perception by consumers in the context of three globally operating fast fashion companies. The article contributes to the theoretical discussion about the limits of normative marketing concepts in a highly competitive and price-oriented market environment and provides implications for the development of digital marketing strategies in the fast fashion segment.

This study contributes to the existing literature by empirically examining the extent to which digitally communicated sustainability influences consumer purchasing behavior in a highly price-sensitive market environment, thereby providing new insights into the structural determinants of the value-behavior gap in the fast fashion segment.

2. Theoretical background

In marketing theory, sustainability has emerged as an extension of the traditional concept of customer orientation toward a broader societal framework. While classical marketing management emphasized the effective satisfaction of target customer needs, the concept of societal marketing integrates long-term social welfare and environmental considerations into corporate decision-making processes (Cuhadaroglu; 2017; Chrystal et al., 2019; Cant & Bothma, 2023; Neha et al., 2024; Kabát & Lincényi, 2024). In this context, sustainable marketing is understood as a normative approach in which firms harmonize economic objectives with environmental and social responsibility.

Digitalization has transformed the way these values are communicated. Digital marketing enables brands to systematically present environmental initiatives, supply chain transparency, and ethical production practices through personalized, data-driven communication (Hamlin & McNeill, 2023; Isoraite & Alperyte, 2024; Ewis & Abdou, 2025). Social media, content marketing, and influencer marketing create space for building symbolic brand value, where sustainability becomes part of brand identity. However, the normative framework of sustainability enters into tension with consumer economic rationality. From the perspective of behavioral economics, purchasing decisions are determined by the maximization of individual utility under conditions of budget constraints (Acatrinei et al., 2025). Price represents a fundamental determinant of demand, particularly in market segments characterized by high competition and low product differentiation. In such environments, environmental attributes of products may be positively perceived but remain secondary to price accessibility (De Oliveira et al., 2022).

The fast fashion model intensifies this conflict. It is based on rapid production, short product life cycles, and aggressive pricing strategies, which stimulate high consumption frequency (Uchanska-Bieniusiewicz & Obloj, 2023). Consumers in this model are encouraged to make repeated purchases through a combination of low prices, trend variability, and intensive digital communication. Although brands increasingly implement elements of environmental responsibility, their business models remain primarily oriented toward volume and rapid turnover. This contradiction is conceptualized in the literature as the **value-behavior gap**, indicating the difference between declared individual values and actual behavior (Peeters et al., 2022). Empirical studies show that consumers often support sustainability initiatives but prefer cheaper alternatives when making real purchasing decisions. Explanatory factors include price sensitivity, distrust of marketing claims, information asymmetry, and cognitive dissonance (Gardarsdóttir et al., 2020).

The digital environment further complicates this phenomenon. Online communication enables relatively low-cost construction of a responsible brand image, while transformative changes in the business model may remain limited (Isoraite & Guleviciute, 2023). This may lead to a discrepancy between reputational communication and actual market performance. The fast fashion segment, therefore, provides a suitable empirical setting for testing the extent of value conflict. If companies with stronger sustainability communication do not achieve relatively better economic performance than price-oriented competitors, it may be assumed that consumer price rationality outweighs the normative influence of sustainability communication.

This theoretical framework forms the basis for empirical investigation of the consistency between declared interest in brand values and the real determinants of purchasing behavior in digitally mediated environments. Despite the growing body of research on sustainable consumption and digital marketing, the relationship between **digitally communicated sustainability and actual consumer purchasing behavior remains insufficiently explored within price-sensitive market segments such as fast fashion**. Most existing studies primarily focus on individual psychological determinants of sustainable consumption, including attitudes, environmental concern, and ethical awareness. However, considerably less attention has been devoted to **market environments characterized by strong price competition and high consumption frequency**, where economic rationality may

systematically limit the behavioral impact of sustainability communication. As a result, the extent to which digitally communicated sustainability influences consumer decision-making **in price-oriented fast fashion markets remains an open empirical question.**

This research, therefore, seeks to address this gap by examining the relationship between the declared importance of brand value attributes and their actual role in the purchasing decisions of digitally active consumers within the fast fashion segment.

3. Research objective and methodology

The research focuses on assessing the relationship between the declared interest in brand values, including environmental and social responsibility, and the actual determinants of purchasing behavior in the digital environment. **The primary objective** of the presented study is to analyze the extent of the value conflict among consumers in the fast fashion segment in the context of digitally communicated sustainability and to assess the consistency between the declared importance of brand value attributes and the real determinants of purchasing behavior. **A secondary objective** of the research is to identify the dominant factors influencing the purchasing decisions of digitally active consumers and to evaluate the relative importance of brand value attributes in comparison with economic determinants.

The research is therefore based on the following three research questions:

RQ1: What is the level of the declared importance of brand value attributes in the digital fast fashion environment?

RQ2: To what extent do declared value preferences translate into actual purchasing behavior?

RQ3: What is the relative importance of brand value attributes compared with pragmatic determinants of decision-making in the fast fashion segment?

Data Collection and Research Design

The empirical part of the research was conducted through a quantitative survey. Data were collected using a structured online questionnaire distributed electronically. The questionnaire was disseminated through digital channels of a female fashion influencer operating within the fast fashion segment. This distribution channel enabled the research to reach respondents who are actively engaged in the digital fashion environment and regularly consume content related to fast fashion brands. The questionnaire consisted predominantly of closed-ended questions with predefined answer options and Likert-scale items focusing on the perception of authenticity, the monitoring of brand value attributes, and the determinants of purchasing behavior. In addition, the questionnaire included one open-ended question in which respondents were asked to spontaneously identify the brand they perceive as having the most effective digital marketing. The open-ended question allowed the identification of respondents' perceptual preferences without predefined answer categories, thereby providing an additional qualitative indicator of perceived marketing effectiveness.

Research Sample

The total research sample consisted of **2,210 respondents**. The gender structure of the sample was strongly female-dominated, with women representing **98% of respondents**. This distribution reflects the structure of the digital fashion environment and corresponds with the dominant target group of the fast fashion segment, in which women represent the primary purchasing and communication-engaged consumer group. Considering the research focus on digitally active fast fashion consumers, the sample cannot be interpreted as representative of the entire consumer population but rather as **segment-specific**. The predominance of female respondents, therefore, does not represent a methodological bias but reflects the structural characteristics of the analyzed market environment (see Table 1).

Table 1. Gender structure of the research sample

Gender	Number of respondents	Share (%)
Female	2166	98.0
Male	44	2.0
Total	2210	100.0

Source: own processing based on quantitative survey data

The largest groups were respondents **aged 26–30 (31.8%) and 21–25 (30.5%)**, reflecting the demographic structure of digitally active fashion consumers (see Table 2).

Table 2. Age structure of the research sample

Age group	Number of respondents	Share (%)
16-20	184	8.3
21-25	675	30.5
26-30	702	31.8
31-35	421	19.0
36-40	144	6.5
40+	84	3.8
Total	2210	100.0

Source: own processing based on quantitative survey data

Data Analysis

Descriptive statistical methods were used to evaluate the collected data. To assess the extent of the value conflict, a comparative analysis was conducted between the declared interest in brand values and indicators of purchasing behavior. Relationships between selected variables were analyzed using **cross-tabulation analysis and correlation analysis**. Responses to the open-ended question were subsequently processed through **manual categorization according to brand names**. Different graphical or linguistic variations of brand names were unified and aggregated into a single category to ensure consistency in the analysis.

4. Results and discussion

To address the first research question, the analysis focused on respondents' perceptions of authenticity and their level of engagement with brand value attributes, including sustainability.

Supporting question 1: Do respondents perceive authenticity in digital communication as important?

The analysis of the statement "*Authenticity in advertising is important to me*" revealed a strongly positive normative orientation among respondents. A total of 42.5% of respondents fully agreed with the statement, while 29.9% rather agreed. In aggregate, this represents 72.4% of the research sample expressing a positive attitude toward authenticity in advertising communication. A neutral position was reported by 19.6% of respondents, while approximately 8% expressed disagreement (see Table 3). These results indicate that authenticity represents an important normative value in the digital communication environment and forms part of the declared value framework of consumers.

Table 3. Perceived importance of authenticity in digital advertising

Response	Number of respondents	Share (%)
Strongly agree	939	42.5
Rather agree	661	29.9
Neutral	433	19.6
Rather disagree	132	6.0
Strongly disagree	45	2.0
Total	2210	100.0

Source: own processing based on quantitative survey data

The results presented in Table 3 confirm a strong normative orientation of respondents toward authenticity in digital advertising, indicating that authenticity represents an important declared value within the digital communication environment.

Supporting question 2: Do respondents systematically monitor brand value attributes?

Despite the high declared importance of authenticity, only 12.99% of respondents reported that they systematically monitor brand values, including sustainability. Nearly half of the respondents (49.23%) stated that they monitor such attributes only occasionally, while 33.4% indicated that they do not monitor brand values at all. Overall, 82.6% of respondents therefore do not demonstrate a consistent interest in brand value attributes. The comparison between the declared importance of authenticity (72.39%) and the systematic monitoring of brand values (12.99%) reveals a substantial discrepancy of approximately **59 percentage points**. These findings highlight a clear inconsistency between normative attitudes and actual behavioral engagement with brand values.

Consequently, the first research question (RQ1) points to a significant divergence between declared consumer values and the practical relevance of these values in everyday consumer behavior.

To address the second research question, additional questionnaire items were analyzed to examine the relationship between digital communication and purchasing behavior.

Supporting question 1: Does digital communication influence respondents' purchasing behavior?

The analysis of responses regarding the type of advertising that most influences purchasing decisions indicates that **influencers represent the most influential communication channel**, selected by 805 respondents. The second most frequent response (778 respondents) indicated that respondents do not base their purchasing decisions on advertising. Other forms of digital advertising, such as display or banner advertising, received significantly lower levels of influence. These findings indicate that interpersonal or socially mediated forms of communication may play a more important role in consumer decision-making than traditional forms of digital advertising.

To examine further the influence of marketing stimuli on consumer responses, a correlation analysis was conducted to assess the relationship between influencer size and consumer engagement. The results indicate a weak but statistically significant positive relationship between influencer size and click frequency ($r = 0.06$; $p < 0.05$) as well as purchase behaviour after exposure to advertising ($r = 0.04$; $p < 0.05$) (see Table 4).

Table 4. Correlation between influencer size and consumer response

Variables	r	p- value	N
Influencer size x click frequency	0.06	<0.05	2210
Influencer size x purchase after advertising	0.04	<0.05	2210

Source: own processing based on quantitative survey data

Despite statistical significance, the strength of the relationships remains very weak, indicating that influencer size alone has limited explanatory power in predicting consumer engagement.

Supporting question 2: Are value attributes among the primary determinants of purchasing decisions?

Brand value attributes did not appear among the dominant factors influencing purchasing decisions. Considering that only 12.99% of respondents systematically monitor brand values, it can be concluded that declared value preferences translate into purchasing behavior only to a limited extent. The results therefore confirm the existence of a **value-behavior gap**, consistent with findings reported in previous studies (Essiz et al., 2023).

To address the third research question, the analysis focused on identifying the key factors that influence consumer purchasing decisions in the digital fast fashion environment.

Supporting question 1: Which factors most strongly influence purchasing decisions in the digital environment?

The results suggest that purchasing decisions are largely determined by socially mediated stimuli or by factors that are not directly linked to explicit value communication. The fact that a considerable proportion of respondents declare independence from advertising further indicates the importance of internal or pragmatic determinants of decision-making.

Supporting question 2: Does the structure of responses indicate the dominance of economic rationality?

Given the low level of systematic monitoring of brand value attributes and the absence of these attributes among the dominant decision-making factors, it can be concluded that brand values do not represent a primary determinant of purchasing behavior.

In the fast fashion segment, which is characterized by high price accessibility and frequent consumption cycles, these findings suggest the predominance of **pragmatic and economically oriented consumer rationality**.

Additional evidence regarding the relative importance of brand values was obtained from the open-ended question in which respondents spontaneously identified the brand with the most effective digital marketing.

The most frequently mentioned brands were **Zara (189 responses)** and **SHEIN (130 responses)**, while **H&M was mentioned significantly less frequently (83 responses)**.

It is important to note that the perception of marketing effectiveness does not automatically imply a direct change in purchasing behavior nor a causal relationship with actual purchase decisions. Perceived marketing effectiveness and real consumer behavior therefore represent analytically distinct categories. However, it should also be noted that Zara (Inditex) and SHEIN belong to the most dominant global players in the fast fashion industry in terms of sales volume. The consistency between their strong market position and the perception of marketing effectiveness suggests that marketing performance in this segment is not primarily determined by sustainability reputation. In the context of the previous findings, particularly the low level of systematic monitoring of brand values (12.99%), these results support the conclusion that value attributes play a **secondary role in the decision-making process compared with pragmatic and economic determinants**.

Consequently, the third research question (RQ3) indicates that in a price-oriented fast fashion market, sustainability communication may serve primarily a **symbolic rather than a decisive function** in consumer decision-making.

Interpretation of key research findings is provided below in Table 5.

Table 5. Interpretation of key research findings

Research dimension	Empirical finding	Interpretation
Perception of authenticity	72.4% respondents consider authenticity important	Authenticity represents a strong normative expectation in digital communication
Monitoring of brand values	Only 12.99% systematically monitor brand sustainability values	Low behavioral engagement with value attributes
Influence of digital communication	Influencers represent the most influential communication channel	Socially mediated communication plays a key role in shaping consumer attention
Determinants of purchasing behavior	Value attributes are not dominant decision factors	Purchasing decisions are primarily influenced by pragmatic considerations

Source: own processing based on quantitative survey data

Conclusions

The findings of the study reveal a substantial discrepancy between the normative evaluation of authenticity in digital communication and the actual behavioral engagement of consumers with brand value attributes. Although a large proportion of respondents declared that authenticity in advertising is important, this attitude is not reflected in a proportional level of active monitoring of sustainability or other value-based brand attributes.

The results indicate the presence of a **value-behavior gap** within the analyzed segment. While sustainability and authenticity are perceived positively at the normative level, they do not represent dominant determinants of purchasing decisions among digitally active consumers. The analysis further suggests that purchasing behavior in the fast fashion segment is primarily shaped by **pragmatic and economic considerations**, particularly price accessibility and market dynamics. The perceived marketing effectiveness of brands corresponds more closely with their overall market strength than with their sustainability reputation. This finding supports the interpretation that consumer decision-making in this segment is largely driven by **economic rationality rather than value-oriented considerations**.

These findings contribute to the ongoing academic debate on the value-behavior gap by highlighting its **structural dimension**. In the fast fashion context, the discrepancy between declared values and actual consumer behavior does not appear solely as an individual inconsistency, but rather as a consequence of the tension between normative sustainability communication and the economic structure of the market.

From a managerial perspective, the results suggest that sustainability communication alone may not be sufficient to influence consumer purchasing behavior if it is not accompanied by economic compatibility, particularly in price-sensitive market segments. Firms operating in the fast fashion industry should therefore consider integrating sustainability strategies with pricing structures and broader value propositions that align with consumer economic expectations.

For the theory of sustainable consumption, the results imply the need for a stronger integration of **market mechanisms and price elasticity considerations** when interpreting value-behavior inconsistencies in consumer behavior. The research is limited by the segment-specific nature of the sample, which consists primarily of digitally active consumers engaged in fashion-related online environments. As a result, the findings cannot be generalized to the entire population of consumers. Future research should therefore focus on **comparative**

analyses across different price segments of the fashion industry and explore experimentally how variations in price levels influence consumers' willingness to prioritize sustainability attributes in their purchasing decisions.

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Acknowledgements. This research was carried out within the framework of the project 3/2025 - International project. Artificial Intelligence and its impact on the Smart City strategy for the private and public sector.

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A ROLE OF INDUSTRIAL DEVELOPMENT ZONES IN POVERTY ALLEVIATION: A CASE STUDY**Mandisi Matyana^{1*}, Richard Mduduzi Mthethwa², Joana Katina³**^{1*,2} *Department of Public Administration, University of Zululand, South Africa*³ *Department of Business Technologies & Entrepreneurship, Faculty of Business Management, Vilnius Gediminas Technical University, Vilnius, Lithuania*³ *Institute of Computer Science, Faculty of Mathematics and Informatics, Vilnius University, Didlaukio St. 47, 08303 Vilnius, Lithuania*³ *Faculty of Electronics and Informatics, Vilniaus kolegija / Higher Education Institution, J. Jasinskio st. 15, 01111 Vilnius, Lithuania*^{1*} MatyanaM@unizulu.ac.za (Corresponding author); ² MthethwaR@unizulu.ac.za; ³ joana.katina@mif.vu.lt*Received 10 February 2026; accepted 19 April 2026; published 30 June 2026*

Abstract. According to the Sustainable Development Goals, numerous countries are making every effort to alleviate poverty among their citizenry by 2030. The primary goal of this study was to evaluate how Industrial Development Zones (IDZs), specifically in the province of KwaZulu Natal (KZN), contribute towards the alleviation of poverty in South Africa. Almost half of South Africa's population still lives in poverty, despite the abolishment of the oppressive apartheid regime since April 1994. The majority of the populace is impoverished. KwaZulu Natal is one of the most affected provinces by poverty in the country. Thus, the purpose of this study was to examine how KZN IDZs contribute to alleviate the level of poverty in this province. A qualitative approach was adopted to gather data from the participants of the study. i.e., KZN EDTEA officials, IDZ managers, economic and business analysts, and community members. The triangulation strategy was adopted to analyse the gathered data. The IDZ annual reports were considered to enhance the gathered data and the findings of the study. It was concluded that the IDZs serve to the communities is limited and primarily driven by business interests. They have an inadequate number of projects and activities to help the community because they are profit driven. Foreign Direct Investments influence employment rates because most of the money earned by IDZ enterprises is taken advantage of by foreign investors. Therefore, proper recommendations have been provided by the study.

Keywords: Development; Industrial Development Zones; KwaZulu Natal Province; South Africa; Poverty Alleviation**Reference** to this paper should be made as follows: Matyana, M., Mthethwa, R. M., Katina, J. 2026. A role of industrial development zones in poverty alleviation: a case study. *Insights into Regional Development*, 8(2), 20-32. <http://doi.org/10.70132/j8662289635>**JEL Classifications:** O1, O14, R58**Additional disciplines:** public administration**1. Introduction**

A central concern for the majority of the South Africans including all government operations is to lead an enhanced standard of living. Schedule 4 and 5 of the South African Constitution of 1996, stipulates the government functions for the three spheres, namely, national, provincial, and local government. These duties are undertaken by various institutions within these spheres. According to part A of schedule 4 of the South African Constitution, all spheres of government must ensure, maintain, and promote industry to ensure that the country can develop its own revenue as well as establish approaches to enhance the process.

The South African government established several industrial zones throughout the country, which are referred to as Industrial Development Zones (IDZs). These zones include, *inter alia*, Richards Bay, Dube Trade Port, East London, Coega, Tubaste, Saldana Bay, Atlantis, Musina, Maluti-A-Phofung, Nkomanzi, and Tshwane Automotive. The mentioned IDZs respond to the emerging and growing South African economy which were specifically constructed to generate new investment to increase foreign reserves and exports, whilst simultaneously promote the local trade. Furthermore, the IDZs are linked specifically with ports, that is, sea and the airports to facilitate the exportation of goods and services. Chauke and Ncanywa (2021) hold that South Africa is facing a conundrum of low levels of exportation and overdependence on raw production. Consequently, the promotion of economic complicity and increase in the economic infrastructure is vibrant to support the country's development and to fight poverty. Asuelime and Enaifoghe (2018) concurred with Chauke and Ncanywa (2021) that the SA government must motivate and incentivise to benefit and support Industrial Development Zones in the Republic. IDZs play a progressive role to transform the country's economy and enhance the standard of living. Hence, these zones play a significant role. Therefore, this study was conducted to assess the role of the KZN IDZs to alleviate poverty in the province.

2. Background

In South Africa, the IDZs were introduced on December 1, 2000. The Manufacturing Development Act (MDA, 1993) stipulates the establishment of IDZs. Since then, there has been much discourse over the viability of IDZs (Asuelime & Enaifoghe, 2018; Qumba, 2023). MDA prescribes the licensing and registration of the manufacturing businesses to facilitate industrial development. It also prescribes the establishment of the Industrial Development Zone programme. IDZs are recognised as part of the national industrial policy strategy which are established to support the manufacturing sector and integrate global economic initiatives.

Industrial Development Zones support various national masterplans and agreements which were signed by the South African government to support manufacturing in the industry sector. The current active South African master plans include, *inter alia*, Automotive Industry; Retail-Clothing; Textile; Footwear and Leather (R-CTFL); and Poultry sector master plan (dtic annual report, 2019/2020). These masterplans serve as a progressive step for what the South African government envisages to achieve for its citizenry. Therefore, the IDZs must support these master plans and agreements and provide for innovation and adapt planning (United Nation, 2017 cited in Menzori, De Sousa & Gonçalves, 2021). A masterplan is defined as a strategic plan of action by the government of the people to achieve a certain community goal.

IDZs should not only benefit businesses involved in the manufacturing sector but enhance the lives of the underprivileged. Furthermore, to enhance the general development of outcomes, for example, alleviation of poverty (Tim, Cui & Sheng, 2021). Singh and Misra (2022) postulated that the significance of corporation between businesses and the government is to invest in social responsibilities to inhibit, *inter alia*, crises such as food shortages and unequal economic conditions. They further asserted that business operations should collaborate with society in which they operate to create a prosperous economy, as well as ensure the quality of life for the community.

IDZs must play a crucial role in human development by generating employment; both directly and indirectly. Direct employment refers to job opportunities directly available in the IDZs, for example, intensive labour, while indirect employment refers to job opportunities available as the result of the IDZs in a certain community or area, for example, banking, hospitality, insurance, communication, and transport. Zheng (2021) point out that the industrial policies of the country should focus on generating employment and improve the communities' wages. IDZs continue to provide necessary support to the manufacturing sector to boost the Gross Domestic Product (GDP) and expand South Africa's export capabilities (Industrial Development Corporation, 2021) (see Figure 1).

Figure 1. 2021 IDZs economic output

Economic sector	Exports (R billion)	% change (year-on-year)
Agriculture, forestry & fishing	27.2	9.9%
Mining (total):	276.9	85.3%
PGMs	98.7	131.9%
Iron ore	49.5	64.6%
Gold	36.6	47.0%
Coal	22.4	9.4%
Other mining	69.7	121.4%
Manufacturing (total):	256.4	32.0%
Motor vehicles	51.0	46.7%
Iron and steel	27.7	46.5%
Machinery and equipment	22.2	38.6%
Chemical products (e.g., pharmaceuticals)	20.3	53.4%
Processed food	19.0	4.4%
Basic chemicals	17.3	10.3%
Parts and accessories for motor vehicles	16.7	87.8%
Non-ferrous metal products	15.1	34.5%
Other manufacturing	67.0	16.9%

Source: Industrial Development Corporation (IDC) (2021)

In 2021 the IDZs managed to support the manufacturing sector and yielded R256 billion for exports. This value was expected to continue to grow. Hence, the South African GDP is also expected to expand at an annual rate of at least 2.3% for the period between 2022 and 2026 (IDC, 2022). Apparently, the support that South African IDZ's receive from government boosts global trading for the state (Stats SA, 2018). The KwaZulu Natal (KZN) economy was doing well since 1997 (KZN Provincial Treasury Report, 2019/2020). It was further revealed that the KZN provinces were ranked as the second contributor towards the South African economy/GDP after Gauteng Province. This economic growth created job opportunities and absorbed new entrants in the labour market within the province.

The KZN province comprises of two IDZs, namely, Richards Bay and Dube Trade Port. However, in 2016, the Dube Trade Port was declared a Special Economic Zone (SEZ) due to the development and services it offers. Among the services that KZN IDZs offers includes warehousing spaces, assemblies for manufactured goods, zones for agriculture referred as agri-zones (the DTIC, 2020). In 2017 the premier of KZN declared the province's IDZs as potential points for investors; both locally and internationally. The premier further declared that KZN IDZs tackles socio-economic issues which the provinces faced. These claims by the premier were also supported by the KwaZulu Natal Department of Economic Development, Tourism and Environmental Affairs (2021). The province yielded a high industrial production with a total GDP of R488 billion which was boosted by the IDZs (IDC, 2022). Hence, export increased, agriculture diversified, and manufacturing grew.

The country's industrial policies which support the IDZs must also conform with information and communication technologies which advances manufacturing and production efficiencies (Chung & Chung, 2021). Successful industrial policies also depend on innovation technology to support production and the economy (Chang & Andreoni, 2020; Lerner et al., 2020). According to Fukuda (2020), technology advancements assist many businesses to relate to the speed of the market as well as remain competitive. The introduction of the 4th Industrial Revolution (IR) in the 21st century has created significant opportunities for the world, particularly, social and economic opportunities which also require appropriate responses from the government (Manda & Ben Dhaou, 2019). Furthermore, 4IR provides developing countries with a greater opportunity to enhance development, whilst also align with developed markets through technology.

Several challenges which South African IDZs face, namely: lack of job opportunities for the unskilled citizenry; range of reforms and attempts required for the labour market; inadequate future investment target; financial guarantees for the future; narrow financial support which focuses on the manufacturing infrastructure; limited areas which favour the IDZ's; and retrenchment of staff due to increased utilisation of artificial intelligence. Shahzad, Schneider and Jebli (2021) concurred with the above concerns and postulated that IDZs have the potential to produce carbon emission, which is extremely unhealthy for human health.

Various scholars have raised their scholarly views with regard to the performance of Industrial Development Zones and poverty. Sharaunga and Mudhara (2021) analysed the strategies which could be utilised to improve livelihoods of women. Furthermore, their findings revealed that due to the lack of capital and other socio-economic issues of households with families, especially women's struggle to free themselves from poverty. Therefore, it was recommended that humanitarian and development agencies prioritise contribute towards the enhancement of strategies for women to alleviate poverty. A study by Luiz (2003) conducted to establish how a country's key spatial development could inhibit unemployment and poverty. The findings revealed that the utilisation of industrial decentralisation is important to enhance regional poverty and unemployment because these assist to contribute towards the state's human capital and economic growth. In support of the above assertion, Karambakuwa et al. (2020) established that transition zones (IDZs) and SEZ plays a crucial role to enhance investment and the economy of a particular state, while also ensure the creation of employment opportunities and contribute towards key developmental factors to alleviate poverty.

The IDZs play an important role in the development of the state and its growth. According to the Special Economic Zones Act, the IDZs have an important role to play in the state's economy by ensuring that there is an industrial focus the regional development; arrangements for the provision of infrastructure and development; maintain both local and foreign investments; and generate new economic activities. More importantly, the IDZs should also create opportunities for decent work; provide social benefits for the local inhabitants or citizenry in their location; promote economic participation through Small-Micro-Medium-Enterprises (SMME's); including other cooperatives. The IDZs should also promote skills for either the relevant beneficiaries or stakeholders.

Given this significance of the IDZs in South Africa the above identified key duties of the IDZs endeavour to address various socio-economic issues which South Africa and its citizenry faces. The question is, how? The following aspects are probable solutions, namely, employ locals; give back to the community; provide opportunities for growth to local businesses and SMME's; as well as invest in the development of skills for both employees and local inhabitants. Wang and Zhang (2020) concurred those local investments, especially in communities by the industries could promote both economic and social progression. This is very important because it could alleviate poverty, while enhance the industrial structures and infrastructure, especially in the developing countries which are undergoing crucial phases of development (Raghutla, 2020; Wang & Zhang, 2020).

Although poverty is multidimensional, this study held that scourge that is facing South Africa, particularly in the KwaZulu Natal province is due to failures in the market to accommodate the needs of people. This assertion is supported by scholars such as Jackson and Jabbie (2020) who asserted that the inability of a market to meet optimal production or provide goods and services, results in the markets failure. Hence, the onset of poverty is exacerbated. Therefore, this study endeavoured to investigate the role of how KZN IDZs could maximise their actions alleviate poverty in the surroundings and nearby communities of the province. In countries such as China, sound IDZ management helps to alleviate poverty (Tang, 2008; Naeem, Waheed & Khan, 2020). China's economy has grown exponentially in the past three decades and has supported multiple citizens to be free from poverty (Naeem, Waheed & Khan, 2020).

3. Literature review

IDZ performance can be influenced or affected by certain aspects. According to Singh and Kumar (2021), the following factors could affect the performance of IDZs: GDP per capita; role of research institutions; population growth; inflation; market structure; capital investments; infrastructure development; and worker level of education. These factors could result in an imbalance to develop the state if not taken care of. Therefore, government intervention is very important through fiscal incentives and promote competition to ensure quality development (Yin et al., 2019). Wang et al. (2021) concurred and hold that the occupation of land by industries is sharply influenced by institutional factors and government control which relates to the market demand/s.

IDZs make a huge contribution towards the country's GDP due to its ability to encourage international trade (Grytten, 2020). High GDP automatically contributes positively to the infrastructure, economic growth and social welfare IDZs have been instrumental in promoting infrastructure development, which in turn facilitates economic growth (Haq, Saeed & Akram, 2021; Sichoongwe, 2025). A sound GDP also plays a crucial role to manage social-economic issues such as poverty (Kompa, 2021); and promote socio-economic development (Tram & Ngoc Huy, 2021). The functions of IDZs should conform with the aforementioned national country goals to ensure national stability for every constituent. Furthermore, IDZs should be able to eliminate developmental challenges faced by local sounding villages.

Supporting legislation and policies: Industrial Development Zones

In South Africa, the IDZs are governed and supported by several legislation and policies, which are listed, and explained below:

- South African Constitution of 1996
- Manufacturing Development Act No. 187 of 1993
- National Development Plan 2030
- Special Economic Zones Act No.16 of 2016
- Industrial Policy Action Plan (IPAP)
- National Industrial Policy Framework

Schedule 4-part B of the Constitution of 1996 prescribes the significance to promote industry in the Republic because it can support and advance the industrial economy; as well as provide a competitive advantage for persons and businesses involved in the industrial sector. The promotion of industry is important to advance the general wealth and create jobs for the constituents to boost the overall economic growth of the country and to fight poverty and other socio-economic issues.

In 1993, the Manufacturing Development Act was promulgated in South Africa. This Act aimed to support the industrial development zone programme throughout the country. It focused on IDZ operations and enterprises. IDZ administration comprises of a board; development and operations; determines its restrictions; activities and goods; provides customs rules and procedures to trade; as well as settles disputes.

The National Development Plan (NDP) aims to tackle inequality, poverty, and unemployment in South Africa. The NDP is a national policy which is South Africa's 'dream' for 2030. In chapter three, the policy focuses on the enhancement of the economy and employment. According to the NDP, to eliminate poverty and alleviate inequality, South Africa has to raise levels of employment and through productivity, grow the earnings of its workforce. The policy asserts that South Africa could achieve this by accelerating its exports; motivate and support the locally produced goods and services; solve challenges which the labour market faces, for example, the lack of skills, and better control of fiscal and monetary policies.

In 2014, the Special Economic Zones Act was introduced by the Department of Trade, Industry and Competition (DTIC) to enhance the IDZs and also focus on the regional trade. Special Economic Zones were introduced because of new developments in trade agreements through Brazil, Russia, India, China and South Africa (BRICS) agreements. However, the aim was not to abandon IDZs but to enhance their inadequacies because of new developments in the trade agreement. The Special Economic Zones Act provides for the expansion of the industrial focus to cover regional development; clear, systematic, and predictable framework for wider development; extended financing framework to allow planning; and governance arrangements beyond the provision of the infrastructure. The Industrial Policy Action Plan (IPAP) also plays a mainstay role in the development and operation of IDZs in South Africa. This action plan accentuates the significance of an increasing GDP per capita, which is characterised by slow movement into non-traditional tradable goods and services that are competitive in the domestic and export market; adapt to the South African economy into the 21st century; ensure the long-term intensification of industrialisation processes; and promote broader-based paths in the industrialisation sector to promote participation, especially of the historically disadvantaged majority. The National Industrial Policy Framework (NIPF) also plays a vital role for IDZs in South Africa. This policy framework was designed to outline the government's approach to manage the industrialisation trajectory and align private and public sector efforts towards one state or development goal. NIPF primarily focuses on enhancing growth and employment, while much consideration is given to low-skill intensity industries for non-traditional tradable goods. This policy framework encourages coordination across all government departments to achieve the industrial development goals in consideration with the macro-economic and educational objectives. NIPF covers thirteen strategic programmes including industrial financing; trade policy; industrial upgrading; skills and education for industrialisation; innovation and technology; coordination, capacity, and organisation; as well as finance and services to small enterprises.

Poverty in the African continent and in South Africa

Poverty is defined as a process of being extremely poor. One can say poverty is whereby a person cannot afford basic necessities or have adequate financial support to maintain the standard of living. Poverty can be attributed to various factors such as social, economic, and political (Matyana & Thusi, 2023). The alleviation of poverty has been the focus of the debate for many governments across the globe (Fransman & Yu, 2019). Governments are trying by all means to alleviate and tackle the scourge, because it creates poor conditions of living for the state constituents. Different economic goals and programmes have been compiled and implemented by many governments to ensure the alleviation of poverty. The Sustainable Millennium Development (SDGs) goals adopted by the United Nations (UN) in 2017 pledges to ensure zero percent poverty in Africa by 2030. Africa is the leading continent globally that faces poverty, and it is envisaged that this crisis will impact severely on its growing population. Poverty on the African continent is one of the most visible and escalating socio-economic issues facing most citizens. They further hold that government policies must be formulated such that these respond to the alleviation of poverty.

Previous studies have revealed that the world is currently making significant strides toward the eradication of global poverty. Furthermore, the fact that a portion of the population is financially susceptible affects the economic development of a country. It has affected people who live below minimum standards globally and has become a social, political, and economic challenge, particularly in developing and third-world countries. Poverty results in hardship and deprivation every day (Thusi, Matyana & Jili, 2023). Since poverty is on the increase globally, it is a significant issue which needs to be addressed by the world at large (Matyana & Mthethwa, 2022).

This study perceived poverty from the monetary aspect, social exclusion and political participation. Monetary aspects examine the lack of financial means to purchase or meet needs to survive. Furthermore, household income and individuals' expenditure are considered. On the other hand, it was also held that poverty is as a result of the country's political dynamics and social exclusions. Political dynamics could be the decisions and actions taken by those in power which could exacerbate poverty (Brady, 2019; Myeni, Matyana, & Mthembu, 2024). A social

exclusion involves breaking social links, restrict access to institutions, eliminate possibilities for social engagement, and weaken social cohesion and solidarity (Orum, 2019). Both it and poverty are a result of it. In addition to age, gender, sexual orientation, disability, poverty, unemployment, and other stigmatised factors, exclusion may be based on cultural identities (Brady, 2019; Matyana & Sibiya, 2025). These several exclusion-related dimensions could collide or accumulate over time and space. Spatial manifestations of social exclusion amplify the effects of other dimensions. Insiders and institutions use physical barriers, as well as social and metaphorical ones to exclude and withhold resources and connections. Furthermore, this study perceived poverty in a Keynesian school, which holds that poverty is as a result of selected issues, for example, unemployment. In other words, it is involuntary. It is due to market failure and requires government to regulate the latter, more especially at the macro level.

4. Problem statement

South Africa is a developing state faced with several developmental issues. Therefore, various attempts should be undertaken by the government to ensure that the citizenry lives an improved quality of life. Poverty is dominant in the of these developmental issues, which requires strategic attempts towards a holistic movement. To establish these movements, globally, countries have gathered to share ideas and knowledge, for example, the Sustainable Development Goals (SDGs). These plans require coordination between government and the private to enhance future development and outputs for the country.

The South African government has worked very hard to promote Industrial Development Zones (IDZs) in South Africa since 1994 (Department of Trade, Industry and Competition, 2020/2021 Annual Financial Report). According to Tang (2008), Industrial Development Zones are considered important vehicles to create employment; attract international investment and boost exports. Tang (2008) holds that these zones are vital so that the economy can perform better, as well as promote an enhanced standard of living for its constituents.

South Africa is almost three decades into democracy, but still faces serious unemployment, poverty, and poor Gross Domestic Product, which deprives the majority of its citizenry from living a comfortable life (Masipa, 2018). In the State of the National Address (SONA) 2022, the honourable president acknowledged that the country was facing a burden of socio-economic issues, for example, high poverty, and unemployment. The president also accentuated that as government, they are working tirelessly to ensure that the South African Industrial Development Zones are well-managed to contribute towards the GDP and encourage foreign investment to manage the country's developmental concerns.

The IDZs play an important role in the state development and growth. According to the Special Economic Zones Act, these zones contribute towards the state's economy by focusing on industry to develop the region; strategise provisions for the infrastructure and its development; maintain both local and foreign investments; stimulate new economic activities. More importantly, the IDZs should also create decent work opportunities; provide social benefits for the local inhabitants in its vicinity; promote economic participation through Small-Micro-Medium-Enterprises (SMME's); and other cooperatives. The IDZs should also promote skills whereby both the recipients and the stakeholders could benefit. Given this importance of the IDZs in South Africa, one can note that the above identified key duties of the IDZs endeavour to address various socio-economic issues which South Africa faces. However, the question is how? Possibly by employing locals, give back to the communities, provide opportunities for growth for local businesses and SMME's, as well as invest in skills development programmes for both employees and local inhabitants. Wang and Zhang (2020) concur that local investment or investing to the community by the industries promotes both economic and social progression. This is very important as it boosts the alleviation of poverty, while enhances the industrial structures and infrastructure, more especially in developing countries because they are under critical phases of development (Raghutla, 2020; Wang & Zhang, 2020). The rate of poverty has been increasing disproportionately in South Africa. The KwaZulu Natal province,

Limpopo province and Northwest province are the most affected by high poverty rates in South Africa. Given the high rates of poverty in these provinces, the government is expected to provide financial support to uplift the citizens. It is evident from the above discussions that no study had been conducted to analyse the role of IDZs to alleviate poverty, particularly, in KZN. Furthermore, China has proven that regular maintenance of Industrial Development Zones contributes towards the GDP which in turn helps to alleviate poverty (Sun et al., 2020; Chen, Su, Wang, Wang and Zhao, 2021). Therefore, this study assessed the role played by Industrial Development Zones to alleviate poverty in the country, particularly in the KwaZulu Natal Province.

5. Methodology

The study's participants' data was gathered using a qualitative methodology, particularly interviews were used. For example, IDZ managers, KZN EDTEA officials, business and economic analysts, and community people were interviewed. The collected data was analysed using the triangulation technique, where the annual reports for KZN IDZs were consulted. The IDZ annual reports were thought to improve the data collected and the study's conclusions. This study comprised of a total of 48 participants (refer to Table 1 below). The data was collected from all study participants in person on scheduled interviews. The ethical clearance was issued by the University of Zululand Research Ethics Committee. Questions were differed for the participants, for example government officials were asked about government strategies to keep IDZs viable for the South African economy, while community citizens were asked about the services and support, they get from the IDZs.

Table 1. Sample size of participants

Participant/s	Number of participants	Reason for inclusion
Government officials from the KZN provincial Department of Economic Development, Tourism and Environmental Affairs (kznedtea).	2	Provincial government officials are included in this study because they regulate and oversee IDZ policies. They also liaise with national government with regard to IDZ operations. The following officials were targeted: Deputy Director General responsible for IDZs and the community engagement or liaison officer.
IDZ management	6 (3 in Dube Trade Port SEZ; 3 in Richards Bay IDZ)	The IDZ management oversees the day-to-day functioning thereof. The researcher selected these officials based on their occupation or roles within the IDZs. The production or operation unit official within the IDZ (operational manager), followed by the second official from the community engagement or liaison office, and lastly an official from human resource (HR) division.
Economic and business analysts	10	Economic and business analysts were included because of their expertise to analyse and comprehend the economy. The objective was to acquire their perceptions of how South African IDZs respond to socio-economic issues, particularly poverty; and probable strategies they intend implementing to enhance coordination in the near future. The study endeavoured to acquire these analysts at universities, particularly, lecturers. At least 5 potential lecturers at University of Zululand, 5 at University of KwaZulu Natal were selected.
Community citizens	30 (15 in Richards Bay city; 15 in Durban)	Citizens were also included in this study because they are affected by poverty. Their perceptions are very important. They could raise concerns related to the South African IDZs to change their day-to-day quality of life. This study concentrated on ordinary citizens located close to the IDZs, and greatly affected by poverty. The aim of the study was to evaluate the extent to which the KZN IDZ responds to the community needs or reciprocates communities near to them or in the regions in which they are located and further afield.
Total number of participants: 48		

Source: designed by the authors

6. Findings and recommendations

The findings of this study were analysed based on the identified themes during the data collection process. NVivo software also assisted to identify these themes. The questions were posed to the selected participants to achieve the objectives of this study. Furthermore, to establish a balance of the ideas and perceptions of the role of IDZs to address poverty in KZN.

Lack of IDZs economic output to solve the needs of the locals

Based on the findings, it was noted that the KZNs IDZs perform very well and the economic output is satisfactory, considering that the province's economy is ranked as number two, *i.e.*, after Gauteng province. However, such economic output does not really assist the needs of the local people, because most of the companies which operate in the KZN IDZs, for example, Bell, South32 Hillside Aluminum, and ARB electronic wholesalers are international companies. They operate in South Africa based on contracts with both the provincial and national governments. As a result, most of the income these companies generate leaves the country, *i.e.*, foreign direct investments. It can be inferred that these companies do not really care about the locals' standard of living and only concerned with economic output and profit.

Therefore, the study recommended that the national government intervenes to ensure that these international companies invest adequately to meet the needs of the community. In other words, these companies must be directed to assist the country and the government to alleviate poverty, including socio-economic issues such as unemployment, poverty, inequality, and crime. It is also recommended that the government invests more in local businesses to enable them to operate in these IDZs. The government should consider inviting new national companies to these IDZs so that the generated income can meet the needs of South Africans rather be transferred to foreign direct investors. Moreover, the government must support innovation to enhance the IDZs output, nationally.

Inadequate provincial IDZ policies

This study also revealed that industrial policies which governs the KZNs IDZs are formulated and adopted at the national level, *i.e.*, these provide guidance based on the national perspective and not the province. These policies includes South African Constitution of 1996, Manufacturing Development Act No. 187 of 1993, National Development Plan 2030, Special Economic Zones Act No.16 of 2016, Industrial Policy Action Plan (IPAP), and National Industrial Policy Framework. Generally, national and provincial government's needs differ, hence, their scope to operate differs. This also applies to the formulated policies. Provincial government formulates legislation for its province. It was inferred that the national policies which governs KZN IDZs are downward than a bottom-up approach. These policies fail to talk to the current socio-economic issues of the province, for example, absolute poverty. The levels of poverty in the province escalates and no action plan has been devised by the IDZs and provincial government to alleviate the scourge. Therefore, the study recommended that provinces should be allowed to formulate provincial legislation to govern IDZs rather than only rely on national policies. This could ensure that national policies are supported and enhanced through a bottom-up operation strategy and enable provinces to manage socio-economic concerns such as alleviation of poverty.

Management issues (corruption and nepotism)

The study also revealed that there basically two managerial issues which affects the output and the efficiency of the KZN IDZs. These issues affect the IDZs differently, however, these are common and has dragged the good reputation of the IDZs down and in the process affected output. Based on the findings of the study, it was noted that some of the officials who manage the IDZs are involved in corrupt practices, for example, award contracts to low performing companies. On the other hand, the members of the community have complained about bias practices when filling vacant posts, accused the IDZs officials of awarding posts to their relatives, friends and family members. This nepotism takes place despite the national recruitment policies, for example, Employment

Equity Act, BBE, and Labour Relations Act. The study recommended that all organizations involved in the IDZs must adhere to strict ethical practices. Those found guilty of illegal practices must be dismissed without amnesty. They must also be held accountable for all funds lost due to misconduct. This could ensure that all officials behave within the limits of good governance and the IDZs output is maximised and not compromised.

Insufficient community programmes to alleviate poverty

The findings revealed that the KZN IDZs are trying their best to give back to the communities wherein they are located. They provide community programmes for the citizens, for example, support selected SMMEs, farmers, offer bursaries and sponsorships, internship trainings and school uniforms to the poor children. These programmes are important for the surrounding communities and plays a crucial role to transform them; however, the zones are not really assisting the province to alleviate both poverty and unemployment. These programmes only assist the government and the people of KZN in the long term. It can be inferred that due to this shortcoming, the KZNs province needs to implement strategies swift to alleviate poverty. It was recommended that the KZN IDZs establish a platform to assist the unemployed youth. The establishment of IDZs School of Excellence, where the local youth can be trained in the specific skills needed by these IDZs is strongly recommended. This would increase their skills specifically needed by the IDZs. Moreover, the government must also increase the number of companies which operate in the IDZs to ensure that more people can be employed, and more poverty alleviation programmes are established and supported. This would include the support of local innovation and the financial support for the young emerging business groups and individuals.

KZN stubborn poverty levels

The findings revealed that the selected community members complained about the high levels of poverty in KZN province. Such levels give rise to many socio-economic illnesses within society, for example, HIV and AIDS, crime, hunger, and teenage pregnancy. Such social illnesses result in unfavourable living conditions for the communities. Therefore, various actions are needed in this regard. It is recommended that the government support local entrepreneurs by creating employment opportunities for the multiple citizens in the future. Furthermore, support social investment programmes, for example, give back to the community. IDZs must appoint a specific committee which has oversight authority over specific roles to support local communities to alleviate poverty in South Africa. The government should also try to increase the number of industries in South Africa by supporting local public enterprises to be part of the IDZs. This could assist to overcome the effects of foreign direct investments by international companies and increase employment opportunities for the local citizenry.

High use of artificial intelligence

It was noted that IDZ companies and divisions rely more on technological advancements and artificial intelligence to enhance production and output. Profit is the ultimate objective. This implies that they tend to focus only on profits than community needs, for example, alleviate poverty and create employment for the locals. This approach undermines the transformation of the local communities. Therefore, it is recommended that the government regulates the utilisation of technology and artificial intelligence in IDZs. Although technology is important for production, it should not be utilised such that the needs of the community is neglected. It is recommended if it is possible the minister of DTIC must enforce regulations that IDZ companies purchase required technological equipment locally, rather than from abroad. This would empower local employment in other sectors. IDZs must also be encouraged to provide training and development to the locals, for example operate technological devices so that skills need not be brought in from abroad to operate such equipment.

7. Conclusion

Poverty has a detrimental effect in certain countries, especially on the African continent. It forces people to live under harsh conditions and they cannot enjoy their life freely due to inflation and inability to afford basic living necessities. In terms of the Sustainable Development Goals, many countries focus on alleviating poverty by 2030.

This study was undertaken to assess the role of IDZs to alleviate poverty in South Africa, particularly, in KZN province. It is almost three decades since South Africa acquired its freedom from the oppressive racist apartheid system, however, almost half of its population is still live in the shadow of poverty and most live below the poverty line. The KwaZulu Natal province is one of the most affected provinces by poverty in South Africa. Therefore, this study endeavoured to analyse the role of KZN IDZs to alleviate poverty in the province. The aim was to assess whether these Industrial Development Zones do their best to address poverty-related issues in the province and have they strategised adequately to change the lives of the local inhabitants. Based on the findings it can be concluded that the IDZs are more economically driven and do less for the communities. They are profit driven and lack adequate projects and programmes to support the communities. The employment rate is also affected because of Foreign Direct Investments. In other words, most of the income generated by the IDZ companies leaves the country and the international investors invest these in more profitable industries, while the expected impact on the lives of the South African poor is not enhanced. The study perceived this effect as a symbol of failure to address poverty in South Africa. Therefore, it is recommended that the country, particularly, the government focuses on supporting the local trade, businesses, and investors. Furthermore, mechanisms should be established to ensure that international investors are limited and promote local investors and businesses. This strategy could help the country to ensure and establish Export Processing Zones in the future and utilise “go global” trade strategy as in China. This strategy would assist to limit the impact of foreign direct investment in the country and ensure that more of the generated income benefits the local economy and its citizens.

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Author Contributions: *M Matyana*: Introduction, Background, Problem Statement, Literature, Findings and Discussion, Conclusion; *RM Mthethwa*: Review and editing; *J. Katina*: editing and funding. The authors have read and agreed to the published version of the manuscript.

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SOCIAL MEDIA PRESSURE AND ITS EFFECTS ON YOUTH BEHAVIOUR AND WELLBEING: A CASE STUDY FROM SOUTH AFRICA**Babalo Kundlwana ¹, Samson Nambei Asoba ^{2*}, Nteboheng Patricia Mefi ³, Mateus Vicente Justino ⁴**^{1,2*,3,4} Walter Sisulu University, Butterworth, 4960, Eastern Cape, South AfricaE-mails: ¹ babalozenzo@gmail.com; ^{2*} sasoba@wsu.ac.za (Corresponding author); ³ nmefi@wsu.ac.za; ⁴ mjustino@wsu.ac.za

Received 20 January 2026; accepted 19 April 2026; published 30 June 2026

Abstract. Social media has become an integral part of young people's daily lives, shaping social interaction, emotional wellbeing, and behavioural choices. While global studies highlight both positive and negative effects, limited qualitative research has explored these dynamics within rural South African contexts. The purpose of this study is to understand how social media affects young people's daily lives. The study adopted a qualitative, interpretivist approach. It was conducted in the OR Tambo District Municipality, located in the Eastern Cape Province of South Africa, a predominantly rural area characterised by high youth unemployment and widespread social media use. Using purposive and snowball sampling, data were collected from twenty-four (24) social media users using Google Forms as the semi-structured interview guide and administered via WhatsApp. The data were analysed using thematic analysis. The findings indicate that social media outcomes in young people's lives are twofold; it may have a positive effect on them and put them at risk. Participants reported motivation, emotional coping, and inspiration, alongside exposure to peer pressure, financial risk, and online scams in the use of social media. They demonstrated critical awareness and self-regulation, and expressed concern about online safety and the need for greater guidance and platform accountability. This study contributes to knowledge by challenging deficit-based narratives that portray young people as passive victims of social media. It foregrounds the rural South Africa social media users' perspective and advances eco-humanistic scholarship by situating social media use within interconnected social, economic, and ethical systems.

Keywords: social media pressure; social media use; youth behaviour; youth wellbeing; South Africa

Reference to this paper should be made as follows: Kundlwana, B., Asoba, S.N., Mefi, M.P., Justino, M.V. 2026. Social media pressure and its effects on youth behaviour and wellbeing: a case study from South Africa. *Insights into Regional Development*, 8(2), 33-50. <http://doi.org/10.70132/k6466377455>

JEL Classifications: O03**Additional disciplines:** sociology; psychology**1. Introduction**

In the contemporary digital era, social media has become a pervasive force shaping the lives of young people across diverse socio-cultural contexts. Platforms such as TikTok, Instagram, WhatsApp and Facebook are not merely tools for communication or entertainment for many youths; they function as central arenas for identity formation, social comparison, belonging, and social interaction (West, Rice & Vella-Brodrick, 2024; Bačík et al., 2025; Gulevičiūtė et al., 2025). Globally, a substantial proportion of adolescents and young adults engage with social media daily, with sustained use influencing both psychological and social processes that underpin their behaviour and wellbeing (Ivančík & Andrassy, 2024, 2025; Pazdur, Tutus & Haag, 2025). This complex digital immersion raises critical questions about how social media exposure can contribute to experiences of peer pressure, emotional stress, and health-related behaviours, particularly in contexts where socioeconomic vulnerability intersects with pervasive digital engagement.

A growing literature underscores the multifaceted influence of social media on youth wellbeing (Pazdur, Tutus & Haag, 2025; Sheng, 2025). Social media use is associated with both positive outcomes, such as social support and access to health information, and negative consequences, including anxiety, depression, and maladaptive comparisons (Sheng, 2025). The literature also indicates that problematic patterns of social media engagement can impair mental health, especially where upward comparison processes and algorithm-driven content contribute to negative self-perceptions (Pazdur, Tutus & Haag, 2025; Tveit & Biele, 2025). For instance, daily social media interactions often involve comparing one's own life with curated depictions of peers or influencers, a process found to predict diminished subjective wellbeing through higher negative affect and lower self-worth among young users (Pazdur, Tutus & Haag, 2025; Sheng, 2025).

Beyond psychological dimensions, social media also shapes behavioural choices. Research indicates that frequent exposure to peers' lifestyles and feedback mechanisms may increase the likelihood of engaging in risky behaviours, including substance use and unsafe sexual practices, by normalising such behaviours through peer endorsement and popularity cues (Maas, Bray & Noll, 2019). Relatedly, studies have documented significant associations between social media use and sexual risk behaviour among adolescents, suggesting that peer influence communicated through online platforms can correlate with real-world health outcomes (Maas, Bray & Noll, 2019; Farré et al., 2020; Paulus et al., 2024). These behavioural associations point to the broader role those digital environments play in young people's decision-making contexts.

Despite the prevalence of studies in high-income contexts, there remains a notable gap in qualitative research on how social media dynamics are experienced among youth in rural and under-researched regions of the Global South, such as the OR Tambo District in Eastern Cape, South Africa (Shava & Chinyamurindi, 2018; De Doncker & McLean, 2022). Rural communities often contend with unique socioeconomic challenges, including limited access to offline resources, economic precarity, and differentiated cultural norms, all of which may moderate how social media influences behaviour and wellbeing (Gregory et al., 2023). To date, there is limited empirical insight into how young people in such contexts interpret and handle social media pressure, upward comparison, risk, and emotional responses. Addressing this gap is essential for grounding global digital wellbeing conversations in diverse lived experiences and for informing culturally sensitive interventions.

2. Research problem

The alarming adverse effects of excessive social media use on young people call for further research to examine how social media pressure influences youth behaviour, emotions, and wellbeing, especially in South African rural areas. Despite positive outcomes of the use of social media, which include social support, access to health information (Sheng, 2025), maintaining closer links with family and friends, there is a great concern of adverse effects of its excessive use (Shava & Chinyamurindi, 2018; De Doncker & McLean, 2022; West, Rice & Vella-Brodrick, 2024; Sheng, 2025). A previous study indicates that increased exposure to peer-endorsed social media content can normalise risk-taking behaviours (Boer et al., 2021). Other studies have highlighted that excessive use can contribute to earlier sexual initiation, substance use (Boer et al., 2021), depression, maladaptive comparisons (Sheng, 2025), and mental health impairment (Pazdur et al., 2025; Tveit & Biele, 2025). Although the global literature provides important insights into the patterns and motivations of youth social media use, three key limitations remain. First, most studies are conducted in high-income Western contexts, often using quantitative survey designs. Second, limited research examines how rural youth in the Global South integrate social media into their daily socioeconomic realities. Third, while motivations are widely studied, fewer qualitative studies explore how young people themselves interpret and explain their patterns of engagement. In support of the above, Shava and Chinyamurindi (2018) conducted a quantitative study to assess the effects of knowledge sharing, habit, and obligation on the use of social media by youth in a rural area of South Africa. Thus, they suggested that a qualitative study of habitual social media use should be undertaken to gain deeper insights into young people's realities in rural South African settings (Shava & Chinyamurindi, 2018). Similarly, a quantitative study on the

negative effects of the use of social media among youth in Cape Town, by De Doncker and McLean (2022:6), suggests that a supplementary approach, such as the qualitative method using "in-depth interviews, should prove useful in determining motivations and explanations for some of the findings". They further ascertained that "a more comprehensive study will further elucidate the risk factors associated with excessive social networking, which will undoubtedly benefit all social media users" (De Doncker & McLean, 2022:6). There is therefore insufficient qualitative evidence from rural South African settings that explains how local economic conditions, cultural norms and digital access realities shape patterns and motivations of social media use. As social media continues to evolve, West et al. (2024) suggest that ongoing research into its influence on the development and wellbeing of adolescents and young people is critical.

In response to this gap, the present study seeks to understand how social media affects young people's daily lives within a rural South African context. This gap is particularly relevant in districts such as OR Tambo, where high unemployment, geographic marginalisation and digital expansion intersect. Thus, this study's objectives are:

- Objective 1: To explore patterns and motivations of social media use among young people in the OR Tambo District.
- Objective 2: To examine how social media exposure contributes to peer pressure, self-comparison, and lifestyle expectations among young people.
- Objective 3: To investigate the influence of social media on youth behaviour in relation to engagement in risky activities.
- Objective 4: To explore the effects of social media use on young people's emotional wellbeing, coping strategies, and perceptions of online safety.

This study assumes that understanding these dynamics is crucial not only for scholarly knowledge but also for designing targeted digital literacy programmes, psychosocial support strategies, and public health interventions that respond authentically to young people's realities in rural South African settings. Such insights can help bridge the gap between global theoretical frameworks and local lived experiences, advancing a more inclusive eco-humanistic understanding of the digital age.

4. Literature review

Patterns and motivations of social media use among young people

The use of social media has been indisputably integrated into young people's everyday lives, serving multiple social, emotional, and informational functions. Studies consistently show that adolescents and young adults use social media platforms primarily for communication, entertainment, information-seeking and self-expression (Verduyn et al., 2017). These platforms provide spaces for maintaining friendships, forming identities and accessing social support, particularly during transitional life stages.

During adolescence and early adulthood, identity formation, peer approval, and belonging become central concerns, and social media can offer visible, immediate feedback through likes, comments, and shares (Nesi, Choukas-Bradley & Prinstein, 2018). Thus, this interactive structure may give motivations for social media use, reinforce continued engagement and shape how young people present themselves online. It has been observed that a potential social media user can be motivated to be an active or passive user. Active use (such as messaging, commenting, and content creation) is often associated with more positive outcomes. In contrast, passive consumption (scrolling and viewing others' posts) has been linked to lower wellbeing (Verduyn et al., 2017). Passive use may increase opportunities for upward comparison and feelings of exclusion, particularly when users observe curated portrayals of peers' success (Vogel et al., 2014). In contrast, active engagement may strengthen social capital and perceived social support (Ellison, Steinfield & Lampe, 2007). Motivations for use, therefore, matter, as they shape how young people interact with content and peers online.

Beyond interpersonal motives, social media use is also shaped by broader structural conditions. In low- and middle-income contexts, digital platforms serve as tools for economic survival, information access, and opportunity-seeking. In South Africa, social media is believed to be used by youth to seek employment information, follow news and escape daily stressors (Shava & Chinyamurindi, 2018). Similarly, research in other African contexts shows that young people use social media for small-business promotion, informal trading, and networking (Chukwuere & Chukwuere, 2017). These uses could also explain how digital spaces become integrated into livelihood strategies where unemployment levels are high.

Social media exposure, peer comparison, and lifestyle expectations

Previous research has shown that when young users frequently interpret online portrayals as realistic benchmarks, despite knowing that content is often edited or exaggerated, they are more likely to feel pressured to achieve similar lifestyles, appearances, or relationships, even when such standards are unattainable (Kross et al., 2013). Similarly, another research indicates that passive exposure to idealised profiles can reduce immediate life satisfaction and mood (Appel, Gerlach & Crusius, 2016). However, another central concern in social media research is the impact of social comparison on users. Platforms encourage constant exposure to curated images of success, beauty and material achievement, which can influence how young people evaluate themselves. Research shows that upward social comparison on social media is associated with lower self-esteem and increased negative affect (Vogel et al., 2014; Dinh, & Lee, 2025)

Social comparison theory explains that individuals evaluate their own abilities and worth by comparing themselves to others, particularly when objective standards are absent (Festinger, 1954). In digital environments, where idealised self-presentations are common, these comparisons become frequent and highly visible. Thus, this frequent social comparison can increase depressive symptoms over time (Nesi & Prinstein, 2015), as image-based platforms have been linked to body dissatisfaction and appearance-related concerns, especially among young women (Fardouly & Vartanian, 2016). It has been observed that peer approval mechanisms such as likes, comments, and follower count can further reinforce comparisons and perceived social status. However, emerging research suggests that the impact of social comparison is not uniform. Some adolescents engage in critical evaluation of online content and recognise selective self-presentation, which may buffer negative outcomes (Valkenburg et al., 2022). This indicates that individual interpretation and digital literacy may play an important role in shaping emotional responses.

Influence of social media on youth behaviour and risk engagement

Beyond emotional effects, social media has been linked to behavioural outcomes, including engagement in risky activities. Research indicates that social media can normalise risk-taking behaviours by increasing exposure to peer-endorsed content related to substance use, unsafe sexual practices and fraudulent opportunities (Boer et al., 2021). According to Social Learning Theory, individuals learn behaviours by observing and imitating others, particularly when those behaviours appear rewarded. In digital environments, visible peer approval through likes and shares may function as such reinforcement, making certain behaviours appear socially acceptable or desirable.

Exposure to alcohol-related content on social networking sites has been associated with increased alcohol use among adolescents and young adults (Litt & Stock, 2011). Online peer networks can amplify perceived norms, creating the impression that certain behaviours are widespread even when they are not. Adolescents are more likely to consider or engage in risky behaviour when such behaviour is portrayed positively or presented as socially rewarding online (Kross et al., 2013). This phenomenon may increase pressure to conform. In addition to the above, financial and economic risks have become increasingly prominent. Young people may encounter online gambling promotions, cryptocurrency schemes, fraudulent job advertisements and deceptive marketing practices. Studies indicate that exposure to online gambling content predicts higher gambling intention among youth (Derevensky et al., 2019; Varmus et al., 2026). In contexts characterised by unemployment and economic hardship, promises of quick financial gain may carry strong appeal. This is particularly relevant in South Africa,

where youth unemployment remains structurally high and digital platforms often serve as informal job search spaces (Shava & Chinyamurindi, 2018).

Emotional and psychological effects of social media on youth wellbeing and coping

Previous research has also associated heavy or problematic social media use with increased anxiety, depressive symptoms and reduced life satisfaction, although effect sizes vary (Orben & Przybylski, 2019). Similarly, another study indicates that moderate use may not be harmful, while excessive or compulsive engagement is more strongly associated with psychological distress (Keles, McCrae & Grealish, 2020). However, the distinction between active and passive use is particularly significant in this matter. Passive consumption of content, such as scrolling without interaction, has been linked to increased envy, rumination, and negative mood (Verduyn et al., 2017). In contrast, active engagement, including messaging and supportive interactions, may enhance feelings of social connectedness. This suggests that the emotional consequences of social media depend not merely on duration of use but on patterns of interaction.

It has been observed that negative emotional experiences are frequently tied to cyberbullying, fear of missing out (FoMO) and constant comparison with peers (Twenge et al., 2018). Cyberbullying has been consistently associated with anxiety, depressive symptoms and, in severe cases, suicidal ideation among adolescents (Kowalski et al., 2014). Unlike traditional bullying, online harassment can occur continuously and reach wide audiences, intensifying emotional impact. At the same time, social media can provide meaningful emotional support. Online communities may offer spaces for self-expression, identity exploration and peer solidarity, particularly for marginalised youth (Best, Manktelow & Taylor, 2014). During periods of stress, such as academic pressure or unemployment, digital platforms may facilitate access to encouragement, information and coping resources (Best, Manktelow & Taylor, 2014; Kozová et al., 2025). COPING strategies vary widely. Drawing on Stress and Coping Theory, young people may adopt problem-focused coping strategies, such as limiting screen time, blocking harmful users, or adjusting privacy settings, or emotion-focused strategies, such as seeking reassurance and social support online.

It has been reported that concerns about privacy breaches, identity theft, online scams and harassment may generate anxiety, particularly in contexts where digital literacy training is limited (Livingstone & Smith, 2014). This indicates that perceptions of online safety can also influence emotional wellbeing. Livingstone and Smith (2014) argue that young people often navigate online risks through trial and error rather than structured guidance, increasing vulnerability. In environments marked by socioeconomic hardship, exposure to exploitative schemes and misinformation may further heighten emotional strain. The literature, therefore, highlights a dual impact of social media on youth wellbeing, offering both emotional support and psychological strain.

4. Research design and methodology

Research paradigm

This study was grounded in the interpretivist paradigm, which assumes that reality is socially constructed and best understood through individuals' lived experiences and meanings. This paradigm was appropriate for exploring how young people perceive, experience, and interpret social media pressure within their social and digital environments.

Research approach

A qualitative research approach was adopted to gain in-depth insights into participants' subjective experiences of social media use, pressure, behaviour, and wellbeing. This approach enabled rich, descriptive accounts that could not be captured through quantitative methods.

Research design

The study employed an exploratory qualitative research design, suitable for investigating and understanding phenomena within specific social contexts. This design enabled the capture of diverse perspectives and facilitated a deeper understanding of how social media pressure manifests in everyday life.

Target population

The study was conducted in OR Tambo District Municipality, Eastern Cape, South Africa. The target population consisted primarily of young people aged 18 and above, with participation also open to older individuals who actively use social media platforms. All participants were required to be active users of at least one social media platform.

Sampling techniques and sample size

Purposive sampling was used to identify participants who met the inclusion criteria of active social media use and willingness to share personal experiences. This was complemented by snowball sampling, in which initial participants referred others in their social networks. These non-probability sampling techniques were appropriate for accessing information-rich participants within a community-based setting. A total of 24 participants completed the interview guide. The final sample size was guided by the principle of data saturation, which occurs when no new ideas, insights or themes emerge from additional data (Guest, Bunce & Johnson, 2006). Saturation was reached before and confirmed at the 24-response mark, as recurring patterns were evident across participants.

Data collection methods

Data were collected using an online semi-structured interview guide developed in alignment with the study objectives. The guide consisted of open-ended questions structured around the four study objectives, enabling participants to provide detailed qualitative responses. The instrument was created using Google Forms and distributed to participants via WhatsApp due to its accessibility and widespread use among youth in the study area. Data collection commenced on 03 October 2025 and continued for three weeks, concluding on 24 October 2025. The Google Form was subsequently configured to stop accepting responses once sufficient qualitative data had been obtained for analysis. All responses were automatically recorded within the platform and downloaded for thematic analysis.

Data analysis

Data were analysed using thematic analysis, following a systematic process of familiarisation, coding, theme development, and refinement. This method enabled the identification of recurring patterns and meanings across participants' responses while remaining grounded in the data. Themes were developed inductively and organised according to the study's research objectives.

5. Data presentation and data analysis***Demographic characteristics of participants***

This qualitative study involved twenty-four (24) participants, all of whom were active users of social media and residents of the OR Tambo District municipality, Eastern Cape, South Africa. The demographic characteristics presented below provide contextual background to the participants whose experiences and perspectives informed the study findings. In terms of gender, the sample comprised thirteen female participants and eleven male participants, reflecting a relatively balanced representation of male and female perspectives. This balance allowed for diverse insights into how social media pressure is experienced across genders. Participants' ages ranged from 19 to 37 years. Most participants were young adults, with the majority aged 21-25, which aligns with the study's focus on youth experiences with social media. Specifically, one participant was 19 years old, one was 20 years old, four were 21 years old, three were 22 years old, four were 23 years old, three were 24 years old, and three were 25 years old. In addition, one participant was 26 years old, two were 27 years old, one was 29

years old, and one was 37 years old. The inclusion of a small number of older participants added additional perspectives and enriched the data without detracting from the study's primary youth focus.

Regarding social media use, participants reported engagement with multiple platforms. WhatsApp was the most used platform, with nineteen participants indicating regular use, highlighting its central role in everyday communication and social interaction. TikTok was used by eleven participants, reflecting its popularity for entertainment and trend-based content. Facebook was reported by nine participants, suggesting its continued relevance for social networking and community engagement. A smaller number of participants reported using Instagram (2) and Twitter (1). Many participants indicated they used more than one platform, suggesting overlapping digital spaces where social interaction, peer comparison, and social media pressure may occur.

Overall, the demographic profile confirms that the participants were active, diverse social media users, well-positioned to provide rich, in-depth accounts of how social media pressure influences behaviour and wellbeing in a rural South African context.

Interpretations of results

Objective 1: To explore patterns and motivations of social media use among young people in the OR Tambo District.

This section presents findings on participants' social media use patterns and motivations for engaging with social media. The analysis draws on responses to the following questions:

- What do you usually do on social media?
- Why do you use social media?

Data were analysed using thematic analysis, following an inductive approach in which recurring patterns and meanings were identified across participants' responses. Three main themes emerged: (1) social media as a space for entertainment and passive consumption, (2) social media as a tool for social connection, and (3) social media as a resource for economic and educational opportunities.

Social media as a space for entertainment and passive consumption

A dominant pattern across participants' responses was the use of social media primarily for entertainment and passive consumption. Many participants described spending time watching videos, scrolling through posts, and viewing updates, particularly on platforms such as TikTok and Facebook. This form of use required minimal interaction and was often described as habitual or routine.

One participant stated simply: *"Watching videos"* (P2)

Similarly, another participant explained: *"Scrolling through posts, watching videos"* (P19)

Several participants indicated that this form of engagement served as a way to relax, pass the time, or escape boredom, reinforcing social media's role as a leisure activity. For example, one participant noted: *"For fun as a hobby"* (P8)

Another participant described social media as a means of filling idle time: *"Pass time"* (P13)

These responses suggest that, for many young people, social media serves as a readily accessible source of entertainment, with content consumed rather than actively created. The findings indicate that entertainment-driven and passive social media use is a central feature of participants' digital lives. This pattern highlights the potential for prolonged exposure to online content, which may increase vulnerability to social comparison and emotional influence, issues explored further in subsequent objectives.

Social media as a tool for social connection and relationship maintenance

Another prominent theme was the use of social media to maintain relationships and social connectedness. Participants frequently reported using social media to communicate with friends and family, particularly through messaging and status features on platforms such as WhatsApp and Facebook.

One participant explained: *“Chatting with friends and family. Also checking groups for work”* (P13)

Similarly, another participant noted: *“Keeping up with friends and family on WhatsApp”* (P15)

Social media was described as especially valuable for maintaining connections across distance. One participant stated: *“To keep in touch with families and friends regardless of the distance and entertainment”* (P4)

For some participants, social media served as a way to observe others’ lives without active participation, as illustrated by one participant who remarked: *“I hardly post!”* (P15)

The statements suggest that while social connection is important, not all participants feel the need to present themselves online; instead, they choose to remain active observers. The findings demonstrate that social media plays a significant role in sustaining interpersonal relationships and social belonging. The emphasis on observation rather than participation for some participants suggests varied levels of engagement, which may influence how social pressure and comparison are experienced.

Social media as a resource for economic, educational and personal development opportunities

A particularly important theme emerging from the data was the use of social media as a practical resource for job seeking, business promotion, learning, and self-improvement. Several participants described using social media platforms to search for employment opportunities, promote small businesses, and gain new skills.

One participant explained in detail: *“Posting pictures, marketing, I am doing sales, looking for customers so that my business can grow and also applying for jobs when there is a suitable position for me”* (P6)

Similarly, another participant stated: *“Applying for jobs and doing my small business”* (P16)

Participants also highlighted the role of social media in learning and inspiration. One participant noted: *“To learn new things”* (P3)

Another participant elaborated on how social media content motivated personal resilience: *“I get inspired not to give up when I don’t make sales... I see people who started from a difficult path, but at the end of the day they win”* (P6)

In addition, social media was used for school-related purposes, as one participant explained: *“Scrolling on TikTok, watching videos, searching for school-related things”* (P20)

The findings reveal that social media is not only a space for leisure and connection but also a critical platform for economic survival, learning, and self-development. This instrumental use reflects the socioeconomic realities many young people face. It provides important context for understanding how social media pressure may be intertwined with aspirations, comparison, and perceived success.

Summary of Objective 1 Findings

Overall, the findings show that young people in the OR Tambo District use social media in multifaceted ways, combining entertainment, social connection, and economic or educational pursuits. These overlapping patterns of use suggest that social media occupies a central position in participants’ daily lives, shaping not only how they communicate and relax, but also how they seek opportunities and motivation. This complexity provides an essential foundation for understanding how social media pressure may influence behaviour and wellbeing, as explored in subsequent objectives.

Objective 2: To examine how social media exposure contributes to peer pressure, self-comparison, and lifestyle expectations among young people.

This section presents findings on participants' experiences with social media exposure, peer comparison, and perceived lifestyle expectations. The analysis draws on responses to the following questions:

- *When you see people on social media showing their cars, jobs, nice clothes, houses, or relationships, how does it make you feel?*
- *Have you ever compared yourself to what you see online? Can you give an example?*
- *Do you feel pressure to have the same things or lifestyle as people on social media? Please explain.*

Thematic analysis revealed three main themes: (1) social media as a source of inspiration and positive motivation, (2) Selective and constructive self-comparison, and (3) Resistance to perceived lifestyle pressure.

Social media as a source of inspiration and positive motivation

A dominant theme across participants' responses was the interpretation of social media content as inspirational rather than distressing. When exposed to images of success, such as cars, houses, jobs, or relationships, many participants reported feelings of happiness, encouragement, and motivation to improve their own lives.

One participant explained: *"I feel so happy, and when I see people with cars and houses, I feel so motivated and be like one day it will be me"* (P5)

Similarly, another participant stated: *"It inspires me to work hard to achieve my goals"* (P10)

Several participants framed others' success as evidence that achievement is possible, rather than as a threat to their own self-worth: *"I always feel happy to see people succeed"* (P16)

Others expressed inspiration grounded in personal values and faith: *"I feel happy because of the heart of God I have"* (P21)

These responses suggest that participants often interpret aspirational content through a lens of hope and future orientation, rather than immediate dissatisfaction. The findings indicate that social media exposure frequently functions as a motivational catalyst, encouraging young people to aspire towards personal and economic goals. Rather than generating distress, visible success online is often reframed as achievable and desirable in the long term.

Selective and constructive self-comparison

While many participants initially denied engaging in comparison, deeper responses revealed instances of selective and constructive self-comparison. These comparisons were typically framed as self-improvement rather than competition or envy.

One participant reflected: *"I envied their success in a good way... one day this would be me"* (P5)

Others described comparison as motivational, prompting behavioural change: *"Yes, by seeing someone exercising, that motivated me to start training"* (P10)

Some participants compared themselves to peers within familiar social circles, such as friends or relatives: *"I saw my cousin purchasing a car"* (P17)

Notably, one participant expressed mixed emotions when comparison highlighted missed opportunities: *"I saw a former schoolmate graduating, and I felt bad somehow... but I was happy for her"* (P19)

At the same time, several participants actively rejected comparison, citing upbringing or personal identity: *"Circumstances are not the same, that's how I was raised"* (P2) *"Online is fake!"* (P15)

These findings suggest that self-comparison among participants is contextual and moderated. While overt comparison is often denied, subtle and constructive comparison occurs, particularly when it aligns with personal goals. Comparison becomes problematic only when it highlights perceived personal shortcomings.

Resistance to perceived lifestyle pressure

Despite exposure to aspirational lifestyles online, most participants reported little to no perceived pressure to replicate what they see on social media. Many articulated a strong sense of autonomy and personal values, emphasising self-determination over imitation.

One participant stated firmly: *"I do my own things; I do not copy what others do"* (P4)

Others expressed awareness of the risks associated with comparison: *"If I'm comparing myself with them, I might end up doing absurd things"* (P5)

Several participants rejected pressure explicitly: *"No, I don't feel any pressure"* (P6)

"No!" (P11)

However, a small number of participants acknowledged conditional pressure, particularly related to long-term aspirations: *"Sometimes... I do want to have things like my own house, car and family"* (P8)

Overall, participants demonstrated a strong capacity to resist social media-driven lifestyle pressure, often grounded in personal values, awareness of online realities, and future-oriented thinking. While aspirations exist, they are not commonly experienced as coercive or distressing pressure.

Summary of Objective 2 Findings

The findings reveal that social media exposure among young people in the OR Tambo District is predominantly experienced as inspirational rather than oppressive. Participants engage in selective self-comparison, often framed as motivation rather than competition, and largely resist lifestyle pressure through personal agency and critical awareness. These findings complicate dominant narratives that portray social media solely as harmful, highlighting the importance of contextual and individual interpretations.

Objective 3: To investigate the influence of social media on youth behaviour in relation to engagement in risky activities.

This section presents findings on how social media influences young people's behaviour, particularly regarding risk assessment, exposure to harmful online activities, and strategies for assessing online safety. The analysis is based on responses to the following questions:

- *Have you ever thought about doing something risky because of social media?*
- *Do you know anyone who got into trouble, like scams, drugs, or unsafe work, because of social media?*
- *How do you know if something online is safe or dangerous?*

Thematic analysis identified four key themes: (1) Perceived vulnerability to online financial risks, (2) Peer influence and normalisation of risky behaviour, (3) Awareness of social media-related harm through lived and observed experiences, and (4) Development of informal online safety strategies.

Perceived vulnerability to online financial risks

A recurring theme in participants' responses was exposure to financially risky opportunities, particularly those promising quick or easy income. While some participants reported resisting such opportunities, others acknowledged either considering or engaging in them.

One participant reflected: *"Yes, I almost tried making money quickly"* (P4)

Similarly, another participant admitted: *"I tried to make money online very quickly, but I failed"* (P8)

Participants also described engagement with online betting platforms: *"Yes, through Betway"* (P6)

"Yes, bet way" (P14)

Some participants recounted direct experiences of financial loss: *"I got scammed once, on Facebook. So now I do nothing!"* (P9)

These responses suggest that financial vulnerability and the appeal of rapid economic gain increase susceptibility to risky online behaviour.

The findings indicate that social media exposes young people to financial risks disguised as opportunities, particularly within contexts of economic hardship. While not all participants acted on these opportunities, the consideration alone reflects heightened vulnerability driven by socioeconomic pressures.

Peer influence and the normalisation of risky behaviour

Peer pressure emerged as a contributing factor in shaping risky decision-making. Some participants explicitly linked their consideration of risky behaviour to social influence encountered online.

One participant stated: *"Yes, because of peer pressure"* (P7)

The visibility of others engaging in risky or questionable activities normalises such behaviour, making it acceptable or achievable. This normalisation was particularly evident in relation to online betting and quick-money schemes.

Conversely, other participants expressed strong moral or personal resistance to risk-taking: *"No, that is so wrong, and at the end of the day, anything done in darkness there'll be time for it to be exposed in light"* (P5)

These findings suggest that while peer influence can normalise risky behaviour on social media, individual values and moral frameworks play an important moderating role. Risk engagement is therefore not uniform but mediated by personal beliefs and social context.

Awareness of social media-related harm through lived and observed experiences

Participants demonstrated awareness of the dangers of social media through both personal experiences and observations of others' misfortune. Scams were the most frequently cited form of harm.

One participant recounted: *"One of my friends got scammed about getting a job, and he paid them, and then the person blocked him"* (P8)

Another described a more severe case involving human trafficking: *"This Russian thing where we believed some influencers about jobs only to find out that's human trafficking"* (P4)

Repeated narratives of scams involving fake online sellers were also common: *"A friend... sent the money, then the person blocked her"* (P6)

These experiences heighten participants' caution and scepticism towards online opportunities.

The findings reveal that awareness of harm is often shaped through shared community experiences, reinforcing caution and mistrust. Exposure to others' negative experiences plays a key role in shaping safer online behaviour.

Development of informal online safety and risk-assessment strategies

Despite limited formal guidance, participants described various self-developed strategies to determine whether online content or opportunities were safe. Common practices included asking questions, conducting online searches, seeking verification, and consulting trusted networks.

One participant explained: *"I do thorough research first"* (P3)

Others emphasised collective verification: *"I ask around if there is anyone aware of this"* (P6)

Digital tools were also used as safety mechanisms: *"Check with Google or ChatGPT"* (P17)

Some participants avoided online risks entirely: *"I don't join anything on social media"* (P14)

These findings indicate that young people actively develop informal digital literacy practices to manage online risk. At the same time, these strategies demonstrate agency and awareness, their effectiveness varies, highlighting the need for structured digital safety education.

Summary of Objective 3 Findings

Overall, the findings demonstrate that social media significantly influences youth behaviour by exposing young people to financial risks, peer-driven pressure, and unsafe opportunities. While some participants experienced

harm directly, others learned through observation and adapted their behaviour accordingly. Importantly, young people are not passive recipients of risk; they actively employ coping and evaluation strategies, though these remain informal and unevenly applied.

Objective 4: To explore the effects of social media use on young people's emotional wellbeing, coping strategies, and perceptions of online safety.

This section presents findings on participants' emotional experiences with social media use, their coping strategies, and their views on how social media can be made safer and less stressful. The analysis is based on responses to the following questions:

- *How does using social media make you feel most of the time?*
- *What advice would you give to other young people about using social media safely?*
- *What would you like to see change on social media to make it safer or less stressful for young people?*

Thematic analysis generated four key themes: (1) Predominantly positive emotional experiences with intermittent emotional strain, (2) social media as a coping and mood-regulation tool, (3) Emphasis on personal responsibility and self-regulation, and (4) Demand for structural safeguards and adult guidance in digital spaces.

Predominantly positive emotional experiences with intermittent emotional strain

Most participants described their emotional experiences of social media use as largely positive, frequently using terms such as *happy* and *motivated*. These emotions were often associated with entertainment, inspiration, and exposure to others' achievements.

One participant stated: *"Happy and motivated"* (P2)

Another explained: *"Happy because I see a lot of achievements"* (P8)

For several participants, positive emotions were consistent but not constant. Some acknowledged moments of stress, boredom, or emotional neutrality: *"Sometimes happy when I'm distressed, sometimes stressed it depends"* (P5)

"I don't feel anything, but sometimes I feel bored" (P6)

A small number of participants emphasised emotional detachment rather than emotional impact: *"Unbothered"* (P13)

The findings suggest that social media use is generally associated with positive emotional states, though these are occasionally interrupted by stress or emotional disengagement. This indicates that emotional wellbeing outcomes are fluid and dependent on context, content, and individual disposition.

Social media as a coping and mood-regulation tool

Participants frequently described using social media as a coping mechanism to manage stress, sadness, or boredom. Platforms such as TikTok were explicitly mentioned as sources of humour and emotional relief.

One participant explained: *"I use social media most of the time to relieve stress or boredom"* (P4)

Another participant shared: *"Sometimes when I'm sad, I usually watch funny videos on TikTok, and I experience some changes in my mood"* (P7)

Others framed social media as a space for emotional release and calmness: *"Most of the time I use social media to cool off my head and release stress"* (P12)

In some cases, coping was tied to personal or spiritual expression: *"Happy, because it gives me more time to share the word of GOD"* (P17)

These findings highlight social media's role as an accessible emotional coping resource, particularly in contexts where alternative recreational or psychosocial support options may be limited. However, reliance on social media for mood regulation may also increase exposure to stress-inducing content.

Emphasis on personal responsibility and self-regulation

When advising others on safe social media use, participants strongly emphasised personal responsibility, critical thinking, and self-regulation. A dominant message across responses was the importance of avoiding comparison and resisting pressure.

Several participants advised: *“Don’t compare yourself to others”* (P6)

“Be in your lane!” (P17)

Others stressed caution in posting and engagement: *“Think first about what you post, don’t share personal information”* (P1)

Participants also highlighted the dual nature of social media: *“Social media is a tool to change your life or destroy it”* (P11)

Some responses reflected scepticism and withdrawal as coping strategies: *“Stop using social media, it’s a very toxic and consuming environment”* (P16)

The findings reveal a strong internalisation of self-monitoring and individual accountability among participants. While this reflects awareness and maturity, it also suggests that young people may place the burden of safety primarily on themselves rather than on platform structures.

Demand for structural safeguards and adult guidance in digital spaces

Beyond individual responsibility, participants expressed a clear desire for system-level changes to make social media safer. Concerns centred on scams, fake content, and unsafe job advertisements.

One participant stated: *“Safer job adverts”* (P2)

Others called for stronger verification mechanisms: *“Everyone must log in with his or her name... it must require identity documents”* (P6)

Adult involvement was frequently emphasised: *“More guidance from adults”* (P9)

Some participants advocated for content regulation: *“Before posting a video, it must be checked”* (P20)

These findings indicate that while young people practise individual caution, they also recognise the need for institutional accountability, adult guidance, and regulatory oversight. Participants perceive safety as a shared responsibility between users, communities, and social media platforms.

Summary of Objective 4 Findings

The findings show that social media use generally supports positive emotional wellbeing and coping, while also presenting moments of stress and emotional disengagement. Young people actively regulate their use, promote personal responsibility, and demonstrate awareness of online risks. However, they also call for stronger protective measures and guidance, highlighting the need for balanced approaches that combine individual agency with structural support.

6. Discussion

This study explored how social media pressure influences youth behaviour and wellbeing in the OR Tambo District, Eastern Cape, South Africa, with particular attention to patterns of use, peer comparison, risk behaviour, emotional wellbeing, and coping strategies. The findings contribute to existing literature by offering contextually grounded, qualitative insights from a rural South African setting, an area that remains under-represented in global social media research.

Patterns and motivations of social media use

The findings demonstrate that young people use social media in multifunctional ways, combining entertainment, social connection, economic activity, and learning. This aligns with existing research indicating that youth engagement with social media is not homogeneous but shaped by both personal needs and contextual realities

(Verduyn et al., 2017). Rather than being solely recreational, social media in this study served as an everyday livelihood and information tool, particularly for job searching and small-business promotion. These findings support evidence from South Africa showing that youth in resource-constrained contexts often rely on digital platforms to compensate for limited offline opportunities (Shava & Chinyamurindi, 2018). From an eco-humanistic perspective, this reflects how digital environments become embedded within broader socioeconomic ecosystems, influencing how young people adapt to structural inequalities rather than merely consuming content for pleasure. Importantly, the dominance of passive activities such as scrolling and video viewing mirrors global trends identified by Verduyn et al. (2017), who caution that passive consumption may carry different psychological implications than active engagement. This distinction becomes relevant when interpreting later findings on emotional wellbeing and comparison.

Peer comparison, inspiration, and lifestyle expectations

Contrary to dominant narratives that frame social media primarily as a source of psychological harm, this study found that exposure to others' success was more often interpreted as inspirational rather than distressing. Participants commonly described feelings of motivation, hope, and future orientation when encountering aspirational content. This finding nuances earlier work by Kross et al. (2013), which associated social media use with declines in wellbeing, by suggesting that interpretation and context matter.

At the same time, evidence of selective and constructive self-comparison emerged. While many participants initially rejected the idea of comparison, deeper accounts revealed moments when comparison stimulated self-reflection or goal-setting. This supports Vogel et al.'s (2014) argument that social comparison on social media is not inherently harmful, but its impact depends on whether it is upward, downward, or internalised as pressure. Notably, most participants resisted pressure to adopt a lifestyle, emphasising personal agency and long-term aspirations rather than immediate imitation. This resistance contrasts with findings from high-income contexts where fear of missing out and social validation are more prominent (Twenge et al., 2018). The difference may be explained by contextual factors, including economic realities and cultural norms that encourage patience, resilience, and incremental success.

Social media and risky behaviour

The findings on risky behaviour reveal a complex interaction among vulnerability, peer influence, and awareness. While many participants denied engaging in risky activities, several acknowledged considering or experiencing financial risks such as online scams, betting, and deceptive job offers. This aligns with Boer et al. (2021), who found associations between problematic social media use and health-risk behaviours, particularly among youth facing socioeconomic stress.

Importantly, risk was not framed as recklessness but as situated decision-making under conditions of limited opportunity. Attempts to "make money quickly" reflected structural unemployment rather than moral failure. This echoes eco-humanistic concerns about how digital platforms interact with fragile socioeconomic systems, often amplifying risk for already vulnerable populations.

Participants' awareness of scams and human trafficking through community narratives reinforces findings that vicarious experience plays a key role in shaping digital caution (Orben & Przybylski, 2019). Rather than disengaging entirely, young people adapted by developing informal safety practices, indicating learning rather than passivity.

Emotional wellbeing and coping strategies

Consistent with much of the literature, social media use was associated with predominantly positive emotional states, including happiness, motivation, and emotional relief (Orben & Przybylski, 2019). Participants frequently

reported using social media to manage boredom, stress, and low mood, supporting the finding that digital spaces can provide short-term emotional regulation (Verduyn et al., 2017).

However, emotional experiences were not uniform. Some participants reported stress, boredom, or emotional detachment, reflecting the mixed outcomes noted in broader studies (Twenge et al., 2018). These findings reinforce the argument that emotional impacts are content- and context-dependent, rather than inherent to social media itself.

A notable contribution of this study is the strong emphasis participants placed on self-regulation and personal responsibility. Advice to others consistently centred on avoiding comparison, thinking critically, and limiting engagement with harmful content. While this reflects digital awareness, it also suggests a concerning trend where young people internalise responsibility for safety, echoing critiques that platform accountability is often shifted onto users (Boer et al., 2021).

Perceptions of safety and structural responsibility

Participants' calls for safer job advertising, identity verification, adult guidance, and content regulation point to a recognition that individual caution alone is insufficient. This resonates with emerging scholarship that argues for shared responsibility among users, communities, platforms, and policymakers (Orben & Przybylski, 2019). From an eco-humanistic standpoint, these findings highlight the need for ethical digital environments that prioritise human wellbeing over unchecked engagement or profit. Participants' emphasis on adult guidance further underscores the interdependence between generations in navigating digital ecosystems, particularly in rural contexts where formal digital literacy programmes may be limited.

Conclusion

This study examined the influence of social media pressure on youth behaviour and wellbeing within the OR Tambo District, Eastern Cape, South Africa, drawing on qualitative insights from young social media users. The findings demonstrate that social media is deeply integrated in young people's everyday lives, functioning simultaneously as a space for connection, inspiration, emotional regulation, and economic exploration. Rather than viewing social media solely as a source of harm, participants articulated nuanced experiences characterised by both opportunities and risks.

Importantly, the study revealed that young people are not passive recipients of social media influence. Many participants demonstrated agency, critical awareness, and adaptive strategies in navigating online spaces, particularly in resisting unhealthy comparison and managing emotional responses. Nevertheless, exposure to risky online activities, including financial scams and deceptive job opportunities, highlights the vulnerability of youth operating within constrained socioeconomic environments. Emotional wellbeing outcomes were similarly mixed, with social media serving as both a coping mechanism and, at times, a source of stress or disengagement. From an eco-humanistic perspective, these findings underscore the interconnectedness of digital platforms, human wellbeing, and broader social and economic systems. Social media pressure cannot be understood in isolation from structural inequalities, limited employment opportunities, and uneven access to digital literacy support. The study, therefore, contributes context-specific evidence that calls for balanced approaches recognising both individual agency and systemic responsibility.

Recommendations

Based on the findings, several recommendations are proposed. *First*, there is a need for context-sensitive digital literacy programmes that go beyond technical skills to include critical engagement, emotional awareness, and online risk assessment. Such programmes should be integrated into schools, community centres, and youth

development initiatives, particularly in rural and semi-rural areas. *Second*, parents, educators, and community leaders should play a more active role in guiding young people's social media use. Participants' calls for adult guidance suggest that intergenerational dialogue can strengthen safe and reflective digital practices without resorting to restrictive or punitive approaches. *Third*, social media platforms and relevant authorities should strengthen mechanisms to protect young users, particularly by regulating online job advertisements, enhancing identity verification processes, and improving reporting systems for scams and harmful content. Responsibility for online safety should not rest solely on individual users but should be shared across digital ecosystems. *Finally*, future research should extend this inquiry by incorporating longitudinal designs and comparative studies across different socioeconomic contexts. Such work would deepen understanding of how social media pressure evolves and how digital environments can be shaped to support sustainable human wellbeing.

In conclusion, fostering healthier digital spaces for young people requires a holistic, eco-humanistic approach that recognises social media as both a resource and a risk. By aligning individual agency with structural support, it is possible to promote digital environments that enhance, rather than undermine, youth wellbeing and development.

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SOVEREIGN WEALTH FUNDS: A CONSEQUENCE OR CAUSE OF ECONOMIC PROSPERITY?***Munashe Matambo^{1,2}, Dominique Emmanuel Uwizeyimana¹**¹*School of Public Management, Governance and Public Policy, College of Business and Economics, University of Johannesburg, P.O Box 542, Auckland Park, 2006, South Africa*²*Graduate School of Business, Bindura University of Science Education, 741 Chimurenga Road, off Trojan Road, Bindura, Zimbabwe**E-mails:*^{1,2} mmatambo@buse.ac.zw (Corresponding author); ² dominiqueu@uj.ac.za*Received 15 January 2026; accepted 23 April 2026; published 30 June 2026*

Abstract. Policymakers in the Southern Africa Development Community (SADC) region are increasingly promoting Sovereign Wealth Funds (SWFs) as essential tools for economic transformation, often citing the success of models such as Norway's Government Pension Fund Global (GPF) and Singapore's Temasek. This paper argues that this perspective is fundamentally misguided. SWFs are not magical toolkits that can miraculously generate prosperity; rather, they are the consequence, not the cause, of sound economic management. Their successful operationalisation is predicated on pre-existing conditions: prudent natural resource revenue management frameworks, robust and stable macroeconomic policies, and sound public sector governance. Through a qualitative analysis of SWF attempts across the SADC region contrasting failures in Angola and Zimbabwe with the relative success of Botswana's Pula Fund this paper demonstrates that establishing an SWF absent these foundational pillars leads to 'premature funds' that fail or become conduits for patronage. The paper concludes that for SADC members, the primary policy focus must be on building the institutional and macroeconomic prerequisites for sustainable development. An SWF may then emerge as a by-product of that success, not as its precursor.

Keywords: Sovereign Wealth Funds; state-owned enterprise reforms; natural resource revenue management; public sector corporate governance; Southern Africa

Reference to this paper should be made as follows: Matambo, M., Uwizeyimana, D.E. 2026. Sovereign Wealth Funds: a consequence or cause of economic prosperity? *Insights into Regional Development*, 8(2), 51-65. <http://doi.org/10.70132/q4443286677>

JEL Classifications: H30

Additional disciplines: Public Policy

1. Introduction

Sovereign Wealth Funds (SWFs) have become a policy fetish within the Southern African Development Community (SADC) (Matambo, 2025). Inspired by the scale and perceived success of global giants such as Norway's GPF (US\$1.45 trillion) and Singapore's Temasek (US\$284 billion), a diverse coalition including Bretton Woods institutions, development agencies, opposition parties, and academics has lobbied regional governments to establish state-owned investment funds (Dixon, Schena & Capape, 2022). The promise is seductive to manage volatile resource rents, catalyse industrialisation, and secure intergenerational equity. Consequently, at least ten SADC member states have either established or seriously considered establishing an

* *The research is funded by University of Johannesburg, School of Public Management, Governance and Public Policy, South Africa*

SWF, positioning Southern Africa as a potential future hub for such funds. Yet, the regional experience, barring Botswana, is one of consistent failure (Matambo, 2025). Funds in Zimbabwe, South Africa, Tanzania, and Zambia have remained stillborn, trapped in the planning stage. Angola's Fundo Soberano de Angola (FSDEA) was looted through institutionalised patronage shortly after its creation. This pattern aligns with what Bauer and Mihalyi (2018) term the "premature fund" a fund established amid over-optimism but lacking the necessary institutional underpinnings for success. This paper posits that this failure stems from a critical misdiagnosis of the role of SWFs. Policymakers are attempting to replicate a symptom (the SWF) while ignoring the underlying disease (poor economic governance) and the prerequisite conditions for health (sound institutions) (Matambo, 2021).

The core argument advanced here is that SWFs are a consequence and not a cause of economic prosperity. They are the by-products of prudent natural resource revenue management frameworks and/or robust macroeconomic policies and sound governance frameworks. Norway did not become prosperous because of its GPF; it established a successful GPF because it was already prosperous, industrialised, and institutionally robust (Ekeli & Sy, 2011). Similarly, Temasek's success is inextricably linked to Singapore's pre-existing world-class regulatory environment, rule of law, and meritocratic governance (Cheng-Han, Puchniak & Varottil, 2015). Emulating the fund without emulating the foundational context is a recipe for waste and failure.

This paper aims to recalibrate the policy debate in SADC by elucidating the prerequisite conditions for a successful SWF. Adopting an interpretivist paradigm and qualitative methodology, the analysis proceeds by first conceptualising SWFs and their typologies. It then delves into the political economy considerations behind their establishment, arguing that the decision is often politically, not economically, driven. Subsequently, it provides a critical survey of SWF attempts across SADC, using case studies to illustrate the consequences of ignoring prerequisite conditions. Finally, it offers targeted recommendations, emphasising that the quest for sustainable development must come first; an SWF may or may not be a later component of that achieved stability.

2. Conceptualising the term Sovereign Wealth Fund

An SWF is a pool of capital derived from net wealth accumulation (i.e., official exchange reserves, excess resource rents accrued because of the adoption of fiscal rules, current account or fiscal surplus and ceding of state-owned enterprises (SOE) to such entities) controlled by a government or government-linked entity that invests assets under its control to reap returns for its sovereign sponsor (Balding, 2012). There are basically three types of SWFs: commodity-based funds, strategic investment funds (SIFs) also referred to as Sovereign Development Funds (SDFs) and surplus savings funds (Dixon et al., 2022). The sub-sections below parse out the SWF types. However, it is imperative to emphasise that although SWF typologies are useful in explaining the origins and policy intent of SWFs, it does not necessarily mean there is within-group homogeneity regarding the investment policy and specific policy purpose of SWFs. Moreover, SWF typologies are not mutually exclusive in some cases. For example, SIFs such as Abu Dhabi's Mubadala are not considered commodity-based funds yet their source of capital is largely derived from hydrocarbon revenues (Dixon et al., 2022).

Commodity-based funds

SWFs whose source capital is derived from natural resource revenue are referred to as commodity-based funds (Qobo & Soko, 2022). They are the oldest, and less controversial type of SWF. Non-renewable natural resources have three attributes. First, they are finite, and the revenue derived from them is temporary. Second, commodity prices are volatile compared to other income streams. Thus, revenue derived from commodities is inherently unreliable. Third, windfall revenues are inflationary on domestic prices and the exchange rate a phenomenon known as Dutch disease (Jiang & Cheng, 2025). This inflationary pressure constrains the development of other sectors in the economy, limiting the buffer that economic diversification of the economy would bring. If properly established, commodity-based SWFs can be used as a tool to address the problems (Botlhale, 2024). The fund can be used to keep resource rents out of the domestic economy thus addressing absorptive capacity issues and

inflationary effects associated with such. It can also be used as a stabilisation fund to smoothen resource rents across the commodity cycle (Boubakri Fotak & Yasuda, 2023). However, a commodity-based SWF is not necessarily a savings vehicle for future generations. For example, it makes sense for Norway to sequester resources as long-term savings for future generations because Norway is highly industrialised and developed. Moreover, it does not need the resources now. In contrast, in developing countries where capital is scarce the population can benefit more from spending on education, health and better infrastructure or the repayment of public debt (Ahmadov, Althuis, & van den Dijssel, 2025). For example, Ghana's Heritage Fund and Stabilisation Fund have yielded an annual net return of one percent per annum since they were established in 2011. However, during the same period government borrowed US\$3 billion in Eurobonds and is paying more than nine percent interest on its latest Eurobond issuance. The overall impact of this policy decision is a net loss running into millions. Had the government allocated resource rents to debt reduction rather than saving, it would have paid less interest and less money would have left the country (Matambo, 2021).

Strategic Investment Funds

SIFs are a result of two processes. First, they are funds that emerge as holding companies of SOEs and other productive assets, which are founded during periods of significant state economic planning. They operate on comparable terms and norms expected of cognate private investors such as private equity funds. Thus, they are market-conforming. Examples include Singapore's Temasek, Bahrain's Mumtalakat, Kazakhstan's Samruk-Kazyna, and Malaysia's Khazanah Nasional Berhad. The broad mandate of this type of SIF is to oversee and drive better corporate governance, operational and financial performance of SOEs in line with global market conditions and management norms, and subsequently, if required to restructure them in pursuit of privatisation and monetisation (Dixon et al., 2022). Second, SIFs emerge when governments realise the need to actively support economic development. Through such funds governments seek to address market failure, or in the case of developing countries, seed capital in strategic sectors or projects particularly when domestic capital markets are underdeveloped, shallow, or repressed. Examples include the Ireland Strategic Investment Fund (ISIF), Rwanda's Agaciro Development Fund (ADF), Russian Direct Investment Fund (RDIF) and Senegal's Fonds souverain d'investissements strategiques (FONSIS) (Braunstein, 2022).

Surplus Savings Funds

Taxonomies of SWFs distinguish two additional types of SWF (i.e., reserve funds and pension funds). Though the policy purpose of the two is different eminent SWF scholars such as Dixon, Schena and Capape combine them into a single category known as surplus savings funds. Countries such as Australia, Korea, Singapore, and China have established SWFs financed by fiscal surpluses or proceeds from state asset privatisation. For example, in 1981 the government of Singapore established Government of Singapore Investment Corporation later renamed Government Investment Corporation (GIC) to manage its budget surpluses. Similarly, government fiscal surpluses and proceeds from the privatisation of Telstra a state telecommunications company resulted in the establishment of the Australia Future Fund in 2006. Concomitantly, China Investment Corporation (CIC) was established from China's large current account surpluses derived from its booming exports to the rest of the world. Furthermore, countries such as New Zealand have established surplus savings funds to cover deficits in social security from demographic ageing (Dixon et al., 2022).

3. Political economy and policy considerations

SWFs are an international symbol of modernity and prosperity through finance (Clark & Monk, 2012). Countries across the income spectrum i.e., developed to developing economies are looking at establishing SWFs as an economic policy tool to manage natural resource rents or catalyse domestic industries to bolster economic development. As previously alluded to in the preceding section, commodity-based funds and surplus savings funds are established to manage macroeconomic challenges associated with resource abundance such as inflation, Dutch disease, and commodity-price volatility. However, countries with significant reserves notably Switzerland

have resisted calls to establish SWFs (i.e., Switzerland has more than US\$1.1 trillion export led reserves). This suggests that the decision to establish an SWF is not solely determined by the need to manage abundant resources (i.e., surplus reserves, or commodity price booms) but by political decisions about the allocation of wealth (Braunstein, 2022). For example, over the past decade countries whose resource rents are small, distant and uncertain have also joined the bandwagon of countries establishing SWFs (Trudelle, 2024). This is a result of the manifestation of the “presource curse” (i.e., over expectation by politicians, citizens, and bureaucrats at multi-lateral organisations such as the Bretton Woods institutions upon the discovery of mineral resources) (Cust & Mihalyi, 2017). In turn, the presource curse has led to the establishment of premature funds. For example, Ghana’s savings and stabilisation fund (i.e., Ghana Stabilisation Fund and Ghana Heritage Fund) have yielded a net return of 1 percent since they were established in 2011. Conversely, over the same period, the Ghanaian government borrowed US\$ 3 billion in Eurobonds and is paying more than 9 percent interest on its latest Eurobond issuance. The net effect is a net loss running into billions of dollars. Had government used resources saved to minimise or pay off its debt it would have remained better off (Bauer & Mihalyi, 2018).

Notwithstanding the potential usefulness of this policy toolkit, commodity-based funds and surplus savings funds are not a panacea to the multiple challenges daunting resource rich economies. They do not replace the need to foster and stimulate a capable workforce, replace effective regulatory oversight and the rule of law. Furthermore, the establishment of these funds will not on its own improve fiscal and monetary outcomes. In fact, the SWF solution to the complicated problem of resource management is complicated (Matambo, 2021). These organisations are modelled along the lines of high performance Western institutional investors. So, for an SWF sponsor to realise the benefits of such a fund, the establishment of an SWF must be part of a broader package of institutional reforms designed to improve a country’s capacity for abundant resource management (Dixon et al., 2022). For example, Norway’s GPFG and its accompanying institutional and fiscal frameworks resulted from a long process that started by asking the right economic question: how can Norway achieve sustainable growth and development? Norway addressed this question by implementing the Hartwick rule which requires sound fiscal policy and public investment management. Though Norway was already developed and industrialised when it started producing oil in 1971, it used its resource rents to expand social welfare system (i.e., lowered the pension age and reduced taxes) and support the expansion of public services and employment (i.e., increased agricultural subsidies and widened industrial policies). Thus, unlike many natural resource rich developing economies stability oriented macroeconomic policies, low levels of taxation, significant spending in research and development, adequate training and development, productivity, and a high degree of exposure to foreign trade account for the country’s phenomenal economic growth. Since 2001 GPFG has been hinged on the four percent bird-in-the-hand rule which stipulates that four percent of the value of the fund at the end of the previous year must be used as reference for how much is extracted from the fund and used to fund government’s non-oil deficit. The fund is fully integrated with the national budget and builds on existing institutions to strengthen the budget process (Ekeli & Sy, 2011).

Furthermore, as previously alluded to in the preceding section, SIFs are established to either promote sound corporate governance in SOEs or bolster economic development. For example, Singapore’s Temasek was established to promote sound corporate governance in Government Linked Companies (GLCs) and Government-linked Real Estate Investment Trusts (GLREITs) (Sim, Thomas & Yeong, 2013). GLCs were established to jumpstart industrialisation and compensate for the absence of a robust private sector in the years following Singapore’s independence from Britain in 1965. Early GLCs include Neptune Orient Lines (shipping industry), and Keppel, Sembawang, Jurong Shipyards (ship building and repair industry) (Price Waterhouse Coopers, 2015). However, government believed that it was not the business of government to run such enterprises (Nee, 2014). In 1972, Dr Goh Keng Swee, Singapore’s first Minister of Finance post-independence lamented that “one of the tragic illusions that many countries of the Third World entertain is the notion that politicians and civil servants can successfully perform entrepreneurial functions. It is curious that, in the face of overwhelming evidence to the contrary, the belief persists” (Temasek, 2024).

To ameliorate the challenge, the government of Singapore established Temasek in 1974 to separate the fiscal policy function of treasury from the management of GLCs (Dixon, 2020). In his remarks during Temasek's 40th anniversary dinner in 2014, the then President of Singapore Dr. Tony Tan Keng Yam (2011-2017) attributed Temasek's success to the clear separation between government's role as a policymaker and regulator and that of Temasek as a shareholder and commercial owner of companies under its portfolio as well as the shared commitment to meritocracy, commercial discipline, and accountability in those companies (Nee, 2014). Moreover, to obtain geopolitical legitimacy over its overseas investments, Temasek avoids buying or possessing a controlling stake in foreign firms that are of sentimental value to a country. Secondly, it often co-invests with local partners. Thirdly, it does not seek board seats on its investee companies (Dixon, 2020). Furthermore, beyond Temasek's robust governance framework, effective governance has been the key to Singapore's success. For decades, the Bretton Woods institutions have recognised Singapore as having the best regulatory and economic conditions for doing business in the world. Secondly, Transparency International (TI) consistently ranks Singapore among the five least corrupt countries globally. Thirdly, the Asian Corporate Governance Association consistently ranks Singapore as having the best corporate governance in Asia (Cheng-Han et al, 2015). In other words, macroeconomic and political variables beyond Temasek promote sound corporate governance in GLCs in Singapore.

4. Methodology

This study used a qualitative approach based entirely on desk research. The researchers did not collect primary data or conduct interviews. Instead, existing literature was reviewed to examine SWF experiences in Southern Africa. The analysis drew from multiple sources: peer-reviewed journal articles, books, policy reports from institutions such as the IMF and Natural Resource Governance Institute, government documents including budgets and legislation, and investment climate reports from the US State Department. News articles helped fill gaps where official documents were unavailable. The researchers focused on ten SADC countries that have either established a sovereign wealth fund or seriously considered doing so: Angola, Botswana, DRC, Mauritius, Mozambique, Namibia, South Africa, Tanzania, Zambia, and Zimbabwe. For each case, the type of fund proposed, the policy rationale, and the actual outcomes were examined. Botswana's Pula Fund served as a regional benchmark. The analytical approach was comparative and thematic. The material was systematically reviewed to identify recurring patterns across cases, paying particular attention to how institutional conditions and governance quality influenced fund performance. This allowed the researchers to assess the central argument that SWFs tend to succeed only where sound macroeconomic management and institutional capacity already exist. The evidence is presented qualitatively, but the conclusions are drawn from a structured comparison of multiple cases.

5. The State of Sovereign Wealth Funds in the SADC Region

As previously alluded to, SWFs in the SADC region are dwarfs in comparison with funds in other parts of the world. Only Botswana's Pula Fund owns assets more than a billion dollars. The rest have either failed or never developed beyond the planning phase. The sub-sections below discuss the circumstances of every country that has established or considered establishing an SWF in the region.

Angola

Angola's Fundo Soberano de Angola (FSDEA) which was looted to the brink of collapse due to institutionalised patronage and poor governance is a classic example of SWF failure in the SADC region. In 2012, the then President of Angola, Jose Eduardo dos Santos appointed his son and preferred successor the inaugural board chairman of FSDEA (Bybee, 2013). In turn, the chairman of FSDEA appointed Quantum Global an asset management company owned by lifelong friend and business associate Jean-Claude de Morais as sole fund manager without going to tender. Unsurprisingly, the fund invested millions of dollars in projects affiliated to

Morais. In one instance, it invested US\$157 million in a star hotel owned by Morais (Markowitz, 2020). In addition, Morais was paid an obscene sum of US\$750 million for managing the fund US\$250 million more than what was publicly state. In 2019, the Lourenco administration announced that it had recovered US\$3 billion stolen from FSDEA by Dos Santos and Morais. FSDEA is still finding its feet under the Lourenco administration (Emi, 2019).

Botswana

Botswana's Pula Fund is a leading example of how policy makers in the SADC region can establish SWFs (Matambo, 2025). Botswana's use of natural resources has not been associated with conflict or divisive politics as it has elsewhere in Southern Africa, where minerals have brought more pain than joy. A political culture characterised by democracy and stability has ensured the successful and peaceful exploitation of natural resources in the country (Sebudubudu, 2021). When Botswana attained independence from Britain in September 1966, it was one of the poorest countries in the world and labelled the "basket case of Africa" with a meagre Gross Domestic Product (GDP) per capita of US\$80 per capita. The economy was virtually rural. Over 90 percent of the population lived in traditional huts known as rondavels without electricity piped water, tarred roads, hospitals, schools, and a sewer system. Fortunately, diamonds were found soon after independence. Using a non-statutory fiscal rule premised on the Hartwick-Solow rule of fiscal sustainability (i.e., the Sustainable Budget Index [SBI]), the government of Botswana has largely invested its resource rents in other forms of capital (i.e., human, physical, and social) that replace its depleting natural capital base. Consequently, the country has made significant progress in terms of human, physical and social development since independence (Leith, 2005). Any resources government fails to invest in the domestic economy due to absorptive capacity constraints are invested in the Pula Fund. The fund is used to cushion the economy against unexpected shocks in the global economy and save for future generations (IMF, 2012). In short, the Pula Fund is a by-product of a prudent natural resource management framework and robust macroeconomic policies. Moreover, it adheres to Generally Accepted Principles and Practices (GAPPs) of governing state-owned investment funds such as institutional coherence, merit based human resource management practices, organisational independence and possession of highly developed decision-making frameworks and risk mitigation strategies (Matambo, 2025). As of 31 December 2025, the fund was valued at approximately US\$4 billion. However, in September 2025 the government of Botswana established an SIF to drive diversification, manage SOEs and create jobs (Reuters, 2025).

Democratic Republic of Congo (DRC)

According to the US Department of State (2020): "The DRC does not have any reported SWF, although the 2018 Mining Code refers to a Future Fund (FOMIN) that is to be capitalised by a percentage of mining revenues. In October 2021, the Technical Secretariate of the Extractive Industries Transparency Initiative (EITI) organised a workshop to develop the FOMIN decree, as well as tools to manage the shares of mining royalties accruing to provinces and local entities. The FOMIN invited the EITI and the Makuta wa Maendeleo Consortium – which is a platform of civil society organisations specialising in natural resources, including the Centre Carter, Justice for All, Resource Matters- to the workshop held in Kinshasa at the end of November 2022 to improve the regulatory framework of the FOMIN decree to make proposals that can ensure good governance of the fund."

Despite possessing one of the largest mineral deposits on earth with an estimated value of US\$24 trillion, greater than the world's largest economy i.e., the US which has a US\$20 trillion GDP (Baraza, 2020), the Congolese government has failed to operationalise a commodity-based fund because it cannot adequately capture and account for its resource rents. This is largely due to armed conflict, state-led corruption, weak macroeconomic policies and neocolonial corporate extraction (BBC, 2013). Natural resources have fuelled civil wars and bolstered authoritarian regimes since the attainment of independence from Belgium in June 1960 (IMF, 2019). After overthrowing Soviet backed Patrice Lumumba, the first democratically elected Prime Minister of Congo a few months after independence, the Central Intelligence Agency (CIA) helped the then commander of the Congolese army Desire Mobuto to topple President Kasavubu in 1965. For three decades, Mobuto's kleptocratic

rule pillaged an estimated US\$5 billion largely from resource rents. At the time he was overthrown (1997), he was richer than the world's richest tycoons at the time Rupert Murdoch, and Ross Perot. His wealth had the same assessed value as many 500 Fortune corporations (Dahlburg, 1997). Mobuto's successors Laurent and Joseph Kabila took over and replaced Mobuto's patronage network backed by the US, Rwanda, Uganda and Angola. When Rwanda attempted to topple Laurent Kabila in 1998, Angolan, Zimbabwean and Ugandan troops intervened and took the opportunity to ransack and pillage minerals in the eastern region of the country. By 2016, the Kabila family had amassed a US\$750 million fortune, owned diamond permits covering 450 miles of territory and racked up ownership of companies across various sectors of the economy (Baraza, 2020). The current President Felix Tshisekedi has accused Rwanda and the European Union of looting resources in the DRC and clandestinely supporting the M23 rebels thus destabilising the resource rich eastern region of the country (Bonny, 2024). The DRC has the potential to possess one of the most successful commodity-based funds in the world because of its abundant natural resource base. However, before Congolese policymakers can seriously consider operationalising a commodity-based fund government needs to adequately capture and account for its resource rents. Thus, peace must prevail, the rule of law needs to be upheld, and state-led corruption must be tackled.

Mauritius

According to the US Department of State (2024a): "The Government of Mauritius does not have an SWF. However, in October 2020, the Mauritius Investment Corporation (MIC), an investment vehicle set up under the aegis of the Bank of Mauritius to financially assist companies impacted by COVID-19, officially announced that it had become an associate member of the IFSWF, and indicated that, through its membership, it was demonstrating commitment and willingness to uphold the IMF Santiago Principles based on good governance, accountability and transparency. In May 2023, the MIC announced that it was working on becoming an SWF." From the foregoing it is not clear what type of SWF Mauritius intends to establish. However, policymakers need to take into cognisance factors that underpin the successful operationalisation of this institution (i.e. prudent natural resource revenue management frameworks, and/or robust macroeconomic policies and a sound governance framework) as they consider transforming the MIC into a SWF.

Mozambique

The government of Mozambique established a commodity-based stabilisation and intergenerational savings fund in January 2024 to manage resource rents from the newly discovered gas in the Rovuma basin. The enabling legislation stipulates that the fund adheres to the Santiago Principles which promote organisational independence and transparency (US State Department 2024b). For the first 15 years, 60% of projected resource rents in a financial year will be allocated to the national budget and the remaining 40% to the SWF. The current split allows government to improve public service and invest in infrastructure. Thereafter, the allocation will revert to a 50/50 split (Sarmiento, 2024). This will only make sense and yield meaningful results if Mozambique adequately captures and accounts for its resource rents. Furthermore, the government of Mozambique should consider gradually deploying SWF types. A stabilisation fund should be the established first because commodity-price volatility is one of the greatest challenges plaguing resource rich economies such as Mozambique. It makes little sense for an impoverished economy such as Mozambique to save for future generations. Resource rents are better use by investing in social and physical capital that can create a healthier economy for future generations (Matambo, 2025).

Namibia

Known for its gem-quality diamonds, gold and uranium, Namibia has considered establishing a commodity-based fund since 2009 (Aljazeera, 2022). Inspired by Article 95 of the Constitution of Namibia which stipulates that "the state shall actively promote and maintain the welfare of the people" the Bank of Botswana established a commodity-based stabilisation, saving and development fund dubbed the Welwitschia fund in May 2022 (Bank of Namibia, 2022), months after oil discoveries by oil giants Total Energies and Shell off its coast (The Namibia Economist, 2022). The fund is divided into two distinct accounts i.e., the stabilisation account and the

intergenerational savings account. The stabilisation account is capitalised by a dedicated portion of Southern Africa Customs Union (SACU) receipts, budget surpluses and resource rents. In years where SACU receipts rebound to over 9.5% of GDP, at least 2.5% of the receipts are channelled to the fund. Furthermore, in years when there are positive adjustments to SACU receipts at least a third of the positive adjustment is channelled to the stabilisation fund. In addition, in years of fiscal surplus owing to increased SACU revenue, 50% of the surplus is channelled to the stabilisation fund. Moreover, 10% of resource rents inclusive of income from green energy is directed to the fund (Republic of Namibia Ministry of Finance, 2022). The stabilisation account invests the resources “in offshore fixed income accounts with a focus on low-risk liquidity and a medium-term investment horizon of three years (Bank of Namibia, 2022:4). The intergenerational savings account is capitalised by mining royalties (i.e., 15% of mining royalties are deposited into the fund), proceeds from the divestiture of state assets (i.e., at least a third of such assets are accrued to the account) and fiscal surpluses (in years of fiscal surpluses owing to increased resource rents, 50% of the surplus is channelled to the fund) (Republic of Namibia Ministry of Finance, 2022). The intergenerational savings account invests in riskier asset classes such as equity and infrastructure over a longer investment horizon of ten years. Provision is also made to invest in domestic infrastructure projects with socio-economic benefits for future generations (Bank of Namibia, 2022). Due to the investment strategies, the fund’s investment returns have grown from an initial seed capital of NAD\$262 million (US\$14.5 million) to NAD\$425 million (US\$23.5 million) as of March 2024 (Republic of Namibia, 2024). In comparison with the region’s most successful SWF the Pula Fund, the Welwitschia Fund is a dwarf. However, it is on the right track to become an established SWF. The government of Namibia considers gradually deploying SWF types. A stabilisation fund should be deployed first because commodity-price volatility is one of the greatest challenges bedevilling resource rich developing economies such as Namibia. Once the stabilisation fund has enough resources to stabilise the economy in the event of an unexpected external shock policymakers can move on to establish a development fund. Once the development fund has developed the economy to optimal levels, policymakers may consider establishing an intergenerational savings fund (Dixon & Monk, 2011). However, it makes little sense for capital starved, underdeveloped economies such as Namibia to follow the Norwegian SWF model. “Leaving future generations with a healthy and robust economy and society is better than leaving them with a bank account (Matambo & Dixon, 2021).”

South Africa

In 2013, the newly formed Economic Freedom Fighters (EFF) led by Julius Malema a former ruling African National Congress Youth League (ANCYL) President expressed its intention to establish an SWF should it ever come to power. Its founding manifesto reads “Owing to surpluses and many sustainable developmental considerations that will be generated as a result of the South African state’s control and ownership of strategic sectors of the economy, government should establish an SWF, which will prudently invest in the development of the African economy. This fund will also assist in the insulation of the South African economy whenever there are volatilities in resource-sector prices and when non-renewable resource are exhausted. Most countries including China, USA, Saudi Arabia, Norway, Libya, Nigeria, Chile, France and many others, have SWFs for these purposes. As we speak, despite massive resource riches, South Africa has no SWF mainly because South African do not own their resource” (Economic Freedom Fighters, 2013).

From the foregoing it can be deduced that the EFF’s intention is to establish a commodity-based stabilisation and savings fund. To the delight of the EFF, during his State of the Nation Address (SONA) in 2020 President Cyril Ramaphosa highlighted that his administration had decided “to establish an SWF as a means to preserve and grow the national endowment of our nation (South Africa) giving practical meaning to the injunction that the people shall share the country’s wealth” (South African Government, 2020:2). Concomitantly, in his 2020 national budget speech, the then Minister of Finance Tito Mboweni announced the establishment of a commodity-based savings and stabilisation fund with seed capital that amounted to US\$2 billion. He also highlighted that a relevant bill will be submitted during the 6th Parliament, but this never materialised (National Treasury Republic of South Africa, 2020). During his opening of Parliament address in July 2024, President Ramaphosa announced that “the

establishment of a state-owned SOE holding company (a SIF) will give us (South Africa) greater capacity to build an SWF. This has been successfully done by other countries whose SWFs have built up capital from the performance of SOEs rather than the fiscus” (South African Government, 2024). Unfortunately, South Africa’s 715 SOEs are loss making entities except for the South African Forestry Companies Limited (Parliament of the Republic of South Africa, 2020). With each passing financial year, these entities are experiencing more financial woes, worsening mismanagement and weakening balance sheets. Thus, posing a risk to the country’s debt profile (Phillip, 2021). From the foregoing it can be deduced that South Africa put the cart before the horse. Successful SIFs such as Temasek’s Singapore inherited high performance SOEs. The rationale behind establishing Temasek was to separate government’s role as regulator and owner of SOEs. Thus, establishing an SIF in South Africa will not miraculously turn around the fortunes of South African SOEs.

Tanzania

In 2012, the then President of Tanzania Jakaya Kikwete announced plans to establish an SWF after the discovery of natural gas offshore by Norway’s Statoil, US group ExxonMobil and Britain’s BG Group and its partner Ophir Energy. Kikwete said the government’s intention was to ensure natural gas revenues were used to speed up development (Ng’wanakilala, 2012). However, the intention never materialised largely because Tanzania cannot adequately capture and account for its natural gas revenue. Tanzanian policymakers need to be able to do so before they can seriously consider establishing a commodity-based SWF.

Zambia

Zambia does not have an SWF (US Department of State, 2024c). However, in 2014, the then President Michael Sata announced that Zambia would establish a SIF through the Industrial Development Corporation to oversee the country’s SOEs (Business Day, 2014). However, the fund never materialised because Zambia’s 36 SOEs are largely loss-making entities. In more recent years, election manifestos across the political divide have proposed the establishment of a commodity-based stabilisation fund (Samuel, 2021). A stabilisation fund is more realistic and attainable because the Zambian economy depends on copper. However, government needs to adequately capture and account for its copper revenue if it’s to successfully operationalise a commodity-based stabilisation fund.

Zimbabwe

The Sovereign Wealth Fund of Zimbabwe Act (Chapter 22:20) was enacted in November 2014 and a commodity-based fund named the Sovereign Wealth Fund of Zimbabwe (SWFZ) whose mandate was to promote intergeneration savings and support government’s development, and macroeconomic stabilisation objectives was established. However, in practice the fund was never operationalised in any serious manner because the government of Zimbabwe cannot adequately capture and account for its resource rents. Resource rents are largely looted by the ruling elite. For example, during the Government of National Unity (GNU), the then Minister of Finance, Tendai Biti accused Zimbabwe African Nation Union Patriotic Front (ZANU-PF) of running a parallel. In 2012 he had to revise the budget downwards from US\$4 billion to US\$3.6 billion because of the underperformance of the diamond revenue head. A mere US\$43 million was remitted against a projection of US\$400 million even though the country had exported diamonds more than US\$500 million (Biti, 2012:74). In September 2023, through Statutory Instrument 156 of 2023 President Mnangagwa amended the Sovereign Wealth Fund of Zimbabwe Act (Chapter 22:20) and renamed the SWFZ the Mutapa Investment Fund. He also transferred government’s shareholding in 22 entities (Defold mine, Kuvimba mining house, Zimbabwe United Passenger Company (ZUPCO), Silo Investments, National Oil Company of Zimbabwe, Petrotrade, Netone, Tel One, Powertel, Telecel, Zimbabwe Power Company, Allied Timbers, Air Zimbabwe, Cottco Holdings, Hwange Colliery, Cold Storage Commission, People’s Own Savings Bank, National Railways Holdings, National Railways of Zimbabwe, ARDA, Industrial Development Corporation of Zimbabwe, AFC Limited) in the energy, telecommunication, transport, mining, agriculture, and banking sectors to the fund thereby establishing a SIF. In March 2024 through Statutory Instrument 51 of 2024 the President added seven SOEs (Aurex Private Limited,

ZESA Holdings Private Limited, Export Credit Guarantee Corporation of Zimbabwe, ZESA Enterprises Private Limited, Homelink Finance, Fidelity Gold Refinery, Homelink Private Limited) to the initial capital of the Mutapa Investment Fund. Furthermore, the amendment empowered the fund to transfer funds into and out of Zimbabwe without restrictions and delay.

In his 2024 national budget statement Zimbabwe's Minister of Finance Professor Mthuli Ncube alluded to the fact that the board and management of the Mutapa Investment Fund are mandated to demand and implement turnaround strategies for SOEs under their portfolio (Ncube, 2024:180). Unfortunately, Zimbabwean policymakers put the cart before the horse. Zimbabwe's 107 SOEs are perennial lose making entities that are constantly bailed out by the state thus draining the fiscus (Matambo, Moyo, Mukonza and Chigova, 2022). In 2016 alone, 38 SOEs ran cumulative losses more than US\$270 million. Moreover, the Auditor General argues that 70 percent of SOEs are technically insolvent after running huge losses for decades (The Standard, 2023). Professor Tony Hawkins a leading Zimbabwean economist argues that "the inclusion of loss-making parastatals is just one attempt to hide public finances from parliamentary scrutiny (The Standard, 2023)." For example, the Sentry (2024) alleges that the government of Zimbabwe clandestinely borrowed US\$1.9 billion to recapitalise the Mutapa Investment Fund. Sadly, four-fifths of the debt i.e., US\$1.6 billion (5% of Zimbabwe's GDP) was used to buy out private investors that held 35% equity in Kuvimba Mining House a mining conglomerate linked to Kudakwashe Tagwirei, President Mnangagwa's advisor, and the ruling party's benefactor accused of corruption. The money paid was triple the valuation given to the shares by government in 2022. Professor Mugano another leading Zimbabwean economist argues that the policy decision would only make sense "if parastatals are profitable and they declare their dividends with their shareholder." Furthermore, opposition leader Professor Welshman Ncube argues that the policy decision will not solve anything if government fails to address issues affecting its ailing economy which include widespread poverty, declining industrial capacity utilisation, and high unemployment (The Standard, 2023). In short, the Mutapa Investment Fund was poorly conceptualised and has no meaningful benefit to the ordinary Zimbabwean. Synthesis of central argument is provided below in Table 1.

Table 1. Sovereign Wealth Fund Initiatives in the SADC Region: A Comparative Assessment

Country	Fund Name	Type	Year Established	Status	Foundational Considerations Present	Key Outcomes
Botswana	Pula Fund	Commodity-based	1994	Operational (US\$4 billion)	✓ Prudent fiscal framework ✓ Political stability ✓ Sound governance ✓ Transparent revenue management.	Regional benchmark, fully adheres to Santiago Principles, effective stabilising and savings vehicle
Namibia	Welwitshia Fund	Commodity-based (stabilisation and intergenerational)	2022	Operational (US\$23.5 million)	✓ Gradual deployment approach. ✓ Clear fiscal rules ✓ Offshore investment	Growing steadily, appropriate focus on stabilisation before savings
Angola	FSDEA	Commodity-based	2012	Near collapse (looted)	✗ Institutionalised patronage ✗ Lack of transparency ✗ Political interference	US\$3 billion recovered after looting, fund still finding its feet.
Zimbabwe	SWFZ→Mutapa Investment Fund	Commodity-based→SIF	2014 restructured 2023	Stillborn/poorly conceptualised	✗ Inadequate revenue capture ✗ Loss making SOEs (107 entities) ✗ Opaque governance	US\$1.6 billion questionable debt; no public benefit; hides finances from public scrutiny.

South Africa	Proposed SWF	Commodity-based and SIF	Proposed in 2020 and 2024	Planning stage only	X 715 loss making SOEs X Weak SOE performance X No enabling legislation	Cart before the horse, SIF cannot fix fundamentally unsound enterprises.
Zambia	Proposed IDC (SIF)/Stabilisation Fund	SIF/commodity-based	Proposed (2014,2021)	Not materialised	X Loss making SOEs X Inadequate revenue capture	Stabilisation fund more realistic; must first capture copper revenue.
Tanzania	Proposed SWF	Commodity-based	Proposed (2012)	Not materialised	X Inadequate gas revenue capture	Cannot operationalise without proper revenue accounting.
DRC	FOMIN (Future Fund)	Commodity-based	Proposed (2018 mining code)	Not operationalised	X Armed conflict X State-led corruption X Weak macroeconomic policies	Must first achieve peace, rule of law and revenue capture.
Mozambique	Rovuma Basin SWF	Commodity-based (stabilisation and savings)	2024	Newly established	± Adheres to Santiago Principles (legislated) ✓ Clear allocation rules ✓ Revenue capture capacity uncertain	Will only succeed if government adequately captures resource rents.
Mauritius	MIC→Potential SWF	Undetermined	2020 MIC	Associate IFSWF member, considering SWF status	✓ Strong governance context ✓ Stable macroeconomy	Well-positioned, if it proceeds; must clarify fund type and purpose.

6. Conclusions

This paper has argued that SWFs are often misinterpreted as catalysts for development when, in reality, they are the products of it. The regional experience within SADC, with the notable exception of Botswana, demonstrates a consistent pattern of failure. Attempts to establish SWFs in Angola, Zimbabwe, and elsewhere have resulted in "premature funds" that either collapse, become instruments of patronage, or remain stillborn on the drawing board. These failures stem from a fundamental misdiagnosis: policymakers seek to replicate the visible institution (the SWF) while neglecting the foundational context that makes it viable. True success stories, like Norway's GPF or Singapore's Temasek, did not create prosperity from scratch. They were built upon pre-existing bedrock of robust institutions, sound macroeconomic management, effective governance, and, in many cases, already-industrialised economies. The Botswana Pula Fund stands as a regional proof of concept precisely because it emerged from and is supported by such a stable, prudently managed environment. For most SADC members, the primary obstacle to development is not the absence of a sovereign investment vehicle, but the absence of the conditions that would allow one to function successfully and for the benefit of the public.

7. Recommendations

For policymakers in the SADC region, the path forward requires a recalibration of priorities. The focus must shift from the fund itself to building the foundations that could eventually sustain one. First, the primary policy objective must be to strengthen the fundamental pillars of economic management: transparency, the rule of law, effective regulatory oversight, and anti-corruption frameworks. Without these, any pool of sovereign capital risks being misappropriated. Institutional reforms that ensure the proper capture, accounting, and transparent management of natural resource revenues are a non-negotiable first step. Second, before creating a savings fund for future generations, governments must achieve fiscal discipline and macroeconomic stability. This involves

implementing sustainable fiscal rules, managing debt prudently, and building credible monetary policy. As the case of Ghana illustrates, it is economically irrational to save small returns in a fund while paying high interest on sovereign debt. Third, not all SWFs are alike, and the Norwegian model is often inappropriate for capital-starved, developing economies. For most resource-rich SADC countries, the most logical and attainable first step is a stabilisation fund designed specifically to manage commodity price volatility and smooth government expenditure. Only once this is successfully operational and broader development gains are secured should the more complex goals of intergenerational savings or strategic development funding be considered. Fourth, The experience of Zimbabwe and the challenges in South Africa show that creating a Strategic Investment Fund (SIF) to manage underperforming, loss-making SOEs is putting the cart before the horse. The Temasek model works because it inherited viable companies. Therefore, the priority must be comprehensive SOE reform i.e. improving governance, commercial discipline, and profitability before consolidating them under a sovereign fund structure. An SIF cannot magically cure deeply rooted inefficiency. In essence, the recommendation is to exercise policy patience. Sustainable development, driven by good governance and sound economics, must be the foremost goal. A SWF may then naturally emerge as a by-product and tool of that success, rather than a poorly conceived and ultimately futile attempt to shortcut it.

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Funding: The research is funded by University of Johannesburg, School of Public Management, Governance and Public Policy, South Africa

Author Contributions: Conceptualization: (*Munashe*); methodology: (*Munashe*); data analysis: (*Munashe, Dominique*), writing—original draft preparation: (*Munashe*), writing; review and editing: (*Dominique*); visualization: (*Dominique*). All authors have read and agreed to the published version of the manuscript.

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DECISION-MAKING PROCESSES WITH FOCUS ON WATER DEMAND PLANNING***Tinashe Mukonavanhu^{1*}, Danielle Nel-Sanders²**

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Received 11 January 2026; accepted 24 April 2026; published 30 June 2026

Abstract. Decision-making processes in Water Demand Planning (WDP) represent a novel and significant concept within the domain of public administration. This paper employs a qualitative approach, integrating both secondary and primary data sources. Secondary data, acquired through a systematic literature review encompassing 468 documents from Scopus-indexed journals spanning from 1972 to 2024, shed light on the extensive literature surrounding decision-making processes in WDP. However, the bulk of this research has predominantly emanated from developed countries such as the USA, UK, Australia, and the Netherlands, with developing nations lagging in this area of study. In addition to secondary data analysis, primary data from interviews and questionnaires are utilised for thematic and statistical analysis. Insights gleaned from interviews and questionnaires suggest a potential deficiency in organisational decision-making processes within management ranks. In summary, this study underscores the newfound importance of decision-making processes in WDP within the public administration sphere.

Keywords: decision-making; water demand planning; systematic review; public management; public administration; government

Reference to this paper should be made as follows: Mukonavanhu, T., Nel-Sanders, D. 2026. Decision-making processes with focus on water demand planning. *Insights into Regional Development*, 8(2), 66-81. <http://doi.org/10.70132/m3538249878>

JEL Classifications: H30

Additional disciplines: Public Policy

1. Introduction to decision-making in public administration

Decision-making processes are significantly affected by prevailing public management styles. The underpinnings of decision-making processes in public administration stem from the theoretical frameworks that guide the field itself. Decision support regarding impacts, adaptation, and vulnerability has evolved from linear, science-driven approaches to encompass a diverse array of methodologies drawn from various disciplines (Westra & Zscheischler, 2023).

Notably, the New Public Management (NPM) theory underscores the importance of granting discretion to modern public managers in their decision-making capacities within their specific areas of jurisdiction. Unlike traditional public administrators, who adhered strictly to established rules and regulations, with minimal discretion and direct responsibility, today's public managers are expected to be more proactive, exercising decision-making authority and bearing responsibility for delivering public services (Masruki & Hussainey, 2022). The study of decision-

* The research is funded by University of Johannesburg, School of Public Management, Governance and Public Policy, South Africa

making processes in public administration has garnered significant attention within the academic community, with numerous researchers delving into the topic (Böhmer et al., 2023; De Lima e Souza & Borges, 2023; Roberts, 2024; Montel, 2023; Shalko et al., 2023; Marienfeldt, 2024; Chintapanti, 2023).

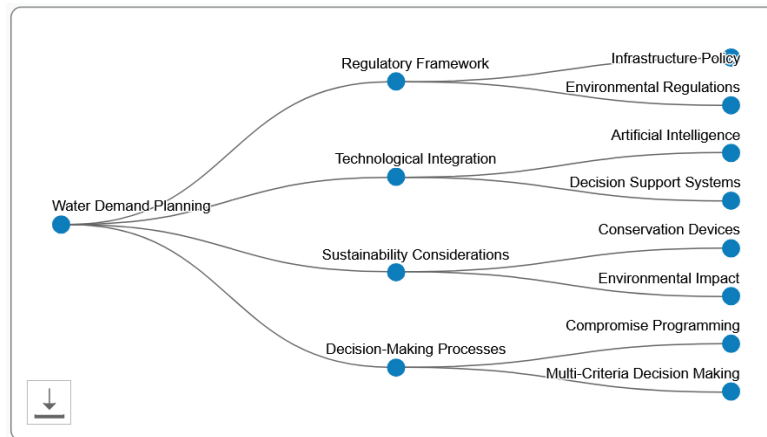
Over the past three decades, reforms inspired by NPM have played a significant role in public institutions across Europe and other OECD nations. NPM emphasises the use of limited public resources by incorporating management techniques from the private sector, partly on the premise that public organisations are inefficient without appropriate incentives. These reforms typically entail the introduction of new organisational or managerial methodologies or alterations within public institutions (Lindaas, Anthun & Magnussen, 2024).

The NPM approach seeks to modernise public administration by embracing market-oriented principles in public services, promoting greater adaptability and transparency, and advocating a shift towards smaller government through initiatives such as streamlining bureaucracy, decentralisation, and privatisation, while integrating liberal market ideals of efficiency and thrift into the public sector to bolster its effectiveness. Central to NPM are principles of managerialism, which entail applying private-sector management methods within public services, coupled with organisational principles from new institutional economics, such as competition, public choice, and principal-agent theories. The objective is to improve efficiency in public sector management and position the economic market as a model for political and administrative dynamics (Lameck & Shabiru, 2023).

Criticism of bureaucracy, characterised by its reliance on rules, permanence, and its dominant role in policymaking, intensified with the rise of neoliberal agendas. The concept of “big government” prompted a re-evaluation of bureaucracy, highlighting its pathologies and inefficiencies, which were perceived as hindering market dynamics. In this neoliberal perspective, reforms in the public sector, such as those advocated by NPM, redefined the role of bureaucracy. Rather than being seen as a rational and effective administrative structure as Weber posited, bureaucracy became synonymous with inefficiency due to its adherence to rules and its monopolistic tendencies. In the UK, Thatcherism brought about neoliberal reforms, including the privatisation of services, the divestment of public assets, the outsourcing of services to the private sector, the establishment of public agencies, and the integration of market principles such as competition and performance management. This shift in the state’s paradigm aimed to introduce free market dynamics, foster competition, and reduce the state’s size (Johnston, 2023).

Over the past few decades, NPM has significantly reshaped contemporary societies. NPM enables the implementation of programs that can be monitored against well-defined objectives, offering clear pathways and targets. In this regard, NPM principles can enhance management practices; moreover, NPM advocates for the elimination of unprofitable facilities. While NPM may strengthen governance and foster more active citizenship, it also facilitates the central government’s retreat from core governmental duties by outsourcing all non-essential public works. NPM promotes cost reduction through various means, including substituting costly services with more affordable alternatives, incentivising delivery, discontinuing unprofitable services, adjusting prices directly, and expanding cost-effective outpatient care (Chen, 2025).

In recent times, a significant number of researchers have directed their attention towards investigating decision-making processes for Water Demand Planning (WDP) (Hoepers et al., 2024; Hibjur Rahaman et al., 2023; Sabia et al., 2023; Zhang et al., 2023a; Sakiyama et al., 2023; Zhang et al., 2023b). Studies focusing on decision-making processes, particularly those incorporating water demand forecasting, are increasingly recognised tools for enhancing water resources management and supporting daily decision-making activities for managers, all while preserving the autonomy of involved stakeholders (González Perea et al., 2023) (Figure 1).

**Figure 1.** Concept map

Source: produced by the SCOPUS AI tool

Consequently, the concept of decision-making processes in WDP has garnered growing interest among public policymakers and managers worldwide over the past half-decade or so.

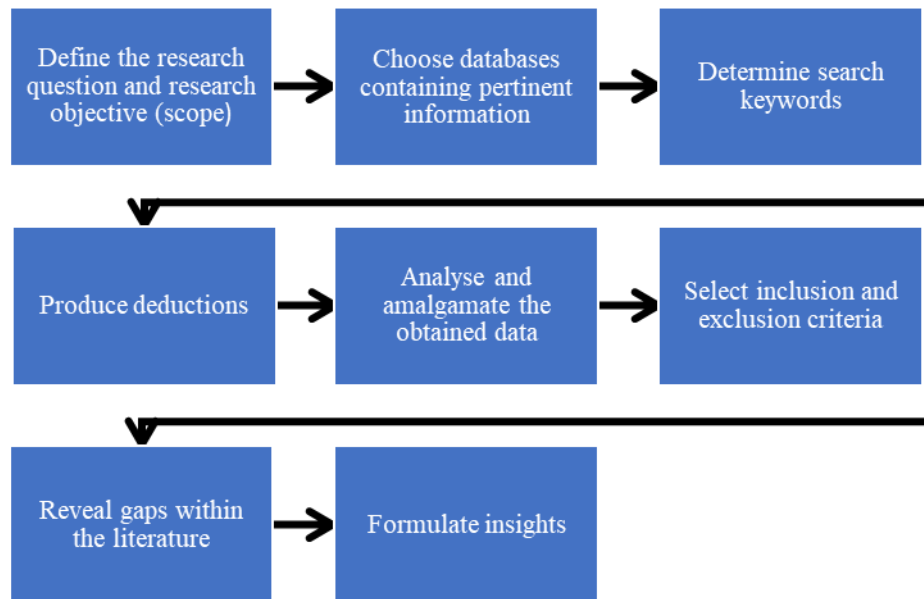
2. Research methodology

When initiating this research endeavour, the authors decided to undertake a literature review. Consequently, they opted for the qualitative method. They examined diverse secondary literature sources, including peer-reviewed journal articles, academic books, articles in professional journals, data sourced from government websites, and material from professional associations, all of which they approached with caution and selectivity. The review encompassed 468 literature sources. Additionally, the authors employed the framework depicted in Figure 2.

**Figure 2.** Literature Review framework

Source: Adapted by the authors, using Leite, Pedilha & Seccati (2019)

Using the above framework, the authors followed the research approach shown in Figure 3 below to address the research question, achieve the research objectives, select the appropriate research methodology, and present and discuss their findings (results).

**Figure 3.** Research approach

Source: Authors' own

- Define the research question and research objective (scope)

Research question: What is the state of research regarding decision-making processes for water demand planning?

Research scope

Given that decision-making processes in WDP involve implementing policies, it would be insightful to examine the historical progression, current status, and driving forces of change in the field. Moreover, although this study focuses on the historical evolution of WDP, it assumes that WDP is integral to public administration reform. Therefore, the research aims to evaluate the development of decision-making processes for WDP critically and to understand the reasons behind its evolution over time. This includes examining the historical trajectory, current state, and underlying factors motivating change, with the overarching goal of substantiating the notion that decision-making processes in WDP constitute a significant aspect of public administration reform.

- Choose a database that offers the most pertinent sources:

Scopus

- Determining search keywords:

To pinpoint applicable publications, the authors opted for search terms (themes): "Decision-making processes", "Water demand," and "Planning." The search terms were utilised through the titles, abstracts, and keywords of scholarly articles and reviews written in English and indexed in the mentioned scholarly literature database.

- Determine inclusion and exclusion criteria:

The search terms (themes) serve as the sole inclusion criteria. Essentially, the resulting dataset encompasses every academic work (published in English) in which at least one term from the search words appears in the title, abstract, or keywords. The authors deemed it appropriate to include literature within the past 20 years, despite acknowledging that the 5-year limit is arbitrary. For validity and reliability, the authors opted to exclude literature older than 20 years. Furthermore, 468 literature sources were examined.

- The synthesis of the gathered:

A methodical examination of secondary literature sources was conducted, employing critical reading and analytical skills. The analysis and synthesis of gathered literature involved addressing the following inquiries: "Was the research project appropriately designed and executed? Are the results and discussions logical, and do they align with the research objectives and methodology? What are the strengths and weaknesses of this study?"

How do the authors substantiate their findings? How does this study enrich the existing research topic?” (Leite, Padilha & Cecatti, 2019).

- Develop conclusions:

Pie charts, graphs, tables, and spreadsheets were utilised to highlight similarities and differences. Following the identification of these similarities and differences in the reviewed literature, the authors presented their own observations and concluded (Leite, Padilha & Cecatti, 2019).

- Identify gaps in the literature:

Employing the aforementioned method, the authors underscored deficiencies in the literature (Leite, Padilha & Cecatti, 2019), particularly noting a significant lack of empirical research on decision-making processes for water demand planning in developing countries. Therefore, further research is imperative to determine the most appropriate decision-making processes for these nations and whether their adoption enhances water demand planning.

- Draft paper, containing authors' insights:

The article was composed in accordance with the research methods outlined previously.

3. Findings from systematic literature

This study conducts a literature review on decision-making processes in WDP using Scopus-indexed journals. The keywords “decision-making processes”, “water demand”, and “planning” were used to search the titles of Scopus-indexed journals, yielding 468 articles on decision-making processes for WDP published from 1972 to 2024. Statistical analysis reveals a notable shift in research attention towards decision-making processes for WDP. Initially, there was minimal focus on this topic until around 2002, when researchers began to emphasise it. For instance, in 2003, four articles were published on this topic, increasing to nine in 2004. The number of publications gradually rose, reaching 42 in 2022. However, in January 2024, only one article on this topic was published in a Scopus-indexed journal. Figure 4 illustrates the distribution of published papers across years.

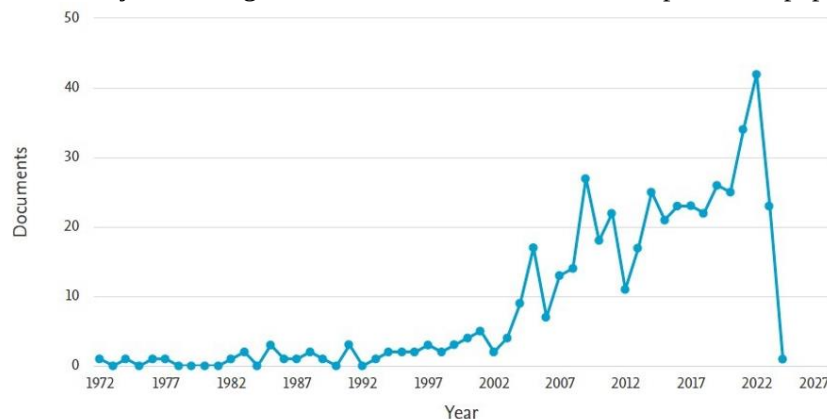


Figure 4. Distribution of papers by publication year

Figure 5 below displays the titles of journals that have published articles regarding decision-making processes for WDP. The data indicate that the majority of these papers were featured in environmental research journals. Notably, the journal *Science of the Total Environment* led with the most articles (19), followed by *Water Resources Management* with 18. The *Journal of Water Resources Planning and Management* ranked third with 15 articles, followed by *Water (Switzerland)* and the *Journal of Cleaner Production*, which published 14 and 9 articles, respectively. Additionally, *Ecological Indicators*, *Sustainability (Switzerland)*, and *Environmental Modelling & Software* contributed 8, 7, and 6 articles, respectively, on decision-making processes for WDP.

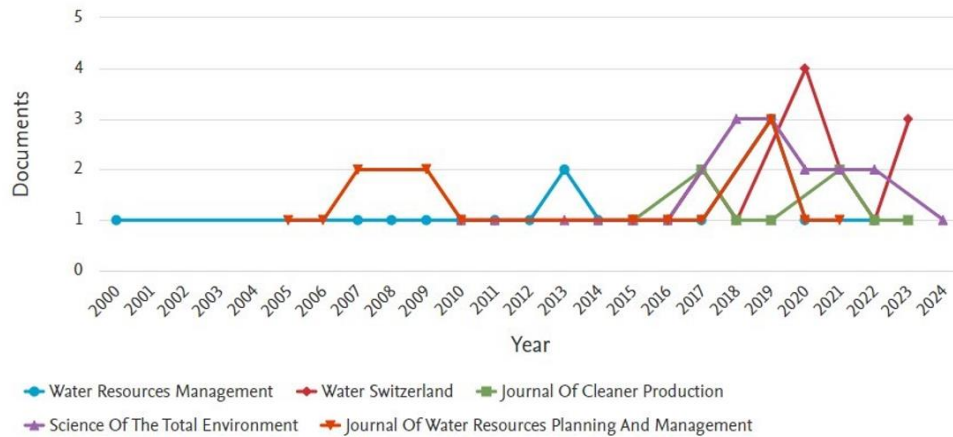


Figure 5. Distribution of papers by journals

Although researchers worldwide have shown interest in decision-making processes for WDP, the majority of research in this area has been conducted in developed countries. The United States has the highest number of articles on decision-making processes for WDP, with 113 publications. China follows with 57 articles, while the United Kingdom and Australia have also made significant contributions, with 46 and 41 articles, respectively. Figure 6 illustrates the distribution of research articles published by each country from 1972 to 2024.

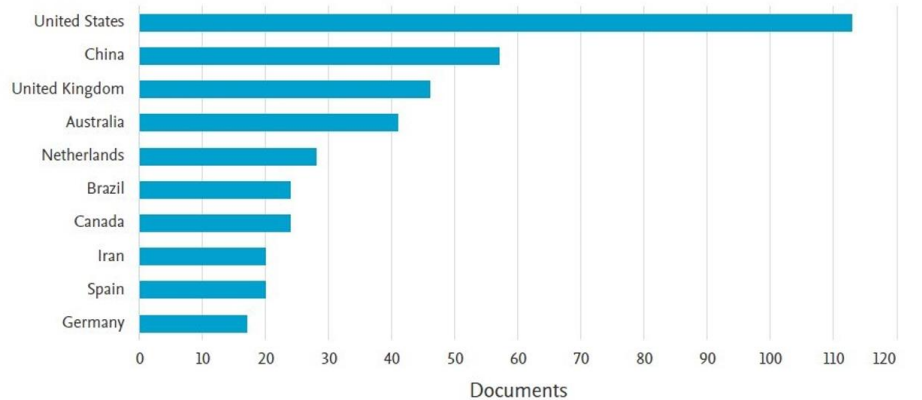


Figure 6. Distribution of papers by countries

Numerous researchers have contributed to the field of decision-making processes for WDP. Among the most prolific authors in Scopus within this field are Li, Huang, Avraamidou, Banihabib, Chung, Islam, Jeffrey, Kapelan, Karamouz, and Lansey, among others. Li has authored six articles on decision-making processes for water demand planning, while Huang has contributed four articles. Avraamidou, Banihabib, Chung, Islam, Jeffrey, Kapelan, Karamouz, and Lansey have each published three articles on this topic. Figure 7 provides a breakdown of the number of papers published by each author concerning decision-making processes for WDP.

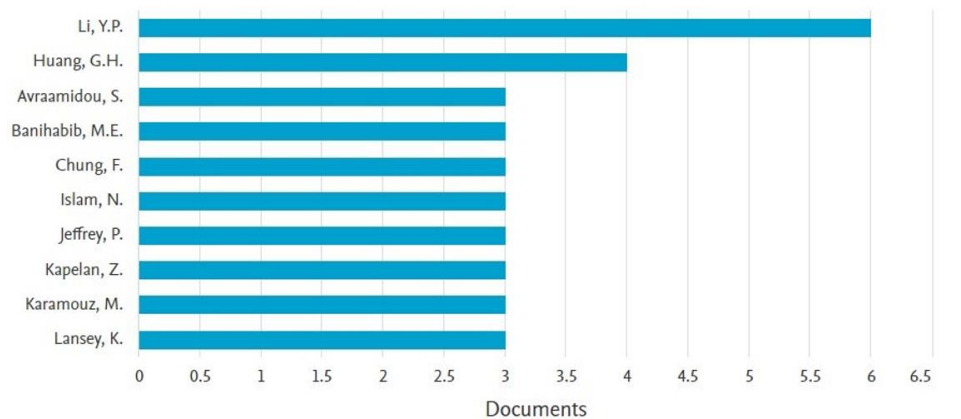


Figure 7. Distribution of papers by authors

Researchers worldwide are actively engaged in studying decision-making processes for WDP. To date, the Commonwealth Scientific and Industrial Research Organisation has been at the forefront, with 12 research papers published on this topic. Following closely, the Beijing Normal University has produced 11 publications, while the University of Tehran ranks third with ten research papers on decision-making processes for WDP. The Chinese Academy of Sciences has contributed eight research articles in this field. The Delft University of Technology, Universitat Politècnica de València, University of California, Davis, and Texas A&M University have each published seven papers on decision-making processes for WDP. Figure 8 provides a graphical representation of the number of publications per university concerning decision-making processes for WDP.

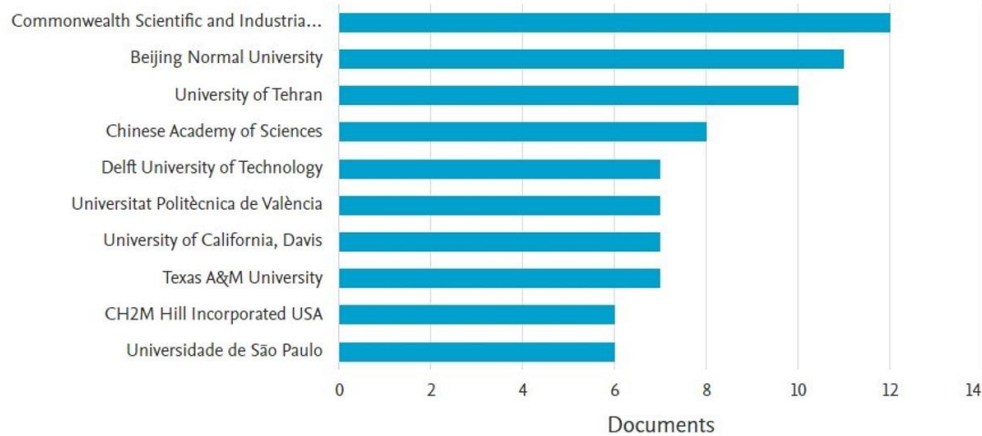


Figure 8. Distribution of papers by universities

Research on decision-making processes for WDP serves the betterment of society and spans various fields of study. While it falls under the realm of social sciences, it is also interconnected with other disciplines. Numerous researchers from diverse fields incorporate concepts of decision-making processes for WDP into their studies to better humanity. Figure 9 illustrates that 35.6% of the research on decision-making processes for WDP is conducted within the Environmental Sciences domain. Engineering accounts for the second-largest share, at 15.6% of the research output. Social Sciences rank third in terms of publication contributions, making up 11.3% of the total production on decision-making processes for WDP. Agricultural and Biological Sciences follow, contributing 6.8% to research publications on this topic. The analysis demonstrates that decision-making

processes for WDP are multidisciplinary, encompassing various subject areas such as Earth and Planetary Sciences, Energy, Computer Science, Mathematics, Business, Management and Accounting, and Biochemistry, among others.

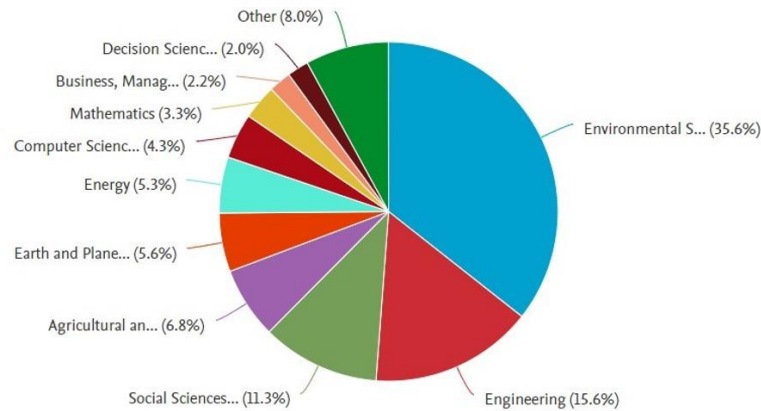


Figure 9. Distribution of papers by subject area

The highest number of published documents on decision-making processes for WDP, totalling 25, indicates a significant research investment by the National Natural Science Foundation of China (Figure 9). Another noteworthy contributor is the U.S. National Science Foundation (NSF), which has supported 14 studies published in Scopus within this field. Additionally, the Brazilian agency Coordenação de Aperfeiçoamento de Pessoal de Nível Superior has sponsored a considerable number of studies, totalling nine publications in Scopus on WDP decision-making processes, indicating an international perspective on this subject.

The European Commission has eight publications listed in Scopus concerning WDP decision-making processes (Figure 10). Its involvement reflects a commitment to research and collaboration on WDP at the European level. Additionally, there are various other sponsors, with publication numbers ranging from one to seven. This diversity of sponsors from different countries and organisations shows the global interest and support for research in this field. Several sponsors with similar publication count (e.g., six, five, four) have contributed at comparable levels, underscoring collaborative endeavours and shared interests in understanding decision-making processes related to WDP. Many sponsors are listed with only one publication, indicating smaller-scale contributions but still highlighting a widespread interest and support network for research in this area.

International collaborations are evident in the publications listed on Scopus concerning WDP decision-making processes (Figure 10). The presence of sponsors from various countries and regions reflects a cooperative and interconnected approach to studying these processes. Both governmental and non-governmental organisations, such as the National Key Research and Development Program of China, the Ministry of Science and Technology, Israel, as well as non-governmental organisations, such as the global environment nonprofit Nature Conservancy and The Rockefeller Foundation, indicate a diverse range of funding sources. Universities and academic institutions, such as Lund University and Imperial College London, also sponsor research on decision-making processes in WDP.

In conclusion, Figure 10 illustrates a diverse and worldwide panorama of financial backing for research on WDP decision-making processes, with substantial contributions from different nations, governmental entities, and non-governmental organisations. The variety of sponsorship sources suggests an interdisciplinary approach to tackling the challenges associated with WDP.

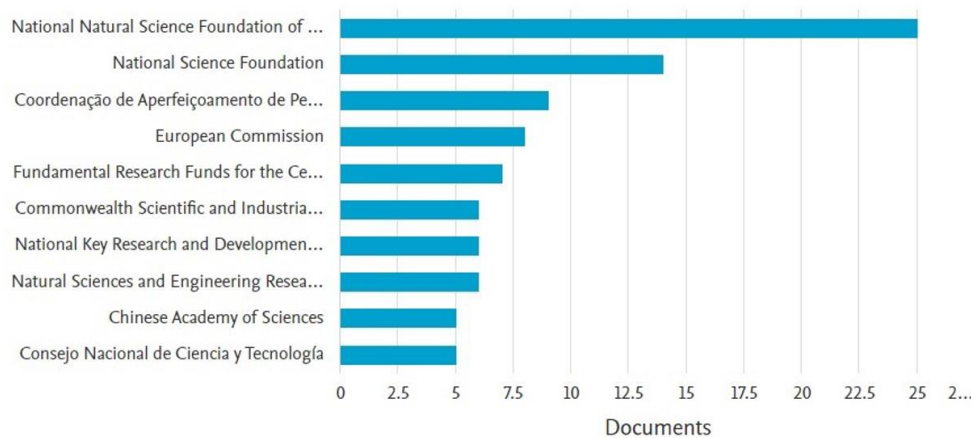


Figure 10. Distribution by funding sponsor

Figure 11 illustrates a predominant presence of articles (65.8%), indicating a substantial emphasis on scholarly investigation concerning decision-making processes in WDP. Articles offer detailed insights, methodologies, and findings derived from specific research endeavours. The inclusion of conference papers (23.1%) suggests active engagement and dissemination of research findings and discussions on decision-making processes in WDP through conferences. Conference papers may provide practical applications and innovative perspectives. The relatively lower proportion of book chapters (4.7%) implies that although there is some coverage in book format, it may not be as extensive as other formats. Book chapters likely delve into specific aspects of decision-making in WDP in greater detail. The presence of reviews (4.3%) indicates an effort to synthesise literature and research on decision-making processes in WDP. Reviews offer a broader understanding of the current state of knowledge in the field. The lower conference review count (1.3%) suggests that critical assessments of WDP-related conferences are less common. Conference reviews can offer insights into key discussions and emerging trends in the field. The least prevalent format is books (0.9%), suggesting that comprehensive publications on decision-making processes in WDP are less common. Books may provide a comprehensive perspective on the subject, covering various aspects in greater depth.

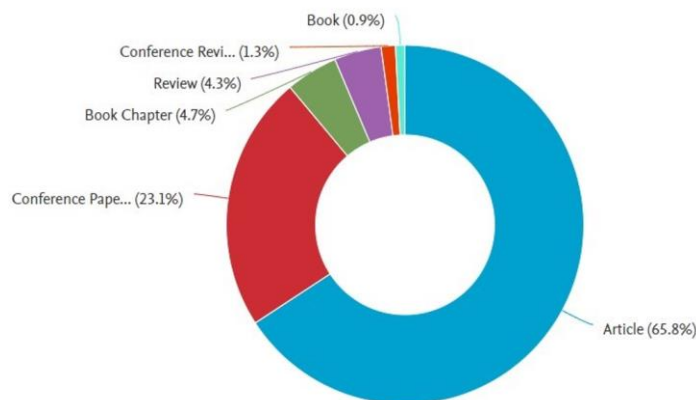


Figure 11. Distribution by type

In conclusion, the distribution of document types highlights a notable focus on scholarly articles and conference papers, underscoring a research-driven approach to understanding and addressing decision-making processes in

WDP. The array of document types further indicates a broad spectrum of sources, encompassing detailed research investigations, comprehensive reviews, and conference contributions.

4. Findings stemming from primary data analysis

In a research endeavour focused on eliciting recommendations from experts regarding the flexibility of the Vhembe District Municipality (VDM) in decision-making processes for WDP, interviewees were posed the following inquiry: “Do the decision-making processes within the Vhembe District Municipality exhibit flexibility and demonstrate effective adaptation to meet the requirements of water demand planning?”

The primary data for the study were collected using a mixed-methods approach that integrated both quantitative questionnaires and qualitative face-to-face interviews. Over three days in 2022, the first author directly administered an open-ended interview schedule to five handpicked management-level participants, and 50 other respondents, including supervisors, technicians, planners, administrators, and lower-level employees, completed structured self-administered questionnaires. A total of 55 individuals took part in the research. The Vhembe District Municipality's various departments, including Agriculture, Forestry and Fisheries; Sports, Arts and Culture; Environmental Affairs; Health and Social Development; Energy; Provincial and Local Government; Local Government and Housing; and Water Affairs, were targeted through a non-probability, purposive sampling method. The in-depth interviews provided qualitative insights, whereas the questionnaires yielded quantitative data suitable for descriptive statistical analysis.

The majority of interview participants concurred that the decision-making processes within the VDM exhibit flexibility and effectively adjust to meet the demands of WDP. They indicated agreement with the notion that the VDM demonstrates adaptability in its decision-making processes in response to WDP requirements. Specifically, 80% of participants acknowledged that the VDM's decision-making processes were flexible enough to cater to the needs of WDP (Mukonavanhu, 2022). According to these respondents, varying circumstances necessitate different solutions and decisions, leading to evolving decision-making processes over time. Moreover, they noted that decisions evolve as problem dynamics change, influenced by factors that also change over time. The consultation processes involving community members in decision-making were viewed as enabling the municipality to make decisions aligned with community needs, thus reflecting changing times and conditions. Notably, none of the participants adopted a neutral stance on whether the VDM's decision-making processes are flexible and adaptable to WDP needs, and none disagreed with this assertion. Among the participants, 20% expressed disagreement regarding the effectiveness of the VDM's decision-making processes in terms of flexibility and adaptation to WDP needs (Mukonavanhu, 2022). To illustrate, one participant who held this view stated: *“With regards to the flexibility in decision-making processes, the graph is just straight, as one would not be able to determine whether any changes are actually made in terms of the decisions that were made, with most of the activities that take place being more of a routine. Innovation is suppressed in the public sector unless higher authorities determine that action is needed. However, it is difficult for the public servants to come up with innovative ways of doing things, as they, in most cases, have to adhere to existing guidelines and frameworks.”*

While the interview findings suggest that the VDM's decision-making processes are flexible and responsive to WDP's demands, the literature presents contrasting evidence. Access to water in the Vhembe District remains a significant problem, despite several policy changes implemented since 1994. Communities depend on numerous sources, mainly boreholes, and roughly as few as 28% of these boreholes work, causing unhappiness with respect to water quantity, quality, and service delivery, indicating a lack of effective adaptation in the VDM's decision-making processes to address limited water access (Malima & Pindihamu, 2022). This implies that the VDM may lack sufficient training in adaptability for its management in decision-making processes. Moreover, the VDM makes insufficient efforts to encourage citizen participation in IDP processes, which is crucial for identifying current community challenges and facilitating adaptation to environmental changes. Additionally, the VDM's

management styles may not be conducive to adaptable decision-making. It may be necessary for the VDM to steer clear of rigid management approaches, such as bureaucratic management, which tend to centralise information with top management, thereby restricting the potential for inclusive and adaptable decision-making.

All stakeholders engaged in WDP must participate in decision-making processes, fostering compromise, negotiation, and accommodation of diverse viewpoints to ensure flexibility and responsiveness. Adopting a polycentric system with multiple decision-makers who consider their individual perspectives and expertise can enhance decision-making flexibility and responsiveness to specific contexts in WDP. Managers, serving as decision-makers in WDP, should also ensure that their decision-making processes remain adaptable and responsive to evolving environments. Excessive reliance on bureaucratic decision-making procedures hampers effective communication within the municipality. Instead of rigid bureaucratic approaches, organisations should embrace socially inclusive and democratic principles. Democratic frameworks would mitigate inequalities and promote social justice by employing communication and negotiation to reconcile divergent interests. Organisational structures serve as valuable tools by delineating effective communication channels within the municipality. The municipal Integrated Development Plan (IDP) theoretically supports communication and should therefore be leveraged to facilitate effective communication in WDP processes within the VDM.

The introduction of New Public Management (NPM) under neoliberalism brought market dominance into public management, grounded in the idea that private-sector markets operate more efficiently than public-sector markets (Kinder & Stenvall, 2024). Essentially, market-based governance advocates implementing market-oriented strategies in the government sector to leverage proven private-sector strategies and enhance performance in the public sector. Public-Private Partnerships (PPPs) can offer advantages in WDP by fostering competition and productivity in the water sector, broadening service delivery, and reducing costs associated with service provision. Professional Service Providers are also better equipped to manage essential supply chains for service delivery than public entities.

In response to the question whether decision-making processes are flexible and effectively adapt to the requirements of WDP, the larger share indicates that 14 (28%) of the questionnaire respondents strongly agreed with the statement. In comparison, 20 (40%) agreed. Conversely, 5 (10%) participants disagreed with the notion that decision-making processes adequately adapt to WDP needs. No participants strongly disagreed, and 11 (22%) remained neutral. Overall, the majority of questionnaire respondents (68%) agreed that decision-making processes demonstrate flexibility and adaptation to WDP needs (Mukonavanhu, 2022). This suggests that the VDM effectively responds to external environmental changes impacting WDP.

5. Concluding insights and suggestions for decision-making in water demand planning

Engaging all stakeholders in WDP fosters negotiation, bargaining, and the accommodation of diverse interests, thereby promoting flexibility and responsiveness in decision-making. It is crucial to avoid bureaucratic management styles, as they impede effective communication within the municipality. Instead, organisational principles should be based on democratic principles to encourage inclusivity and adaptability. Involving the private sector contributes to decision-making flexibility by aligning decisions with environmental conditions and contextual factors.

Suggestions concerning public officials' decision-making regarding WDP entail advocating for the introduction of comprehensive decision-making methodologies. The recommendations from the study underscore the importance of involving all stakeholders impacted by WDP in policy formulation, integrating WDP approaches to expand decision-making options, contextualising to ensure project sustainability, and improving the flexibility and contextualisation strategies.

The model depicted in Figure 12 below provides a framework for a comprehensive decision-making process in WDP, thereby ensuring the involvement of all stakeholders. According to this model, goals established in WDP are formulated based on identified needs, with all stakeholders, both public and private, included. Public sector organisations, acting as professional service providers (PSPs), play significant roles as they are closely involved in WDP initiatives. By involving all stakeholders in goal-setting, the range of alternatives is expanded, and strategic plans are contextualised. Stakeholders such as households and industries are essential, as they must take ownership of WDP projects implemented in their communities. Stakeholder ownership helps in reducing infrastructure vandalism and encourages reporting of issues such as burst pipes. Effective communication among all stakeholders is crucial for successful collaboration.

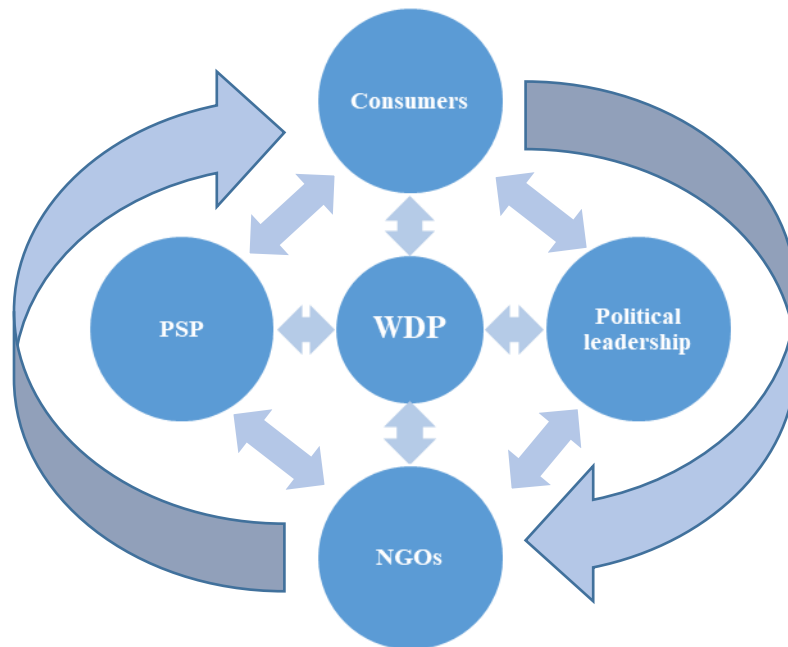


Figure 12. Holistic Decision-Making model
Source: based on Mukonavanhu 2022

The Holistic Decision-Making model (Figure 12) seeks to foster the participation of previously marginalised individuals in decision-making processes regarding water resources, particularly during the apartheid era. This model also upholds democratic principles, including stakeholder engagement, accountability, transparency, and decentralisation, grounded in ethical norms. Additionally, the Holistic Decision-Making model aligns with the principles of NPM, which advocates for professionalisation of the sector through decentralised decision-making processes.

The *vertical vectors* emphasise the advancement of consumers and non-governmental organisations advancing comprehensive decision-making in (WDP).

Consumers

The Holistic Decision-Making model can promote water conservation among consumers by fostering effective collaboration among political leaders and experts to make decisions on efficient water use. Additionally, this model can help minimise water infrastructure. By encouraging dialogue, the model enhances decision-making by Water Service Providers (WSPs), leading to improved water service provision. This, in turn, reduces consumers' sense of desperation, diminishing the likelihood of resorting to vandalism to access water.

Non-Governmental Organisations

The Holistic Decision-Making model has the potential to address skills shortages within the public sector. By fostering enhanced collaboration in decision-making among NGOs, governmental bodies, and consumers involved in WDP, the model facilitates more effective resource utilisation and promotes better cooperation between the public and private sectors, enabling the public sector to leverage resources and expertise from the private sector. This collaboration can contribute to improved planning and financial services within the public sector.

The *horizontal vectors* emphasise the importance of professional service providers and political leaders in advancing holistic decision-making in WDP.

Professional Service Providers (PSP)

The Holistic Decision-Making model can contribute to achieving the objectives outlined in the Constitution of the Republic of South Africa (South Africa, 1996), which emphasises decentralisation and allows the national government to delegate authority. By facilitating cooperative decision-making, particularly when local governments engage professional service providers for water services, the model can ensure that the national government retains ultimate accountability for compliance with legislative requirements in service provision. This involvement of the national government in decision-making processes will help uphold adherence to regulations across all levels.

Political leadership

The Holistic Decision-Making model can help garner political support for WDP in South Africa. This can be achieved by increasing politicians' involvement in WDP decision-making processes, thereby encouraging their endorsement of WDP initiatives. Additionally, the model can assist politicians in achieving their objectives of finding solutions to public-sector challenges by implementing technical solutions that enhance efficiency. WDP incorporates various technical solutions to address the diverse challenges encountered in water service delivery.

Moreover, the Holistic Decision-Making model aligns with the ideologies advocated by Woodrow Wilson and Goodnow, which emphasise the importance of a distinct public administration separate from politics to enhance efficiency and mitigate corruption. This is because the model promotes the integration of business-like principles from the private sector into the public sector, thereby elevating public sector policies to a level more akin to business principles rather than traditional public administration.

As depicted in Figure 12, each stakeholder can engage directly in WDP activities without necessarily involving other stakeholders. However, stakeholders should collaborate on WDP endeavours to ensure a cohesive, integrated approach. Such collaboration enhances the range of available options, tailors responses to specific contexts, and promotes the long-term sustainability of projects. It is essential for WDP initiatives not to be constrained by predetermined goals, thereby allowing for flexibility and adaptation of strategies as needed. According to the model, stakeholders should engage in collaborative efforts and resource-sharing in WDP to enhance the implementation of plans. For instance, NGOs can provide households with tap nozzles to reduce tap water pressure, thereby encouraging water-saving practices among household users.

In conclusion, the Holistic Decision-Making model presents a comprehensive approach to WDP that emphasises inclusion, collaboration, and flexibility. By incorporating stakeholders from various sectors, including public organisations, service providers, NGOs, households, and industries, the model aims to set goals based on identified needs and to promote effective decision-making. This model not only aligns with democratic principles, such as transparency and decentralisation, but also reflects NPM principles by promoting professionalism and accountability in the public sector. It encourages mutual communication among stakeholders to foster cooperation

and ensure that all voices are heard in the decision-making process. Furthermore, the model recognises political support and involvement in WDP initiatives, aiming to align political interests with efficient solutions to public-sector challenges. It also emphasises the importance of approaches, flexibility in goal-setting, and collaboration among stakeholders to maximise contextualisation and ensure project sustainability.

The Holistic Decision-Making model provides a framework for promoting water conservation, addressing infrastructure issues, and enhancing service delivery through collaborative efforts and stakeholder engagement. By encouraging dialogue, accountability, and shared responsibility, the model strives to achieve more efficient and sustainable outcomes in WDP initiatives.

Scholars from developing and underdeveloped nations are encouraged to contribute further to research on decision-making processes for WDP, and, thereby to contribute to the improvement of their respective public sectors.

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Funding: The research is funded by University of Johannesburg, School of Public Management, Governance and Public Policy, South Africa

Author Contributions: Conceptualization: *Danielle NEL-SANDERS*; methodology: *Tinashe MUKONAVANHU*, *Danielle NEL-SANDERS*; data analysis: *Tinashe MUKONAVANHU*, writing—original draft preparation: *Tinashe MUKONAVANHU*, *Danielle NEL-SANDERS*, writing; review and editing: *Tinashe MUKONAVANHU*; visualization: *Tinashe MUKONAVANHU*. All authors have read and agreed to the published version of the manuscript.

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DIGITAL GOVERNANCE FOR IMPROVING SERVICE DELIVERY AND MUNICIPALITIES' ACCOUNTABILITY: CONTEXT OF SOUTH AFRICA**Abongile Pindo***Human Science Research Council (HSRC), South Africa**E-mail: APindo@hsrc.ac.za**Received 15 February 2026; accepted 30 April 2026; published 30 June 2026*

Abstract. Despite the potential benefits of digital governance across South African municipalities, there is a need for an in-depth understanding of its efficacy, challenges, and gaps in improving service delivery and fostering accountability and transparency in this context. Therefore, this paper analysed secondary sources published between 2010 and 2024 on the efficiency of digital governance in improving public service delivery and fostering accountability across the South African local municipalities. The review paper has identified factors that can improve digital governance, as well as potential challenges and gaps that contribute to its ineffectiveness. The findings show that to ensure effective service delivery through the use of digital governance, it is important to invest in ICT infrastructure and to capacitate the municipal officials in the use of digital municipal governance tools to improve accountability and transparency.

Keywords: accountability; digital governance; local governance; service delivery

Reference to this paper should be made as follows: Pindo, A. 2026. Digital governance for improving service delivery and municipalities' accountability: context of South Africa. *Insights into Regional Development*, 8(2), 82-94. <http://doi.org/10.70132/r5484699273>

JEL Classifications: H30

Additional disciplines: Public Policy

1. Introduction

South African municipalities are facing challenges with service delivery and accountability. The introduction of innovative systems and methods of service delivery across municipalities can improve the status quo of service delivery and ensure the sustainable satisfaction of the public with public sector services (Thusi, Mahlatse & Matyana, 2023). South Africa gained its independence over 30 years ago; however, most South Africans still face issues such as poor service delivery. For example, millions of people and businesses are not satisfied with local governance, as their service-delivery promises are never realised by their municipalities, which they trusted with their votes. These service delivery issues include poor infrastructure, overcrowded schools, lack of water, sanitation, unemployment, and electricity (Moichela, 2025).

Every year, municipalities receive funding for service delivery, yet the public remains unhappy. The growing number of service delivery protests proves this. Since the advent of democracy, several communities across the country have embarked on service delivery protests, arguing that more than 70% of South African municipalities fail to provide services to their communities (Chilli et al., 2023). These service delivery protests show that citizens and voters are disillusioned with local governance and the municipality, as their promised services are never delivered. The poor service delivery and lack of municipal accountability also hinder the local government from successfully implementing policy interventions (Qobo, Soko & Ngwenya, 2022). This shows a lack of accountability and dishonesty on the part of the municipal officials. The accountability issues are a sign of

municipal failures to communicate and involve communities. The accountability issues on the municipal side challenge the ethical behaviour expected of municipal officials and politicians. Municipalities are tasked with providing efficient, high-quality, and accountable governance for their communities (Moichela, 2025). In pursuing effective municipalities, municipal accountability, and better service delivery worldwide, municipalities are turning to e-governance or digital services as solutions. The Fourth Industrial Revolution (4IR), in the form of digital governance, is also underway in some municipalities (Khoza et al., 2023). Digital governance services include innovative strategies and technologies to improve service delivery, promote community involvement, enable digitalised administration, provide e-recruitment services, and deploy data analytics tools to overcome service delivery obstacles and achieve efficient, accountable governance (Udovita, 2020).

Maleka and Moeti (2021) emphasise that the arrival and implementation of Information and Communication (ICT) methodologies and systems significantly improved the operations and administrative methods of the public sector. This is because the introduction of new technologies through the 4IR worldwide and in South Africa has enabled public administration processes to be conducted using ICT tools and online platforms, ensuring sustainable digital service delivery. The use of technology is imperative to ensuring that the public is effectively served and that municipalities are accountable for promised service delivery, including through performance management (Khoza et al., 2023). To guide the use of digital services, the Department of Public Service and Administration (DPSA) introduced the Digital Policy Framework. In South Africa, the use of digital methodologies has potential and provides opportunities for improved accountability (Layton-Matthews & Landsberg, 2022; Millan & Lagura, 2026).

Not all South African municipalities are ready for this digitalisation and to integrate e-governance into their Integrated Development Plans (IDPs). On the positive side, the use of advanced technology offers opportunities for municipalities' socio-economic growth and service delivery. However, to ensure its efficacy, this lies within the municipality's strategies and policy implementation, community engagement, and service delivery priority areas (Layton-Matthews & Landsberg, 2022). One advantage of digital governance is that it enables municipalities and public service officials to perform their duties through ICT systems. For example, the use of digital-engagement processes, e-services, public portals, e-city or smart services and goods, broadband fibre rollouts, Closed-circuit television (CCTV) networks, data centre infrastructure, and private cloud solutions is stated to be a few of the systems integrated into e-governance (Kenneth & Makganya, 2023). However, public participation in digital governance is deemed ineffective, and there is an urgent need to ensure comprehensive, open public participation, which means consultation is key.

The introduction of digital governance was beneficial in South African municipalities. However, a significant gap remains in the effectiveness of digital governance across all South African municipalities. There is a need to bring in-depth knowledge of the effectiveness and sustainability of e-government tools, systems, and methods across South African municipalities, and to also review the success level of e-government in municipal service delivery and accountability in both rural and urban municipalities. This paper's objective is to review the efficacy and issues of digital governance in improving service delivery and fostering accountability across South African municipalities, and to propose strategic recommendations to enhance governance services for municipalities and service users.

This systematic review will also offer recommendations for improving digital governance in local municipalities and for how digital governance services may enhance service delivery. Thus, this paper analyses empirical papers, including grey literature (theses, dissertations, and conference papers), that speak about digital governance and accountability across South African municipalities. Using the municipalities' digital governance strategies and accountability is an imperative research area that can develop solutions for the ongoing service delivery protests and dissatisfaction. Some evidence indicates that digital governance improves service delivery; however, implementing it in some communities remains a challenge (Indama, 2023). Based on this, developing solutions to digital governance challenges is important so that communities can learn to trust their governance and municipal systems. This review contributes to the body of knowledge on digital and e-governance for service delivery, as well as to the current status of service delivery and digital governance in South African municipalities.

2. Methods and data collection strategy

This is a desktop study where empirical research articles, including theses, dissertations, and conference papers, were reviewed and analysed. The review was conducted on papers published from 2010 to 2024 that relate to digital or e-governance in improving public service delivery and fostering accountability across South African local municipalities. To ensure the rigour of the review, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework or methodology was used and adapted to meet the paper's inclusion and exclusion criteria. The systematic review of papers for inclusion was conducted across two major databases and a scientific social media platform: ProQuest, Google Scholar, and ResearchGate. The keywords and terms were used to find the relevant papers. These terms or words include: 'e-governance and digital governance in South Africa, service delivery, accountability, and transparency of municipalities in South Africa. After getting the search results from each database and the scientific social media platform, the screening and downloading of the papers began.

The papers were scanned first by title, abstract, and body. Only papers that spoke to the aim of this paper were interpreted. The inclusion criteria were: papers published between 2010 and 2024; peer-reviewed papers; empirical papers; papers on digital and e-governance for improving service delivery; papers written in English; and PhD theses or dissertations. The excluded papers were those published before 2010, not focusing on South African municipalities' digital governance, non-empirical papers, non-peer-reviewed papers, papers not written in English, and theses and dissertations not for PhD purposes. The data extraction phase involved scrutinising the documents against the developed inclusion and exclusion criteria and their alignment with the paper's objective. The majority of the papers were excluded because they did not address e-governance service delivery, were published in the year of publication, used secondary sources for data collection, or did not focus on the South African municipal context. After collecting and reviewing the papers for inclusion and exclusion, the paper was analysed through thematic analysis. Based on the reviewed papers, four key themes emerged. The following is PRISMA Figure 1 showing the papers reviewed.

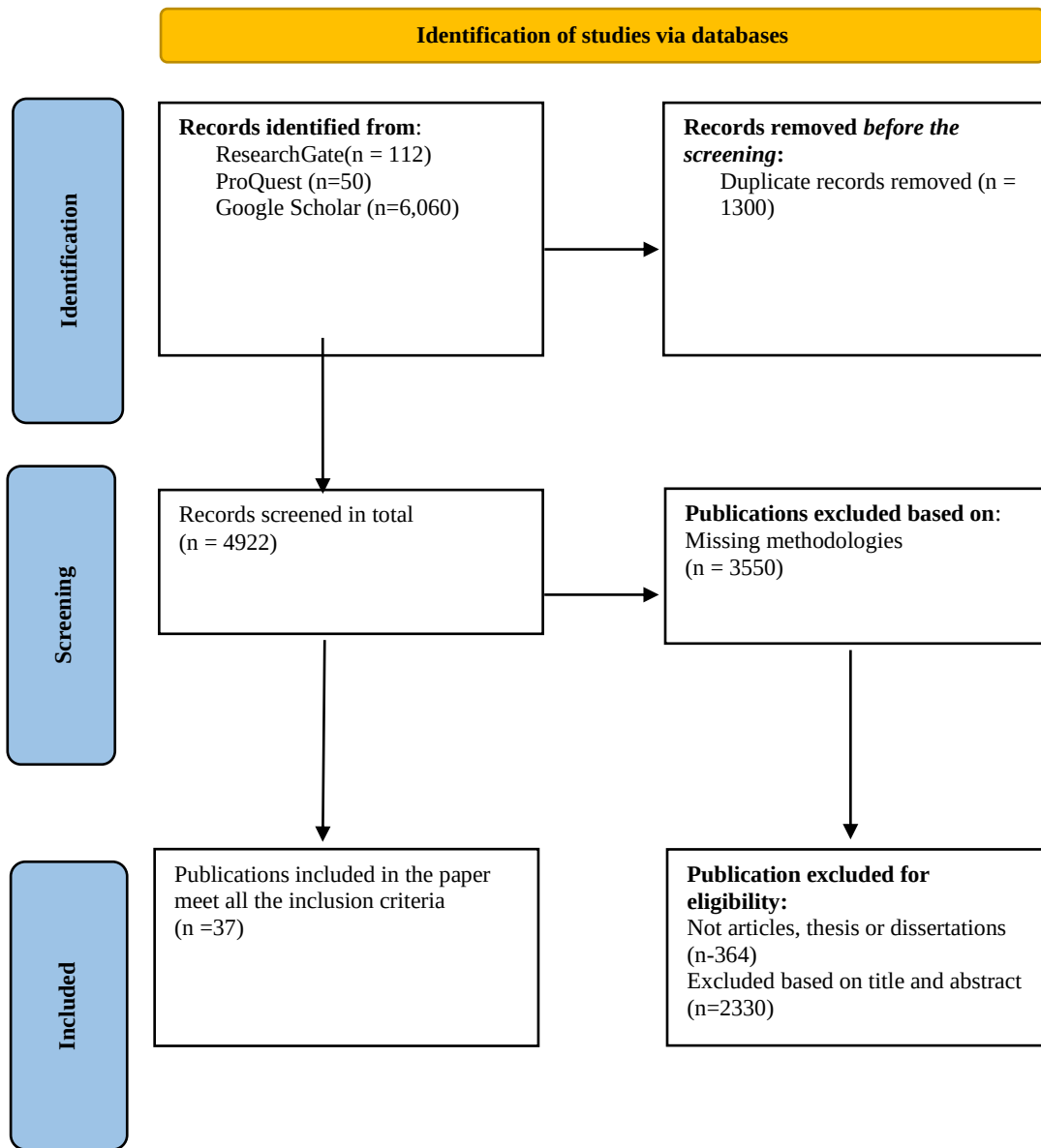


Figure 1. PRISMA 2020 flow diagram for data extraction

Figure 1 represents the screening process for inclusion and exclusion criteria for papers used in the review. The PRISMA diagram in Figure 1 shows how the researcher searched for papers across two databases and a scientific social media platform, resulting in screening 4922 papers after removing duplicates and those that did not meet the inclusion criteria. The paper reviewed and analysed 37 papers that met the inclusion criteria and spoke to the study objective. The diagram also shows the reason for excluding most of the papers. The 37 papers included in the review paper were analysed through thematic analysis. The themes that emerged are discussed in relation to digital governance for improving service delivery and municipalities' accountability.

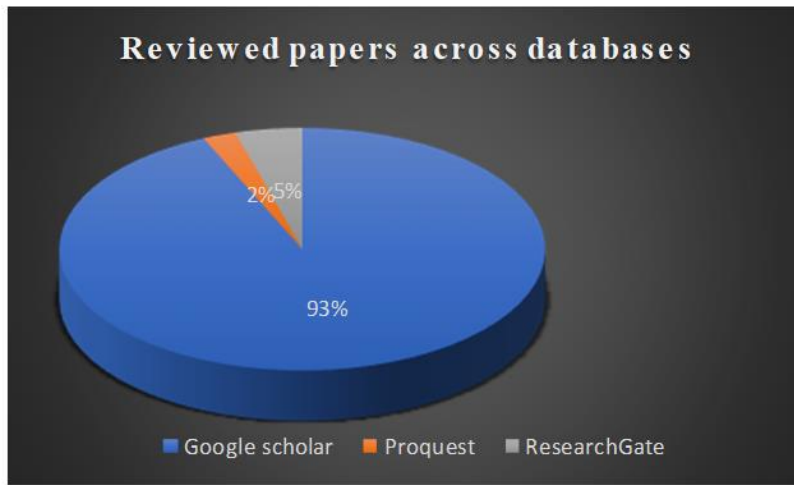


Figure 2. Reviewed papers across databases and scientific social media platforms
Source: by the researcher

Figure 2 illustrates that Google Scholar had the most papers on digital government in South African municipalities; for example, 89% of the papers presented in the review come from Google Scholar, followed by ResearchGate, which accounts for 9% of the papers. The database with the very fewest papers is ProQuest at 02%.

3. Results and discussions

In Table 1 below methods used and findings of reviewed papers are presented.

Table 1. Papers reviewed

Title	Author(s) and year of publication	Methods	Findings
An examination of the Fourth Industrial Revolution in the context of the South African local government	Mhlongo & Thomas, 2024	Qualitative design and purposive sampling	Municipalities use digital governance to improve service delivery through 4IR technologies.
Records management for the administration of the Traditional Council at Ga-Mphahlele in Limpopo, South Africa	Kgomoeswana, Makgahlela & Molaudzi, 2024	Qualitative approach, Case study design	Officials lacked understanding of records management for administration due to resource constraints, and therefore continued using traditional methods.
The role of information and communication technology (ICT) in the transformation of municipalities into smart cities for improved service delivery	Ncamphalala & Doorgapersad, 2022	Qualitative approach	There is a need to improve ICT infrastructure and resources for effective e-governance.
Mediating Factors Of Municipal Service Excellence	Worku, 2021	Quantitative	Respondents are happy with the City of Tswane's service delivery, and there is an effective service help desk.
Exploring Factors Delaying Public Service Delivery in South African Local Government	Thabang, Makhanya & Nel, 2022	Quantitative	There is a lack of resources, personnel, and the ability to use digital service delivery, as well as accountability and transparency challenges.
Realising E-government Access for Socio-economic Development in Rural Areas	Maramura, Dambuza & Jaka, 2017	Mixed methods	A significant number of people have access to ICT, but issues such as accessibility and use of e-governance persist.
Enhancing service delivery through digital transformation in the public sector in South Africa	Shibambu & Ngoepe, 2024	Qualitative	There are no policy frameworks that support the effective implementation of digital governance in service delivery.

Effectiveness of governance towards digitalisation at eThekweni Metropolitan Municipality in KwaZulu-Natal province, South Africa	Govender & Reddy, 2019	Qualitative	There are constraints on using digital systems and a lack of government support.
E-audit to monitor e-government progress to address better service delivery and the digital divide	Moloto & Muchie, 2023	Quantitative	The use of e-auditing services can fast-track service delivery and reduce human error and manipulation.
Devising a strategy for IT governance implementation in municipalities. A case study of South Africa	Sibanda & von Solms, 2019	Quantitative	Lack of IT skills, municipal support, and resources challenges digital governance.
E-Government Implementation: A Reflection on South African Municipalities	Mawela, Ochara & Twinomurinzi, 2017	Qualitative	Limited ICT skills and resources hinder digital governance.
Digital Public Administration and Inclusive Governance at the South African Local Government, Depth Analysis of E-Government and Service Delivery in Musina Local Municipality	Galushi & Malatji, 2022	Qualitative	E-governance may get rid of corruption and poor service delivery
Citizen perceptions of digital transformation in local municipalities: The case of South Africa	Netshirando, Munyoka & Kadyamatimba, 2024	Quantitative research design	Facilitating issues, affordability, perceived privacy, and trust positively affect public intent to accept e-government.
Challenges and Opportunities: The Role of Artificial Intelligence in Reinventing Public Administration in South Africa	Motadi, 2024	Qualitative	Lack of skills, resources, and infrastructure gaps hinder e-government
ICT Adoption and Improving Service Delivery within the Municipalities of the North-West Province, South Africa	Lobelo & Tshidzumba, 2024	Qualitative	The Internet provides effective and efficient communication
Factors That Affect the Effective Use of E-Government Procedures in Limpopo	Moloto & Muchie, 2023	Quantitative	Allocating sufficient budget and resources would facilitate effective e-governance services.
e-Government Innovation for Improved Service Delivery	Kanyemba & Hofisi, 2019	Mixed methods	E-services are essential as they reduce delays and queuing
Challenges of Innovations in Participatory Governance in uMshwathi Local Municipality in KwaZulu-Natal	Mthuli, 2019	Qualitative	There is a digital innovation divide between rural and urban innovation infrastructure.
Towards a Smart City Model for Local Government: The Case of South African Metropolitan Municipalities	Maphangwa & van der Walddt, 2023	Qualitative	Investment in infrastructure and resources is the key to the effectiveness of e-governance.
E-Government Implementation: A Reflection on South African Municipalities	Mawelaa, Ocharab & Twinomurinzi, 2017	Qualitative	Resources, leadership, ICT skills and funding are the main barriers to e-governance.
Mapping and auditing digital literacy of civil servants in selected South African government departments	Mbata, 2022	Quantitative	The public needs a digitally skilled official for effective e-governance
Development of e-government diffusion assessment tool for service delivery in South Africa's municipalities: task-technology-fit approach	Mkhonto, 2020	Quantitative	There is a need for collaboration and ICT infrastructure
Utilisation of the digital central supplier database in enabling electronic procurement in the Limpopo provincial departments.	Mpehle & Mudogwa, 2020	Qualitative	Improves government transparency and accountability
A comparative study on the utilisation of e-government by selected municipalities in South Africa and Rwanda: development of a model for effective and efficient online service delivery	Murenzi, 2016	Quantitative	Slow awareness and participation in e-governance by the public
Readiness factors affecting e-procurement in South African government departments'	Maepa, Mpwanya & Phume, 2023	Quantitative	Factors such as technology and finance affect South Africa's e-procurement readiness.
Assessing the impact of e-government projects: The case of Limpopo province in South Africa	Manyoka & Manzira, 2013	Quantitative	Citizens' satisfaction and reduction of waiting in queues and corruption

Availability and utilisation of information and communication technologies for service delivery: a South African case study	Ntetha & Mostert, 2011	Qualitative	ICT systems are solely used by the officials, not for service delivery
The Adoption of E-Government in the Department of Home Affairs – Unpacking the Underlying Factors Affecting Adoption of E-Government within the Selected Service Centres in Limpopo Province, South Africa	Nokele & Mukonza, 2021	Qualitative	Factors such as age, poor infrastructure, language barrier and motivation impact the implementation of e-governance.
E-government Challenges Faced by Selected District Municipalities in South Africa and Rwanda	Murenzi & Olivier, 2017	Mixed Methods	Infrastructure issues and a lack of ICT devices
Urban Governance in Africa – A Perspective of E-Governance in South African Urban Municipalities	Muridz, Meyer & Masengu, 2021	Mixed method	Development of an e-governance framework
Technology as a driving force of service delivery in the King Sabata Dalindyebo Local Municipality	Ntando & Mofolo, 2024	Mixed method	Training is important for the integration of technology
Digital Transformation Framework for Smart Municipalities.	van der Hoogen, Fashoro, Calitz & Luke, 2024	Quantitative	Improved service delivery and transparency
Smart city readiness in South African municipalities: A qualitative study	Enwereji & Uwizeyimana, 2022	Qualitative	Finance, resources, leadership, and infrastructure are among the issues hindering e-governance.
Information Communication Technology (ICT) and smart service delivery in the Fourth Industrial Revolution: A case of the City of Johannesburg	Shava & Vyas-Doogapersad, 2021	Qualitative	Poverty, inequality, and socio-economic issues hinder the use of e-government services.
The Role of E-Government in Promoting Transparency during Service Delivery in South African Municipalities	Butana & Niyitunga, 2012	Qualitative	A lack of capacity among municipal officials hinders transparency in e-government services.
Urban Governance in Africa – A Perspective of E-Governance in South African Municipalities	Muridzi, Meyer & Masengu, 2021	Qualitative	Municipalities are adopting e-governance full force, and to the IDPs.
Framework for e-governance to improve service delivery for local authorities in South Africa	Muridzi, 2019	Quantitative	Various technological systems are being developed to allow citizens to access municipal information.

The main questions that this paper sought to address were how digital governance can improve service delivery and municipalities' accountability. And what are the challenges and successes that can be experienced due to digital governance in South African municipalities? The following are the emerging themes from the papers included in this literature review paper.

Policy frameworks for digital governance for service delivery

Studies reviewed suggest that the South African public sector lacks a robust policy framework and strategies to implement and monitor the use of the e-governance system for service delivery. This shows that to achieve effective and reliable digital governance, it is necessary to invest in robust digital frameworks and systems, and South Africa is still lagging in this regard. The literature also shows limitations in the policy frameworks that guide the implementation of digital governance. Therefore, without proper digital systems, accountability issues will remain prevalent (Shibambu & Ngoepe, 2024). Proper policy frameworks may play a critical role in addressing the digital divide in rural areas to ensure accessibility. This is also critical to achieving Sustainable Development Goal 09, which focuses on innovation and infrastructure. Arguably, with proper investment in digital infrastructure and public policies, the digital governance of service delivery can be improved to ensure access and success of the municipalities. However, previous research suggests that the digitalisation of service delivery began with the Public Service Act No. 103 of 1994, which allows the Minister of Public Service and Administration (MPSA) to implement standards for information sharing and management within municipalities and the public sector. 40% of the reviewed papers agreed that the DPSA is one of the policy frameworks implemented to monitor the use of e-government for service delivery, followed by the Electronic

Communications and Transactions Act 89 of 2002, which provides directions for innovation and technology usage in both private and public sectors (Republic of South Africa (RSA), 2000). However, several studies have found that e-governance policies for service delivery are flawed. For example, it is arguable that the policies are well-written on paper. Still, there is no evidence of success in implementing them, and such issues lead to further service delivery problems and public frustration with municipalities. However, one of the main gaps in the literature this paper identified was that previous sources fail to qualitatively reveal the main causes of poor policy implementation in e-governance, the extent to which poor policy implementation is a main hindrance to digital service delivery, and the ways poor policies lead to accountability issues for municipal officials. Only a few studies noted that many municipal officials often fail to adhere to the rules and regulations prescribed by the DPSA and the Municipal Financial Management Act (MFMA). The paper also found that, apart from policy implementation, for digital governance to work, it must be a collaborative effort to implement 4IR tools (Govender & Redd, 2019). The paper argues that accountability issues and poor service delivery across municipalities can be minimised through the use of digital platforms, such as ICT strategies, which can foster accountability and transparency (Maepa, Mpwanya & Phume, 2023; Lobelo & Tshidzumba, 2024).

Efficacy of digital tools in service delivery

Studies such as Worku (2021) show that e-government service users are satisfied with ICT systems and e-governance tools, as they facilitate effective communication, prompt responses to queries, and efficient customer service. Mobile devices are key for e-governance systems, as they allow applications to be downloaded and connect people with municipalities (Ncamphalala & Doorgapersad, 2022; Noruwana, 2022). Additionally, e-governance municipal services are welcomed by both the public and officials, as transactions are now more effective and secure, unlike before the introduction of technology, when people had to visit the municipality to conduct transactions. More people in local municipalities are becoming aware of e-services and online payment methods, and their enquiries are resolved effectively without having to visit the municipality or queue, saving time and money on transportation. However, a small number of people and government officials are afraid to use e-governance services; the majority, however, are embracing the systems. Both the municipal employees and the residents were sceptical about the success of e-government. Scholars believe that the public must be included in these e-governance services, which eliminate queue issues for those with Internet access (Galushi & Malatji, 2022). Digital services improve communication within communities and municipalities. However, these e-governments must prioritise citizens' participation, which aligns with the Batho Pele principles (Lobelo & Tshidzumba, 2024). There are several e-service benefits mentioned by different scholars, such as reducing long queues, convenience in applying for jobs and making transactions, and a timely turnaround time in processing by government officials (Kanyemba & Hofisi, 2019). This is because the new technology enables easy access and remote access to information through the use of technology devices and Artificial Intelligence (AI), for example, the use of AI in public service reduces risks of losing data and allows service users to ask clarifications when not sure of the data received (Muridzi, 2019; Motadi, 2024; Mhlongo & Thomas, 2024). This enables the public to stop having to go to municipalities to pay for services, as they can do that from the comfort of their homes or locations (Mhlongo & Thomas, 2024). However, public participation in implementing the e-governance services is important. However, to ensure that no one is excluded, both the public and government officials, it is important to train and educate the public in using technologies such as social media analytics, mobile platforms, intelligent chatbots, and self-service kiosks (Netshirando, Munyoka & Kadyamatimba, 2024). These systems are effective because they reduce administrative errors and corruption (Manyoka & Manzira, 2013; Moloto & Muchie, 2023a,b). However, these systems need funding to be effective, and therefore allocating sufficient budget and ICT-skilled personnel, such as telecommunications engineers and project managers, can lead to more effective, efficient, and improved service delivery (Moloto & Muchie, 2023a,b).

The reviewed literature agrees that the use of digital government tools supports democracy and improves governability and service delivery in a transparent and accountable way (Mthuli, 2021; van der Hoogen et al., 2024). For example, advanced 4IR technology tools for the central supplier database (CSD) have improved transparency and accountability when selecting suppliers that fully qualify to conduct business with municipalities

or government departments. This is because this system reduces human error, favouritism, and corruption (Manyoka & Manzira, 2013; Mpehle & Mudogwa, 2020). However, a study by Ntetha and Mostert (2011) revealed that in some municipalities, ICT systems are used only by officials and not for service delivery.

Challenges in accessing and using ICT for e-governance

Inequalities and exclusion persist in accessing and using e-government services. There is a need for improvement, as having access to technology devices does not equate to the ability to use technology or make online payments, submit applications, or make submissions. This is because the majority of people, especially those residing in rural communities, have no access to the Internet or wireless fidelity (Wi-Fi) to use e-government services (Maramura, Dambuza & Jaka, 2017). Apart from this, various scholarly papers alluded to the fact that ethical issues, limited government resources, limited training, accountability, and transparency issues contribute to ineffectiveness of the e-services and service delivery (Mawela, Ochara & Twinomurinzi, 2017; Mawelaa, Ocharab & Twinomurinzic, 2017; Sibanda & von Solms, 2019; Mkhonto, 2020; Thabang, Makhanya & Nel, 2022; Ncamphalala & Doorgapersad, 2022; Motadi, 2024; Ntando & Mofolo, 2024). Additionally, age, infrastructure, language barriers, and motivation affect the use of e-governance services (Nokele & Mukonza, 2021; Enwereji & Uwizeyimana, 2022). Technology innovation systems, such as AI systems, require trained personnel and advanced infrastructure to be effective, and the South African government lacks the budget for that (Murenzi & Olivier, 2017; Motadi, 2024). 80% of the papers agreed that South African municipalities lack essential skills and technology in using ICT; therefore, skills development investment is essential as limited skills contribute to limitations in implementing the e-government system (Mkhonto, 2020; Mkhonto, 2020; Galushi & Malatji, 2022). For example, rural infrastructure is deplorable, and there is an imbalance in infrastructure between rural and urban municipalities (Butana & Niyitunga, 2012; Mthuli, 2021). The provision of technology infrastructure and budgeting might improve e-government systems (Maepa et al., 2023). The municipalities must invest in infrastructure, which includes both soft and hard skills and expertise in technology and innovation (Maphangwa & van der Waldt, 2023).

Despite the infrastructure issues, a few papers reported that socio-economic factors such as unemployment, poverty, illiteracy, and inequalities are barriers to the effective use of governance systems (Shava & Vyas-Doogapersad, 2021). For example, the levels of awareness and utilisation of available online services among citizens were very low. The main constraints were related to a lack of education and low income (Murenzi, 2016). A digitally skilled workforce is imperative and critical for improved service delivery and productivity in governance (Mbatha, 2015). For example, there are situations in which officials do not understand record management through e-services, which hinders productivity (Kgomoeswana, Makgahlela & Molaudzi, 2024). Such issues lead officials to rely on traditional methods, which slow productivity and are prone to human error.

Conclusions and recommendations

Arguably, the use of e-governance systems for service delivery has both challenges and benefits. The most cited benefits include the effectiveness of information sharing and prompt communication, without having to visit municipalities. However, the rural communities experience internet connection issues, which serve as a barrier to e-governance services. It is important to ensure inclusivity and full access to e-services without excluding some people. This paper shows that to ensure effective service delivery through digital governance, it is important to invest in ICT infrastructure and to capacitate municipal officials in the use of digital municipal governance tools to improve accountability and transparency. One limitation this paper identified is the scarcity of papers that qualitatively and quantitatively assess the effectiveness of DPSA and other municipal policies in digital municipal governance. A robust policy framework to direct and facilitate the use of e-government services is important to ensure transparency and accountability, and it must also ensure public participation.

There is still a lot for the government to do to improve its e-government services and enhance service delivery. More empirical studies are needed in rural areas to examine the use of e-government services and systems, with attention to both citizens and government officials. Moreover, preliminary research on policy frameworks for the effectiveness of ICT tools for digital governance across rural municipalities in South Africa is still needed.

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FROM OPPORTUNITY TO STRATEGY: FUTURE SCENARIOS FOR NIGERIA–EU SCIENCE, TECHNOLOGY, AND INNOVATION COLLABORATION**Leonardo Piccinetti ¹, Trevor Uyi Omoruyi ², Donatella Santoro ³, Mohammed Mahgoub Hassan ⁴, Irie Vroh Bi ⁵, Mohamed Ramadan A. Rezk ⁶**¹ Sustainable Innovation Technology Services Ltd, Ducart Suite, Castletroy, Ireland² Chester Business School, Queens Park Campus, Chester, United Kingdom³REDINN, Italy⁴ National Center for Sustainable Agriculture Research and Development (Estidamah), Riyadh, Saudia Arabia⁴ National Center for Research, Ministry of Higher Education and Scientific Research, Sudan⁵The African Observatory for Science, Technology and Innovation (AOSTI), Malabo, Equatorial Guinea⁵Academy of Scientific Research and Technology (ASRT), 11516, Cairo, EgyptE-mails: ¹leonardo@sinnovations.org; ²t.omoruyi@chester.ac.uk; ³donatella@sinnovations.org; ⁴mohkadis74@gmail.com; ⁵vrohbi@africanunion.org; ⁶mm Ramadan79@gmail.comReceived 25 February; accepted the 2nd May, 2026; published 30 June 2026

Abstract. Science, Technology, and Innovation (STI) have become central to international partnerships in the knowledge economy, particularly in addressing shared development challenges. Within this context, collaboration between Nigeria and the European Union (EU) presents important opportunities for strengthening research cooperation, innovation ecosystems, and technological development. Yet, despite growing policy momentum and expanding scientific engagement, this cooperation remains uneven and often fragmented across institutions, sectors, and funding mechanisms. This paper examines the future trajectory of Nigeria–EU STI collaboration through an integrated analytical framework combining bibliometric analysis, qualitative content analysis, PEST analysis, and scenario planning. Drawing on evidence from 8,468 Nigeria–EU co-authored publications published between 2020 and 2025, the study identifies the main thematic areas of cooperation and the key political, economic, social, and technological drivers shaping the partnership. Based on these drivers, three plausible future scenarios for collaboration by 2040 are developed: Green–Digital Leap, Uneven Pathways, and Drifting Apart. The findings show that Nigeria–EU STI cooperation has a strong foundation in public health, climate and sustainability, governance, education, and emerging digital fields, but its long-term effectiveness will depend on stronger political commitment, more stable and diversified funding, improved institutional and technological capacity, and broader participation across the innovation system. The paper concludes that a more strategic, inclusive, and challenge-oriented partnership could transform Nigeria–EU STI cooperation from fragmented project-based engagement into a resilient framework for co-innovation, capable of advancing sustainable development, green transition, and digital transformation by 2040.

Keywords: Nigeria–EU collaboration; science diplomacy; innovation systems; research partnerships; scenario planning; PEST analysis

Reference to this paper should be made as follows: Piccinetti, L., Omoruyi, T.U., Santoro, D., Hassan, M.M., Bi, I.V., Rezk, M.R.A. 2026. From opportunity to strategy: future scenarios for Nigeria–EU science, technology, and innovation collaboration. *Insights into Regional Development*, 8(2), 95-119. <http://doi.org/10.70132/b5535332757>

JEL Classifications: O2, O31, O32

Additional disciplines: management, public administration

1. Introduction

International cooperation in science and technology enhances the integration and utilisation of global resources, promotes innovation, and strengthens national economic performance. Stable international and regional collaboration networks also support rapid scientific development and improve a country's competitive position in the global arena (Wang et al., 2022). More broadly, collaborative research, innovation, and education initiatives across countries accelerate technological progress and contribute to sustained economic growth through the exchange of knowledge and expertise (Figueiredo et al., 2026; Thach, 2025). Since the late 2000s, the Joint Africa–EU Strategy (JAES) and major African policy frameworks, such as the Science and Technology Consolidated Plan of Action (2005–2014) and the 2007 Addis Ababa Declaration, have encouraged the Africa–EU partnership to prioritise scientific and technological collaboration while promoting both South–South and North–South cooperation in science, technology, and innovation (STI) (Dosso et al., 2022).

Scientific production in Africa is characterised by a high level of international collaboration, although these partnerships often remain uneven in structure and benefit distribution (Confraria et al., 2016). Nevertheless, collaborative networks play an important role in generating knowledge spillovers and strengthening innovation systems across African countries (Toivanen & Ponomarev, 2011). This cooperation has also been institutionalised in strategic sectors. For example, the Africa–EU Energy Partnership, established under the JAES, formalised collaboration on key energy issues and was supported by substantial EU investment in energy access and infrastructure, including more than €12 billion for African, Caribbean, and Pacific countries and targeted mechanisms such as the ACP–EU Energy Facility (Tichý et al., 2022). Similarly, the Pan-African GMES and Africa Support Programme has strengthened African decision-making capacity through Earth Observation services by improving access to data, informing policy, and building institutional and private-sector capabilities (Speranza et al., 2022). Beyond sectoral initiatives, Africa and the EU also cooperate in international fora to address shared global challenges, including climate change, energy security, and sustainable development, through alliances in organisations such as the UNFCCC and OECD (Dodo, 2014). Since 2003, European countries have further expanded research collaboration with sub-Saharan Africa, particularly in poverty-related diseases such as HIV/AIDS, tuberculosis, and malaria. These partnerships have been supported by initiatives such as the European & Developing Countries Clinical Trials Partnership and the EU Research Framework Programmes. This collaboration has produced highly cited research outputs, with greater citation impact than non-collaborative or exclusively intra-African studies (Breugelmans et al., 2018).

The ARISE (African Research Initiative for Scientific Excellence) partnership illustrates this trajectory, as it was established under the AU–EU High-Level Policy Dialogue framework. Aligned with STISA-2024 and Agenda 2063, ARISE aims to strengthen the capacities of African scientists and research institutions while mobilising resources for African development and maintaining European engagement through collaborative networks (Mutua et al., 2025). More broadly, the EU has created multiple scientific and technical agreements globally to provide formal frameworks for research cooperation, with programmes such as Horizon Europe underscoring its commitment to advancing international scientific collaboration and supporting researchers (Di Luca et al., 2021). Within this broader Africa–EU context, Nigeria represents a particularly important case for examining bilateral STI cooperation. Nigeria is a developing country in West Africa, bordered by Benin to the west, Niger to the north, and Chad and Cameroon to the east (Dabara & Chiwuzie, 2022). It possesses considerable development potential, supported by abundant natural resources and a large human-capital base (Grutman & Burnett, 2026). Nigeria has an estimated population of more than 200 million people, with reported figures ranging from approximately 200 million to 216 million, and a population density of about 226 persons per km² (Olaomi et al., 2026). It is also recognised as one of the continent's leading economies, with a GDP estimated between \$472.62 billion and \$522.638 billion (Siéwé et al., 2023; Olabisi et al., 2025). Nigeria's economy is anchored in petroleum, agriculture, trade, and services, alongside an expanding digital and entrepreneurial sector (Ilori et al.,

2002; Abodunde & Jegede, 2020). In science and technology, the country has developed universities, research institutes, innovation hubs, and policy frameworks intended to enhance research and development, build technological capacity, and improve national competitiveness (Abodunde & Jegede, 2020). According to recent studies, STI policy, digital innovation, and technical entrepreneurship are becoming increasingly important to Nigeria's economic transformation (Adeleke, 2021; Rezk et al., 2024).

Nigeria's domestic economic structure reflects a combination of resource dependence and gradual diversification across multiple sectors. While petroleum remains a dominant contributor, agriculture and services also play significant roles in shaping overall economic performance, as illustrated in Figure 1.

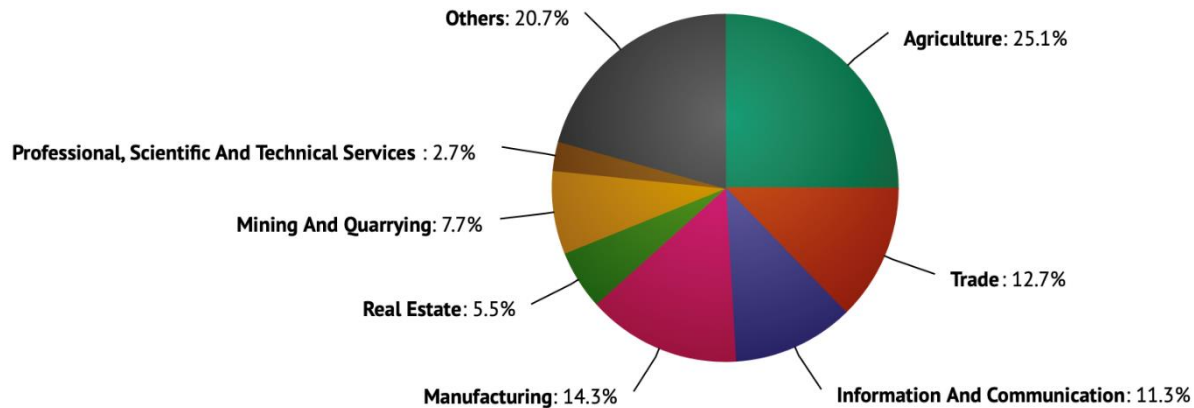
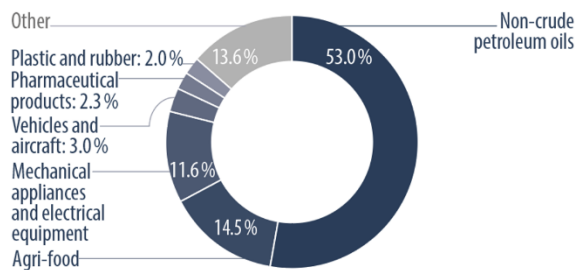


Figure 1. Nigeria's Gross Domestic Product by Economic Activity (% of GDP)

Source: National Bureau of Statistics, 2026

Nigeria's external economic relations, particularly with the European Union, further reveal structural features that shape the context of bilateral cooperation. As illustrated in Figure 2, EU imports from Nigeria are overwhelmingly concentrated in crude petroleum oils and gas, accounting for most trade flows, whereas EU exports to Nigeria are more diversified and include non-crude petroleum products, agri-food goods, and mechanical and electrical equipment. This pattern reflects a persistent asymmetry in which Nigeria continues to export primarily raw or low-value-added commodities while importing more sophisticated industrial and technological products. Such an imbalance underscores the strategic importance of strengthening cooperation in science, technology, and innovation as a pathway toward economic diversification, technological upgrading, and improved integration into higher-value segments of global production and trade.

EU exports of goods to Nigeria (2021)



EU imports of goods from Nigeria (2021)

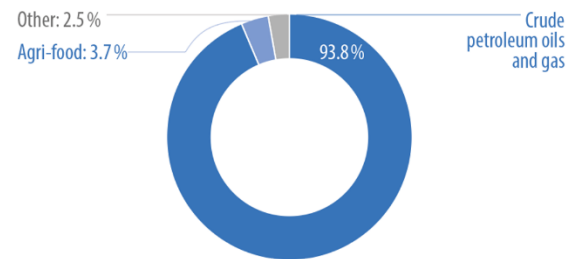


Figure 2. Structure of EU–Nigeria trade in goods by sector (2021).

Source: Members' Research Service, 2025

The collaboration between Nigeria and the European Union in science, technology, and innovation has entered a more institutionalised phase, moving beyond adhoc and project-based engagements toward a formal governance framework. This shift is closely aligned with the broader objectives of the AU–EU Innovation Agenda (2023–2033), which seeks to mobilise STI as a key instrument for addressing shared global challenges and advancing sustainable development. In this context, the European Commission and the Federal Republic of Nigeria opened negotiations for a bilateral Science and Technology Cooperation Agreement intended to strengthen collaboration in research and innovation, in line with the outcomes of the 2023 EU–Nigeria Strategic Dialogue and the 2024 EU–Nigeria Summit. The proposed agreement is expected to provide a structured political mechanism for assessing earlier cooperation, drawing lessons from experience, and jointly defining future priorities consistent with bilateral objectives and the AU–EU Innovation Agenda (The AU-EU Innovation Agenda, 2023).

This institutional deepening has coincided with the second EU–Nigeria Science and Innovation Day, held in Lagos on 24 February 2026, which brought together researchers, entrepreneurs, investors, and policymakers to showcase the growing dynamism of the partnership. More broadly, cooperation in STI has expanded under the Joint EU–Nigeria Roadmap that emerged from the 7th EU–Nigeria Ministerial Meeting in 2020. This growing engagement is reflected in Nigeria’s increasing participation in Horizon Europe and the Global Health European and Developing Countries Clinical Trials Partnership 3 (EDCTP3). To date, 55 Horizon Europe projects involving Nigerian entities have been funded, representing 65 participations by Nigerian organisations and approximately €20 million in support, mainly in health, food, agriculture, and environmental fields. In parallel, Nigeria has participated in 12 EDCTP3 projects with a total value of around €75 million, while 15 Nigeria-based organisations involved in these projects have received approximately €9 million (European Commission, 2026; The AU-EU Innovation Agenda, 2023).

More broadly, EU–Nigeria cooperation in STI is embedded within a wider strategic partnership centered on green and digital transformation, governance reform, human development, and inclusive economic growth. Under the EU’s current external cooperation framework, engagement with Nigeria is tied to the Global Gateway strategy, through which STI is framed not as an isolated sector but as a cross-cutting driver of economic diversification, institutional modernisation, and sustainable development. This orientation is reflected in the Multiannual Indicative Programme for Nigeria 2021–2027, which identifies three main priority areas: Green and Digital Economy; Governance, Peace and Migration; and Human Development. Within this framework, the EU allocated €508 million for the 2021–2024 phase of bilateral cooperation, with funding for 2025–2027 to be determined following a review, while the broader grant envelope for the 2021–2027 partnership amounts to €731 million. Nigeria also benefits from several regional EU programmes, including the €10.2 billion programme for Sub-Saharan Africa over the same period (EEAS, 2021; European Commission, 2025).

Table 1. Main dimensions of collaboration between the European Union and Nigeria, 2021–2027.

Dimension	Main Focus of EU–Nigeria Collaboration
Strategic framework	A long-term strategic partnership based on shared values, mutual interests, and common objectives for 2021–2027
Green and digital economy	Support for economic diversification, private-sector-led growth, job creation, digitalisation, and green transition
Migration and mobility	Joint action on migration, forced displacement, and mobility issues
Human development	Investment in Nigeria’s human capital, especially for youth, women, and girls
Research and innovation	Promotion of science, innovation, and knowledge-based development
Business and investment	Enhancing trade relations and positioning the EU as a key commercial and investment partner
Cooperation mechanism	Coordinated delivery through the “Team Europe” approach

Source: European Commission, 2025

At the intercontinental level, the AU–EU framework for research and innovation cooperation is progressively influencing this bilateral partnership. The first R&I Ministerial Meeting of the AU–EU High-Level Policy Dialogue on Science, Technology and Innovation identified four priority areas for joint action: public health, green transition, innovation and technology, and capacities for science. The ministers also agreed to advance a joint AU–EU Innovation Agenda, reflecting a strategic shift toward impact-oriented cooperation designed to strengthen innovation ecosystems, institutional capacities, and scientific competences across both continents. In this sense, the emerging paradigm of AU–EU research and innovation cooperation emphasises not merely joint investment in knowledge production, but also the generation of tangible societal and developmental impact on the ground (European Commission, 2022).

Despite this growing policy and institutional momentum, an important analytical gap remains. Existing studies have largely focused on policy frameworks, funding instruments, sector specific initiatives, or descriptive assessments of Africa–EU and EU–Nigeria cooperation. Far less attention has been paid to how Nigeria–EU STI relations may evolve under conditions of uncertainty shaped by technological disruption, climate pressures, and changing geopolitical dynamics. Limited research has systematically examined the future trajectories of this partnership through a scenario-based analytical approach. This gap is significant because the transition from fragmented, project-based cooperation to a resilient and strategic long-term partnership depends not only on current institutional commitments, but also on the ability of both parties to anticipate and respond to emerging structural transformations.

This paper argues that the future of Nigeria–EU STI cooperation will be shaped by a combination of interrelated political, economic, social, and technological drivers, whose interaction may produce different pathways for collaboration. While current efforts focus on immediate priorities such as agricultural resilience, digital inclusion, and public health, the long-term success of the partnership will depend on the ability of policymakers and institutional actors to navigate broader global shifts, including the rapid advancement of artificial intelligence, the deepening of the climate crisis, and the shifting dynamics of global geopolitics (Hauck et al., 2019). By studying possible future scenarios, policymakers and researchers can identify the critical uncertainties that will shape the science, technology, and innovation landscape, allowing for the co-creation of adaptive strategies that ensure the Nigeria–EU partnership remains an engine for sustainable and inclusive growth in a world of high uncertainty. Accordingly, this study seeks to examine the future evolution of cooperation between Nigeria and the European Union in the fields of science, technology, and innovation (STI), with particular attention to its possible transition from a fragmented, project-based form of engagement to a more strategic, institutionalised, and sustainable long-term partnership by 2040. Using an integrated analytical framework that combines bibliometric evidence, PEST analysis, and scenario planning, the study identifies the key drivers and critical uncertainties shaping Nigeria–EU STI cooperation and assesses a set of plausible future pathways for its development. In this way, the study contributes to the literature on international STI partnerships by providing a structured methodological basis for forward-looking analysis and by offering insights that may help policymakers, researchers, and institutional actors design more adaptive, resilient, and mutually beneficial forms of cooperation.

2. The current collaboration Nigeria – EU countries

This section analyses the current landscape of scientific collaboration between Nigeria and European Union member states by examining Scopus-indexed 8,468 co-authored publications produced from 2020 to 2025. Drawing on bibliometric mapping and qualitative content analysis, it explores the structure of collaboration networks, identifies the main thematic areas shaping bilateral research partnerships, and assesses the extent to which the resulting knowledge contributes to addressing key societal challenges.

2.1. Network Patterns and Thematic Specialisation in Nigeria–EU Scientific Collaboration

From 2020 to 2025, Nigeria demonstrated a strong pattern of scientific collaboration with European Union member states, generating 8,468 co-authored publications. As illustrated in the VOSviewer co-authorship network

(Figure 3), The collaboration profile was led by Germany, Italy, France, the Netherlands, and Spain, which collectively represented nearly half of Nigeria's total EU-linked co-authored output. This distribution suggests that Nigeria's research engagement with Europe is both significant and concentrated, relying primarily on established partnerships with major European research systems. Nevertheless, the presence of collaborative output across all EU member states indicates a broad transnational network. These findings reflect the strategic importance of EU–Nigeria research ties and suggest considerable scope for strengthening collaboration with a wider range of European partners.

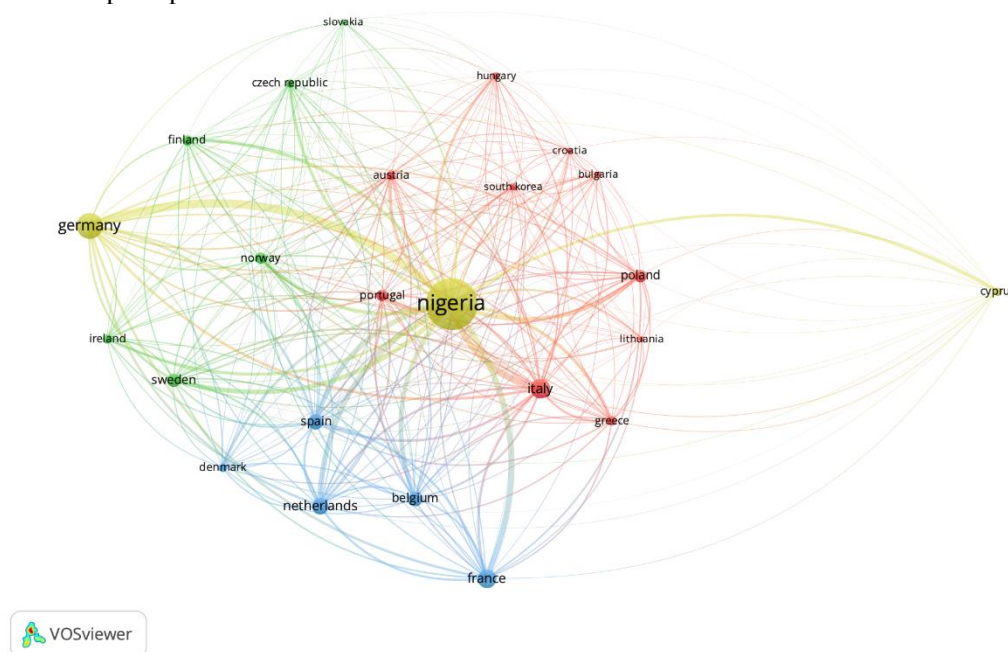


Figure 3. Scientific collaboration network between Nigeria and EU member states based on co-authored publications, 2020–2025

A comparative country–theme analysis, based on affiliation-derived identification of EU partner countries and keyword-assisted coding of titles, abstracts, and author/index keywords, indicates that thematic collaboration between Nigeria and EU member states is differentiated more by emphasis than by fully distinct specialisation. Germany emerged as Nigeria's most extensive EU collaborator in the dataset, appearing in 2,519 records, with strong representation in public health and medicine (1,390 records), climate, environment and sustainability (973), governance, policy and development (964), and artificial intelligence, data science and modeling (538). Italy, which appeared in 1,590 records, and France, represented in 1,411 records, also displayed a predominantly health-oriented profile, with 1,066 and 868 health-related records, respectively, alongside substantial contributions in governance and development (591 and 538) and climate and sustainability (539 and 464). These patterns suggest that the largest Nigeria–EU partnerships are anchored primarily in health-related collaboration, while simultaneously extending into environmental and institutional domains.

The Netherlands, Spain, Sweden, and Belgium also exhibit clearly identifiable thematic profiles. In the Netherlands, which appeared in 1,241 records, collaboration was led by public health and medicine (931 records) and governance, policy and development (592), while agriculture and food systems accounted for a more limited 186 records. This indicates that, within this dataset, Dutch collaboration with Nigeria is more strongly oriented toward health and governance than toward agriculture. Spain, represented in 1,183 records, combined health-related collaboration (812) with substantial activity in governance and development (461) and climate and sustainability (392). Sweden, which appeared in 913 records, showed a comparatively strong governance profile, with 458 records in governance and development, alongside 669 in health and 311 in climate and sustainability. Belgium, represented in 853 records, followed a similar pattern, with strong concentrations in health (640) and

governance (395). Together, these findings suggest that Nigeria's collaboration with Western and Northern European partners is characterised by a strong health core but also by visible engagement with governance and sustainability-related concerns.

Smaller but still significant EU partners display more differentiated thematic emphases. Finland, represented in 586 records, stands out for its comparatively stronger profile in artificial intelligence, data science and modeling, with 158 records, equivalent to 27.0% of its Nigeria-linked output. Poland, which appeared in 865 records, also showed a relatively stronger computational and technology-related component, with 204 records in AI, data science and modeling and 111 in energy. Although these volumes remain lower than those observed in health-related collaboration, they indicate that certain EU partners contribute more visibly to technology-oriented and computational domains. The comparative evidence indicates that public health and medicine remain the dominant thematic foundation across nearly all Nigeria–EU country partnerships, while cross-national variation is most apparent in the relative strength of climate and sustainability, governance and development, and computational or technology-oriented research areas. As country counts and thematic counts are non-mutually exclusive, these values should be interpreted as indicators of relative thematic prominence within each bilateral collaboration profile rather than as exclusive categories.

2.2. Major Research Themes in Nigeria–EU Scientific Collaboration

An analysis of 8,468 abstracts from Nigeria–EU co-authored publications published between 2020 and 2025 reveals a broad and interdisciplinary collaborative research landscape, with strong thematic emphasis on health, sustainability, governance, and technological innovation (Figure 4). Based on keyword-assisted coding of titles, abstracts, and author and index keywords, public health and medicine emerged as the most prominent theme, appearing in 4,292 records (50.7%), indicating sustained collaborative attention to disease burden, clinical care, epidemiology, infectious diseases, and health systems. Climate, environment, and sustainability constituted the second most prominent thematic domain, represented in 2,989 records (35.3%), reflecting substantial engagement with climate change, environmental management, resilience, pollution, biodiversity, and sustainability transitions. Governance, policy, and development also featured strongly, appearing in 2,936 records (34.7%), which suggests that Nigeria–EU collaboration extends beyond laboratory-based inquiry into institutional, regulatory, and development-oriented concerns.

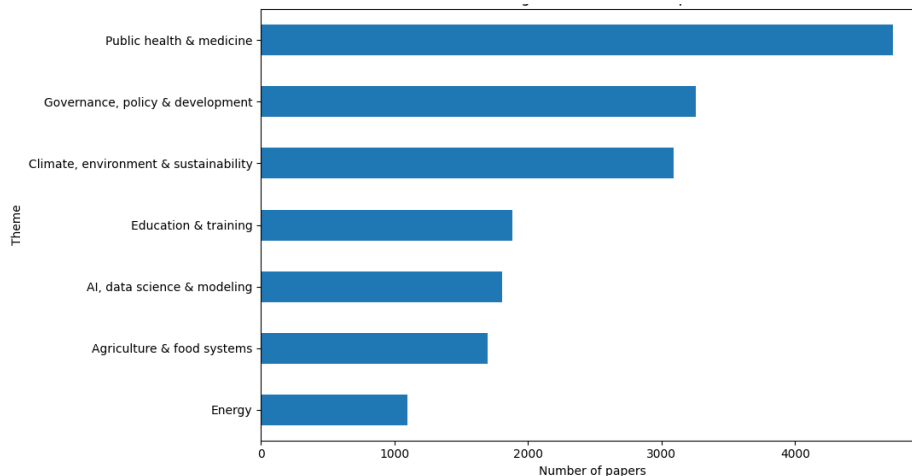


Figure 4. Main research themes in Nigeria–EU co-authored publications, 2020–2025

Additional thematic domains further demonstrate the breadth of the collaboration. Education and training were identified in 1,885 records (22.3%), highlighting the importance of higher education, skills development, and research capacity-building. Agriculture and food systems appeared in 1,679 records (19.8%), underscoring the relevance of food security, crop production, rural sustainability, and agricultural development within the collaborative agenda. Artificial intelligence, data science, and computational modeling were present in 1,257

records (14.8%), pointing to growing engagement with digital methods, predictive systems, and computational approaches across multiple fields. Energy-related research accounted for 924 records (10.9%), indicating an emerging focus on renewable energy, energy systems, and sustainability-linked technological transitions. The Nigeria–EU scientific collaboration is strongly anchored in health research while also displaying increasing diversification toward sustainability, governance, food systems, education, and technology-driven domains, as illustrated in Figure 4.

2.3. Addressing Societal Challenges in Nigeria–EU Research Collaboration

The qualitative content analysis of 8,468 abstracts and their index keywords from Nigeria–EU co-authored publications published between 2020 and 2025 reveals a research landscape characterised by a strong societal challenge orientation. The most prominent challenge domain was health systems and public health, identified in 4,649 records (54.9%), indicating sustained collaborative engagement with disease burden, healthcare delivery, clinical research, epidemiology, and infectious disease management. This was followed by environmental resilience and climate-related challenges, which appeared in 3,024 records (35.7%), reflecting substantial scholarly attention to climate change, adaptation, sustainability, biodiversity, environmental degradation, and resilience. A further 2,576 records (30.4%) addressed poverty reduction, livelihoods, and development-related concerns, suggesting that a considerable proportion of the collaborative output is linked to broader socioeconomic well-being and development outcomes. Governance, institutions, and policy were identified in 2,389 records (28.2%), underscoring the importance of regulatory, institutional, and implementation dimensions within the research corpus.

Additional challenge domains further illustrate the breadth of the collaborative agenda. Education, skills, and capacity building appeared in 1,878 records (22.2%), while food security and agriculture were represented in 1,569 records (18.5%), highlighting the significance of training, agricultural systems, rural livelihoods, and food-related challenges within Nigeria–EU research cooperation. Clean energy and energy transition appeared in 937 records (11.1%), pointing to an emerging, though comparatively smaller, body of collaborative work focused on renewable energy, electrification, and sustainability-oriented energy systems. These findings show that Nigeria–EU co-authored research is strongly oriented toward addressing concrete societal challenges rather than remaining confined to narrow disciplinary boundaries (see Figure 5 below).

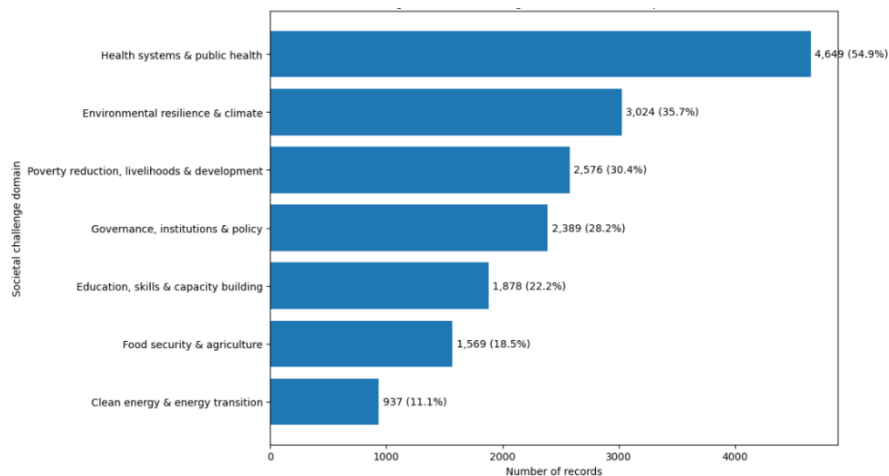


Figure 5. Social Challenge orientation of Nigeria-EU co-authored publication (2020-2025)

The evidence indicates that the collaboration is anchored primarily in health-related concerns, while also engaging substantially with environmental resilience, socioeconomic development, governance, education, food systems, and energy transition.

3. Methodology

This paper adopts a foresight-oriented mixed-methods methodological design to analyse how the partnership between Nigeria and the European Union in science, technology, and innovation may evolve from a fragmented, project-based pattern of cooperation into a more integrated, strategic, and sustainable partnership by 2040. The design is based on the integration of bibliometric analysis, qualitative content analysis, PEST analysis, and scenario planning, thereby enabling the study to combine an empirical and analytical examination of the current state of collaboration with a strategic foresight exploration of its possible future trajectories. The suitability of this methodological framework lies in its capacity to address the complex nature of international STI relations, which are shaped simultaneously by existing institutional patterns, structural transformations, and long-term uncertainties. The selection of this methodological approach is grounded in two main considerations. First, bibliometric analysis and qualitative content analysis allow for a systematic characterisation of the existing structure of Nigeria–EU collaboration, revealing its principal themes, knowledge trends, and policy and institutional orientations. Second, PEST analysis provides a structured explanatory framework for identifying the political, economic, social, and technological factors that shape the environment of this bilateral cooperation, while scenario planning enables the construction of plausible alternative futures for 2040 under conditions of multiple variables and growing uncertainty. Therefore, the study does not seek to predict one deterministic future; rather, it aims to explore a range of possible future alternatives by identifying the key driving forces, critical uncertainties, and strategic configurations that may influence the trajectory of Nigeria–EU relations in science, technology, and innovation.

3.1. PEST Analysis

This study employs PEST analysis as a strategic tool used to assess external macro-environmental factors that influence shaping Nigeria–EU collaboration in science, technology, and innovation (STI). The framework focuses on four interrelated dimensions political, economic, social, and technological factors (Mwogosi & Mambile, 2025; Cox, 2020) and is well suited to the analysis of international STI partnerships, which are influenced by policy environments, funding structures, societal capacities, and technological readiness. In this study, PEST analysis is used not only to assess the current macro-environment of Nigeria–EU STI cooperation, but also to identify the key drivers of change that may shape its future. This analysis is based on qualitative secondary data from multiple documentary sources relevant to Nigeria–EU relations in science, technology, and innovation. These sources include policy documents, strategic frameworks, official reports, program documents, and peer-reviewed academic research. In particular, the analysis draws on materials from the European Commission, Nigerian government institutions, the African Union, EU-AU cooperation frameworks, and international organisations involved in research, innovation, development, and technology policy.

The PEST framework focuses on four interrelated dimensions. The political dimension examines the policy and institutional context within which Nigeria–EU collaboration is embedded, including bilateral and interregional agreements, governance structures, diplomatic relations, regulatory arrangements, and coordination among Nigerian, EU, and African institutions. The economic dimension considers funding arrangements, trade and investment relations, macroeconomic conditions, export competitiveness, and the broader economic factors affecting the sustainability of collaborative research and innovation activities. The social dimension addresses migration dynamics, diaspora engagement, social inclusion, human development conditions, institutional trust, and the societal relevance of scientific cooperation. The technological dimension focuses on research infrastructure, digital capabilities, technological readiness, technology transfer, and the institutional capacity required to support innovation and knowledge exchange.

3.2. Development of Future Scenarios

The development of future scenarios in this study was grounded in the identification of key drivers of change derived from two complementary analytical sources: the analysis of Nigeria–EU co-authored scientific publications and the PEST analysis results. The co-authorship analysis provided insights into the existing structure, thematic trends, and collaborative patterns of Nigeria–EU STI relations, while the PEST framework enabled a systematic assessment of the political, economic, social, and technological factors shaping the broader environment of this partnership. By combining these two sources, the study was able to distinguish relatively stable trends from critical uncertainties with the potential to influence the future trajectory of Nigeria–EU collaboration in science, technology, and innovation. The scenario-building process was refined through two workshops involving 15 experts selected based on their experience in science, technology, and innovation policy, international research collaboration, higher education, innovation systems, and EU–Africa or Nigeria–EU cooperation. The panel included academics, policy specialists, research managers, and innovation practitioners with relevant expertise in both the African and European STI landscape. Their multidisciplinary backgrounds ensured that the scenario exercise captured a broad range of institutional, policy, and strategic perspectives.

The selection of key drivers was guided by three main criteria: relevance, impact, and uncertainty. First, each driver had to demonstrate clear relevance to the future of Nigeria–EU STI collaboration based on evidence from the co-authorship analysis and the PEST framework. Second, the driver had to have a potentially high impact on the direction, quality, or sustainability of the partnership. Third, particular attention was given to drivers characterised by a high degree of uncertainty, since these were considered most likely to shape divergent futures. Through this process, an initial set of potential drivers was identified and subsequently presented to the expert panel during the workshop. The experts critically reviewed, validated, and refined these drivers, and collectively selected those considered most significant based on their relevance, impact, and uncertainty. This step enabled the study to distinguish between relatively stable background trends and critical uncertainties with strategic significance for scenario development.

The final three scenarios were agreed through a structured workshop process in which the experts reviewed the selected drivers, discussed their relative influence and uncertainty, and grouped them into coherent combinations of future conditions (Rezk et al., 2025). Following this discussion, the most significant and uncertain drivers were used to frame alternative trajectories for Nigeria–EU STI collaboration by 2040. The scenarios were then refined collectively to ensure that each one was plausible, internally consistent, analytically distinct, and policy relevant. This process resulted in the selection of three future scenarios representing contrasting but credible pathways for the evolution of the partnership.

4. Results and Discussion

4.1. PEST Analysis Results

The PEST analysis shows that Nigeria–EU collaboration is shaped by a complex external environment in which political, economic, social, and technological factors interact in ways that both enable and constrain long-term cooperation. The results indicate that the partnership is underpinned by important formal institutional arrangements and shared strategic interests. However, its future effectiveness will depend on how successfully both sides address persistent governance challenges, economic instability, social inequalities, and technological capacity gaps.

4.1.1. Political Factors Influencing Nigeria–EU Collaboration

The political dimension shows that Nigeria–EU collaboration is becoming more inclusive of embedded in formalised bilateral and multilateral governance structures, cooperation has been guided by strategic instruments such as the EU Country Strategy Paper and National Indicative Programmes, which define priority sectors and funding allocations, including €512 million under the 11th European Development Fund for 2014–2020, of which €150 million was allocated to sustainable energy and electricity access in Nigeria (Tichý et al., 2022). This

indicates that the political relationship is supported by structured policy frameworks rather than ad hoc engagement. Nigerian government institutions also play a central role in aligning domestic systems with EU standards, especially in export-related sectors such as agriculture. Measures such as full pre-export testing of cocoa beans, the issuance of health certificates, and coordination with EU border control authorities have strengthened regulatory compliance, while training programmes and workshops for food processors, handlers, and exporters have supported adherence to food safety standards and improved market access (Tijani & Kehinde, 2026). In this context, agencies such as the Federal Government, the Cocoa Research Institute of Nigeria, and NAFDAC are important institutional actors in operationalising Nigeria–EU regulatory cooperation (Tijani & Kehinde, 2026).

At the same time, the effectiveness of political cooperation is shaped by domestic institutional conditions and multilevel governance arrangements. Access to credit, women's participation in agricultural decision-making, and the ability of local actors to engage in land-use and investment systems all affect the outcomes of Nigeria–EU collaboration, particularly in fragile and conflict-affected regions (Olanrewaju et al., 2025). Nigeria–EU cooperation is further influenced by partnerships involving Nigerian state governments, the EU, and international organisations such as DFID, the World Bank, and USAID, especially in sectors such as health, agriculture, and education (Ukhurebor et al., 2021). At the regional level, bodies such as NEPAD and the African Union place Nigeria–EU relations within wider continental and plurilateral governance frameworks aimed at collective self-reliance and strategic engagement with global markets, although their effectiveness is often constrained by internal contradictions and limited resources (Ndayi, 2009; Kotsopoulos & Mattheis, 2018; Chidozie et al., 2024). In addition, non-formal actors, including market associations, town unions, civil society organisations, and informal groups, continue to shape policy implementation, sometimes privileging localised interests over broader national priorities (Schreier, 2024).

The broader political context also reflects longstanding structural weaknesses in Nigeria's development planning. Although the country has introduced laws and policies intended to promote indigenous technological development and the acquisition of foreign technology, earlier national development plans did not adequately position science and technology as a strategic driver of development (Okejiri, 2000). Despite multiple National Development Plans, Nigeria has remained heavily dependent on crude oil, while manufacturing growth and industrial capacity utilisation have remained weak. High production costs, weak demand, expensive maintenance, the influx of cheap imports, and political instability have all contributed to poor industrial performance (Ilori et al., 2002). The findings indicate that the political environment for cooperation between Nigeria and the European Union has become more structured and supportive, but it remains constrained by fragmented governance, institutional weaknesses, and uneven policy implementation.

4.1.2. Economic Factors Shaping Nigeria–EU Partnerships

The economic dimension Shows both the potential and the fragility of Nigeria–EU cooperation. Nigeria's economic expansion depends significantly on trade openness and integration into global markets, yet policy choices have not always supported this objective. For example, land border closures have negatively affected trade flows and undermined broader economic engagement, including with European partners (Joshua et al., 2020). At the macroeconomic level, export trade contributes positively to growth, while import dependence and policy uncertainty tend to have adverse effects. These negative outcomes may be moderated by stronger institutional quality, which remains an important condition for sustainable external partnerships (Elijah & Musa, 2019).

Nigeria–EU economic relations are also shaped by trade governance frameworks, particularly Economic Partnership Agreements, which have influenced tariff structures and promoted trade liberalisation. At the same time, these frameworks have underscored the importance of tariff adjustment, export diversification, and competitiveness in improving access to European markets (Hout & Salih, 2019; Mbroh, 2021). However, Nigeria's economic environment remains highly vulnerable to oil price fluctuations and exchange rate volatility,

reflecting the country's continued dependence on crude oil exports. These shocks have significant short-run effects on GDP and foreign direct investment flows and also reduce investor confidence, thereby affecting trade and investment relations with the EU (Yunusa, 2020; Uzo-Peters et al., 2018).

The agri-food sector further illustrates the mixed character of this economic relationship. Although Nigeria possesses considerable export potential, its agri-food exports to the EU remain relatively inefficient, indicating substantial untapped opportunities. Income levels, exchange rates, and compliance with EU standards all shape export performance and determine the extent to which producers can benefit from European market access (N. M. Abdullahi et al., 2021). These findings suggest that the economic basis of Nigeria–EU cooperation remains promising but unstable. While trade, funding, and market access provide important opportunities, long-term sustainability will require greater diversification, stronger institutions, and reduced exposure to external shocks.

4.1.3. Social Factors Affecting Nigeria–EU Collaboration

The social dimension of Nigeria–EU collaboration is strongly influenced by migration dynamics, human development conditions, and broader questions of social inclusion. Migration governance is shaped by a complex set of pressures, including unemployment, and limited economic opportunities, all of which affect mobility decisions and reintegration processes (Komolafe, 2008). Although governmental bodies, international organisations, and civil society actors are involved in supporting returnees and migrant communities, many of these interventions remain limited in inclusivity and long-term sustainability (Olakpe, 2022). This suggests that migration-related cooperation between Nigeria and the EU is not only a policy issue, but also a reflection of deeper structural and social challenges.

Diaspora networks constitute an additional and important social dimension of the relationship. Nigerian communities in the EU play a role in circulating information, influencing migration decisions, and supporting transnational connections that shape broader governance processes (Yakubu et al., 2022). Diaspora engagement in policy frameworks is increasingly recognised as a potential asset for development and cooperation. However, this potential is often limited by mistrust, institutional fragmentation, and the adjustment difficulties faced by migrants and returnees. (Akanle & Ola-Lawson, 2021). As a result, the social contribution of diaspora engagement remains significant but not fully institutionalised. The findings point to deeper cultural and social barriers that influence collaboration outcomes. Ethnocentrism, gender norms, traditional practices, and forms of discrimination continue to shape migration management and social integration processes, often limiting inclusiveness and undermining the effectiveness of policy interventions (Cornelius & Greg, 2013). The results show that the social foundation of Nigeria–EU cooperation cannot be understood only in terms of migration flows, but must also be linked to questions of equity, social cohesion, institutional trust, and human capability development.

4.1.4. Technological Factors in Nigeria–EU Collaboration

The technological dimension reveals that innovation, digital transformation, and scientific capacity are of growing importance to Nigeria–EU cooperation, although significant structural limitations remain. Technological advancement is widely recognised as essential for Nigeria's sustainable development, yet policy design and implementation have not been sufficiently effective in driving this transition (Chiemeke & Imafidor, 2020). Evidence shows that digital technology adoption contributes positively to economic growth and labour productivity, but these gains depend on workforce training, regulatory support, and institutional readiness (Ufua et al., 2021). Technology transfer has also been influenced by trade openness, collaborative policy arrangements, and regional integration frameworks such as the African Continental Free Trade Area. These processes have created opportunities for the diffusion of ICT-related technologies, although weak institutional frameworks still limit the effectiveness of technological cooperation (Olaoye & Zerihun, 2023). In practical terms, progress in e-governance and digital service delivery remains constrained by major deficits in electricity supply, broadband access, and ICT literacy (Abdullahi & Mustafa, 2021). While collaboration with the EU has contributed to improvements in transparency and public service delivery, persistent challenges remain in relation to interoperability, systems integration, and citizen inclusion.

Similar patterns are evident in education and workforce development. The integration of Industry 4.0 technologies into vocational education offers substantial opportunities for curriculum modernisation and stronger industry collaboration, but implementation has been slowed by infrastructure shortages, insufficient funding, and low levels of digital competence (Oyetade et al., 2025). In the environmental and energy sectors, EU-funded projects have supported sustainable energy systems and environmental governance in Nigeria, particularly through the strengthening of regulatory frameworks and the promotion of cleaner production practices (Ukhurebor et al., 2021). However, collaborative research in agroforestry and sustainable agriculture remains comparatively limited, indicating a need for greater investment in scientific infrastructure, research capacity, and academic collaboration (Sharma et al., 2025). Through technological analysis, it was found that cooperation between Nigeria and the European Union has great transformative potential, but this potential will depend on stronger implementation capacity, better infrastructure, and more inclusive innovation systems.

4.2. Key Drivers of Change

The combined findings from the co-authorship analysis and the PEST framework indicate that the future of Nigeria–EU collaboration in science, technology, and innovation (STI) will be shaped by a set of interrelated high-impact drivers. These drivers reflect both current structural conditions within the partnership and wider international trends affecting global research and innovation systems, including digital transformation, artificial intelligence, climate transition, shifting trade and investment patterns, and geopolitical uncertainty. At the same time, they embody critical uncertainties that may steer the partnership toward deeper strategic integration, selective and uneven adaptation, or more fragmented forms of cooperation. Table 2 summarises the main drivers of change and presents their possible positive and negative directions, together with their relative levels of uncertainty.

Table 2. Main Drivers of Change and Their Positive and Negative Directions in Nigeria–EU STI Collaboration

Key driver of change	Positive direction	Negative direction	Level of uncertainty
1. Political commitment and strategic alignment	Stronger EU–Nigeria and AU–EU policy coordination; more stable STI agreements; clearer long-term governance for joint research and innovation	Weaker political commitment; fragmented implementation; geopolitical tensions reducing continuity of cooperation	High
2. Research and innovation funding	More predictable and diversified funding; stronger public–private co-financing; better capacity to mobilise STI for transformative change	Funding volatility; overdependence on short project cycles; reduced fiscal space and weaker long-term institutional support	High
3. Governance and regulatory quality	Improved policy coherence, regulatory stability, and implementation capacity; more efficient coordination across institutions	Governance fragmentation; weak implementation; regulatory uncertainty discouraging long-term collaboration	High
4. Institutional and network capacity	Stronger university–industry–policy linkages; broader participation across Nigerian and EU institutions; more resilient collaboration networks	Collaboration concentrated in a limited number of institutions and countries; weak institutional coordination; low scaling capacity	Medium
5. Technological transformation and AI readiness	Joint investment in AI, digital infrastructure, data systems, and skills; more inclusive technology adoption and co-development	Concentration of AI capabilities in a few countries and firms; widening digital gaps; weak infrastructure, data, and skills limiting participation	High
6. Research infrastructure and digital connectivity	Improved laboratories, broadband, electricity, cloud systems, and digital research platforms supporting effective knowledge exchange	Persistent infrastructure deficits; weak connectivity; unreliable electricity and limited digital access constraining STI collaboration	High
7. Skills, education, and human capital	Expanded research training, mobility, digital upskilling, and workforce adaptation to new technologies	Persistent skills gaps; weak absorptive capacity; uneven access to advanced training and innovation opportunities	Medium

Key driver of change	Positive direction	Negative direction	Level of uncertainty
8. Green transition and climate cooperation	Deeper collaboration in climate adaptation, renewable energy, sustainability, and green innovation	Climate pressures outpacing institutional response; fragmented green transition; weak implementation capacity	Medium to High
9. Trade, investment, and economic diversification	More balanced trade and investment relations; stronger support for value addition, innovation ecosystems, and technology-intensive sectors	Continued dependence on raw commodity exports; macroeconomic instability; limited diversification and weak innovation-based industrial upgrading	High
10. Social inclusion and development orientation	More equitable and challenge-oriented STI cooperation addressing health, food, energy, gender inclusion, and social resilience	Unequal distribution of benefits; exclusion of less-capable institutions and marginalised groups; reduced developmental impact	Medium
11. Migration, mobility, and diaspora engagement	Stronger researcher mobility, academic exchange, and productive engagement of diaspora networks in knowledge transfer, innovation, and institutional cooperation	Brain drain, mobility restrictions, weak reintegration mechanisms, and limited institutional use of diaspora capacities reducing long-term STI benefits	Medium to High
12. Human development and social capacity	Greater investment in education, skills, youth inclusion, women's participation, and social capabilities that strengthen the societal base of STI cooperation	Persistent inequalities in education, weak skills formation, exclusion, low institutional trust, and limited human development capacity constraining broader participation in STI collaboration	Medium

Source: Authors

4.3. Future Scenarios of Nigeria–EU STI Collaboration

The future scenarios of Nigeria–EU collaboration in science, technology, and innovation (STI) were developed based on the key drivers of change identified in the previous section and their interaction with major global trends expected to shape international research and innovation systems toward 2040. In particular, the scenarios reflect variations in political commitment and strategic alignment, the continuity of research and innovation funding, institutional and network capacity, technological readiness, the green transition, skills and human capital development, and the wider geopolitical environment. These drivers are closely linked to broader global trends, including the expansion of artificial intelligence, accelerating digital transformation, increasing climate and sustainability pressures, shifting trade and investment patterns, and rising geopolitical uncertainty. The scenarios do not represent predictions, but plausible and internally coherent futures showing how different combinations of drivers and trends may shape the trajectory of Nigeria–EU STI collaboration. The three scenarios reflect contrasting pathways: one in which global transformations reinforce strategic partnership and co-innovation, one in which cooperation continues but remains selective and uneven, and one in which external pressures and internal weaknesses lead to fragmentation and reactive engagement. Together, these scenarios provide a structured basis for understanding the opportunities, risks, and strategic choices that may define the partnership by 2040.

4.3.1. Scenario 1: Green–Digital Leap

This scenario emerges when the principal drivers of change evolve in a positive and mutually reinforcing direction. Strong political commitment and strategic alignment sustain the continuity of Nigeria–EU cooperation, while research and innovation funding becomes more stable, diversified, and better aligned with long-term priorities. At the same time, improvements in institutional and network capacity, research infrastructure, digital connectivity, and skills development strengthen the ability of Nigerian and European actors to engage in more balanced and effective collaboration. These favorable conditions are reinforced by wider international trends, especially the acceleration of digital transformation, the expansion of artificial intelligence, and growing pressure for green transition and climate resilience. In this context, Nigeria–EU STI cooperation moves beyond fragmented, project-based engagement toward a more institutionalised and strategically coordinated model of co-innovation.

Under this scenario, cooperation expands in areas where both partners have shared strategic interests and where the developmental relevance of STI is particularly strong, including public health, sustainable agriculture, renewable energy, climate adaptation, digital governance, and AI-enabled innovation. Nigeria strengthens its research and innovation ecosystem through greater domestic investment, improved absorptive capacity, stronger university–industry–policy linkages, and broader participation in international research programmes. At the same time, the European Union supports a more inclusive and development-oriented partnership that places greater emphasis on co-creation, technology transfer, capacity-building, and joint agenda-setting. As a result, scientific cooperation produces not only higher research output, but also more visible technological, economic, and societal benefits. A defining feature of this future is that green and digital transformation become mutually reinforcing pillars of the partnership. Advances in technological readiness and AI capability are matched by stronger collaboration in clean energy, climate-smart agriculture, environmental monitoring, and sustainable industrial innovation. Research collaboration is increasingly linked to practical innovation outcomes, including start-up development, digital platforms, technology testing, joint postgraduate training, and the application of scientific knowledge to pressing societal challenges. Researcher mobility and diaspora engagement also play a more constructive role in deepening knowledge exchange and strengthening long-term institutional ties between both regions.

By 2040, this scenario results in a more resilient, inclusive, and strategically significant Nigeria–EU STI partnership. Cooperation is no longer concentrated mainly in isolated externally funded projects, but is embedded in durable governance arrangements, broader institutional participation, and shared long-term objectives. In this future, science, technology, and innovation function not only as areas of collaboration in themselves, but also as strategic instruments for economic diversification, technological upgrading, human development, and sustainable development. The partnership therefore becomes a model of green and digital co-innovation in which both sides benefit from more adaptive, equitable, and future-oriented cooperation.

Table 3. Scenario 1 (Green–Digital Leap): future images, realisation pathway, and high-impact drivers of change

Year	Future Image	Description of Future State	Key Drivers with Highest Impact on Realisation	Expected Realisation
2026	Bilateral cooperation agreements	Bilateral agreements and early-stage STI cooperation with fragmented but active engagement	Political commitment and strategic alignment; Research and innovation funding	Immediate / Short-term (2025–2026)
2028	Coordinated governance frameworks	Establishment of joint STI coordination bodies and standardised policy and data-sharing frameworks	Political commitment and strategic alignment; Research and innovation funding; Trade, investment, and economic diversification	Short-term (2027–2028)
2030	Shared digital research infrastructure	Deployment of federated research platforms, high-speed connectivity, and shared digital systems	Technological transformation and AI readiness; Research infrastructure and digital connectivity; Research and innovation funding	Early medium-term (2029–2031)
2032	Advanced human capital and research capacity systems	Expansion of joint education programs, advanced training centers, researcher mobility schemes, and stronger university–industry collaboration	Technological transformation and AI readiness; Research infrastructure and digital connectivity; Green transition and climate cooperation	Medium-term (2031–2033)
2035	Integrated co-innovation and green technology ecosystems	Development of joint innovation hubs, green technology pilot initiatives, and interconnected startup and applied research ecosystems	Trade, investment, and economic diversification; Technological transformation and AI readiness; Green transition and climate cooperation	Mid-to-long term (2033–2036)
2038	Cross-border integrated STI and innovation systems	Integration of cross-border research systems, shared intellectual property frameworks, coordinated innovation networks, and interoperable digital collaboration mechanisms	Political commitment and strategic alignment; Research infrastructure and digital connectivity; Trade, investment, and economic diversification	Late-stage (2036–2039)
2040	Green–digital integrated ecosystem	Mature and institutionalised Nigeria–EU STI ecosystem supporting sustainable innovation, AI-driven governance, and green industrial	Political commitment and strategic alignment; Research and innovation funding; Technological transformation and AI readiness; Research infrastructure and digital connectivity; Green	Long-term (2038–2040)

Year	Future Image	Description of Future State	Key Drivers with Highest Impact on Realisation	Expected Realisation
		transformation	transition and climate cooperation; Trade, investment, and economic diversification	

Source: Authors

4.3.2. Scenario 2: Uneven Pathways

By 2040, Nigeria–EU collaboration in science, technology, and innovation remains active and productive, but it does not mature into a fully broad-based strategic partnership. Instead, cooperation adapts selectively to global change. The partnership benefits from continued political support, the availability of some research and innovation funding, and the persistence of established collaboration networks. Yet, these gains are offset by uneven institutional capacity, patchy technological readiness, and an incomplete spread of skills, infrastructure, and absorptive capability across the wider Nigerian STI system. In effect, the partnership advances, but not evenly. This unevenness becomes the defining feature of the scenario. Opportunities created by digitalisation, climate transition, and technological upgrading are real, but they are captured mainly by institutions that already possess stronger international linkages, better infrastructure, and higher implementation capacity. As a result, cooperation becomes concentrated in fields that combine strong external support with clear international relevance, especially public health, food systems, climate-related innovation, and selected digital applications. These areas continue to generate visible outputs and policy relevance, but the benefits do not diffuse widely across institutions, sectors, or regions.

A small group of Nigerian universities, research institutes, and innovation actors therefore becomes more embedded in EU-linked programmes, platforms, and networks, while many others remain only marginally connected. Some progress is made in digital tools, data systems, researcher training, and project management capacity, but these improvements are clustered rather than systemic. Green and sustainability-oriented collaboration also continues, although it is driven largely by flagship projects and targeted external programmes rather than by a deeper restructuring of the partnership around long-term co-innovation. The same pattern holds for capacity-building: leading centres improve, but the broader STI ecosystem does not advance at the same pace. The result of this scenario is a partnership that remains relevant but only partially transformative. Nigeria–EU STI cooperation under this scenario is neither stagnant nor fully strategic; it is adaptive, but in a selective way that reproduces existing asymmetries. Collaboration survives, and in some domains performs well, yet it continues to depend on a limited number of institutions, sectors, and funding channels. This makes the partnership more resilient than a fragmented future, but less inclusive, less balanced, and less system-building than the strategic co-innovation pathway described in Scenario 1.

Table 4. Scenario 2 (Uneven Pathways): future images, realisation pathway, and high-impact drivers of change

Year	Future Image	Description of Future State	Key Drivers with Highest Impact on Realisation	Expected Realisation
2026	Sustained but selective cooperation arrangements	Nigeria–EU STI cooperation continues through existing agreements, networks, and funding channels, but without a major shift toward deeper strategic integration	Political commitment and strategic alignment; Research and innovation funding	Immediate / Short-term (2025–2026)
2028	Clustered governance and project coordination	Coordination mechanisms improve in selected domains and institutions, but governance gains remain uneven and concentrated among stronger actors	Political commitment and strategic alignment; Institutional and network capacity; Research and innovation funding	Short-term (2027–2028)
2030	Uneven digital and research infrastructure access	Some institutions benefit from improved digital tools, research platforms, and connectivity, while many others continue to face infrastructure and access constraints	Technological transformation and AI readiness; Research infrastructure and digital connectivity; Institutional and network capacity	Early medium-term (2029–2031)
2032	Concentrated skills and capacity development	Training, mobility, and project management capacity improve mainly in leading universities and research centres, while broader system-wide capacity gaps persist	Skills, education, and human capital; Institutional and network capacity; Research infrastructure and digital connectivity	Medium-term (2031–2033)

Year	Future Image	Description of Future State	Key Drivers with Highest Impact on Realisation	Expected Realisation
2035	Flagship green and innovation collaboration clusters	Green transition projects, digital applications, and innovation initiatives continue in selected flagship areas with strong external support, but diffusion remains limited	Green transition and climate cooperation; Technological transformation and AI readiness; Research and innovation funding; Trade, investment, and economic diversification	Mid-t-long term (2033–2036)
2038	Partially connected STI collaboration networks	A limited group of Nigerian institutions becomes more embedded in EU-linked programmes and networks, while many actors remain marginal to international collaboration	Institutional and network capacity; Migration, mobility, and diaspora engagement; Skills, education, and human capital	Late-stage (2036–2039)
2040	Selective and uneven partnership ecosystem	Nigeria–EU STI cooperation remains relevant and productive in specific domains, but it is still dependent on a limited number of institutions, sectors, and funding streams, making it adaptive but only partially transformative	Political commitment and strategic alignment; Research and innovation funding; Institutional and network capacity; Technological transformation and AI readiness; Research infrastructure and digital connectivity; Skills, education, and human capital	Long-term (2038–2040)

Source: Authors

4.3.3. Scenario 3: Drifting Apart

In this scenario, Nigeria–EU collaboration in science, technology, and innovation loses strategic coherence and becomes increasingly difficult to sustain as a long-term partnership. By 2040, cooperation still exists, but it is no longer driven by a shared forward-looking agenda. Instead, it is shaped by instability, uneven commitment, and a succession of external pressures that push both sides toward shorter-term and more reactive forms of engagement. What remains is a partnership that survives in fragments rather than evolving through durable institutional consolidation.

This outcome becomes more likely when several key drivers move in an unfavorable direction at the same time. Political commitment weakens, research and innovation funding become less predictable, and institutional and network capacity fail to deepen in ways that would support continuity. At the same time, technological transformation and AI readiness advance unevenly, leaving major gaps in infrastructure, digital access, and absorptive capacity. These internal weaknesses are further intensified by broader international pressures, including geopolitical rivalry, economic volatility, climate-related disruption, and unequal global access to frontier technologies. Under such conditions, Nigeria–EU STI cooperation becomes more exposed to shocks and less capable of sustaining coordinated long-term priorities.

The practical effect is that collaboration narrows rather than expands. Joint activities continue mainly in issue-specific areas where immediate needs, donor priorities, or crisis-response mechanisms still provide incentives for engagement. Health emergencies, food insecurity, environmental stress, migration pressures, and selected governance challenges may still generate collaborative projects, but these efforts remain episodic and disconnected from any broader strategy of innovation-system building. More ambitious forms of cooperation in green transition, advanced digital systems, frontier science, or long-term capacity development lose momentum because the institutional and financial conditions needed to sustain them are no longer sufficiently strong.

A striking feature of this future is the widening gap between isolated scientific outputs and broader developmental transformation. Some collaboration persists through individual researchers, temporary grants, or existing networks, but it does not accumulate into strong and resilient partnership structures. Advanced capabilities in AI, data systems, and research infrastructure remain concentrated in a small number of actors, while many Nigerian institutions remain peripheral to frontier STI domains. As fragmentation deepens, the partnership becomes less inclusive, less developmental, and less able to generate cumulative long-term impact. By 2040, the overall result is a weakly coordinated and strategically diminished relationship in which STI no longer functions as a robust pillar of Nigeria–EU partnership. Cooperation remains possible, but mostly through scattered projects, temporary

alignments, and problem-driven interventions rather than through a stable model of co-innovation. In this future, the partnership is defined less by strategic ambition than by constrained adaptation to crisis, leaving both sides with a relationship that is active in places, but fragmented in substance and limited in transformative effect.

Table 5. Scenario 3 (Drifting Apart): future images, realisation pathway, and high-impact drivers of change

Year	Future Image	Description of Future State	Key Drivers with Highest Impact on Realisation	Expected Realisation
2026	Fragile cooperation continuity	Nigeria–EU STI collaboration formally continues, but growing instability, weak strategic commitment, and uneven institutional capacity begin to undermine momentum and long-term confidence	Political commitment and strategic alignment; Research and innovation funding; Institutional and network capacity	Immediate / Short-term (2025–2026)
2028	Weakening governance and coordination	Coordination mechanisms lose coherence, long-term planning weakens, and partnerships rely more heavily on existing informal networks than on strong institutional frameworks	Political commitment and strategic alignment; Institutional and network capacity; Wider geopolitical environment	Short-term (2027–2028)
2030	Unequal and fragile research infrastructure	Digital systems, research infrastructure, and technological readiness improve only in limited pockets, while wider infrastructure deficits and weak absorptive capacity constrain collaboration	Technological transformation and AI readiness; Research infrastructure and digital connectivity; Institutional and network capacity	Early medium-term (2029–2031)
2032	Narrow and uneven capacity retention	Skills development, researcher mobility, and training opportunities remain limited and uneven, while brain drain and weak institutional retention reduce broader STI capability	Skills, education, and human capital; Migration, mobility, and diaspora engagement; Human development and social capacity	Medium-term (2031–2033)
2035	Crisis-driven cooperation	Joint activities focus mainly on urgent pressures such as health emergencies, food insecurity, migration challenges, and environmental stress rather than long-term innovation-system development	Green transition and climate cooperation; Wider geopolitical environment; Research and innovation funding	Mid-to-long term (2033–2036)
2038	Widening technology gaps	Advanced digital, AI, and innovation capabilities remain concentrated in a small number of institutions, while many Nigerian actors remain peripheral to frontier STI fields and high-value collaboration networks	Technological transformation and AI readiness; Research infrastructure and digital connectivity; Skills, education, and human capital	Late-stage (2036–2039)
2040	Weak institutional continuity	Cooperation remains possible but is scattered, short-term, and weakly coordinated, with limited durable structures, low cumulative developmental impact, and declining strategic significance for the broader partnership	Political commitment and strategic alignment; Research and innovation funding; Institutional and network capacity; Technological transformation and AI readiness; Wider geopolitical environment; Migration, mobility, and diaspora engagement	Long-term (2038–2040)

Source: Authors

4.3.4. Comparative Discussion of the Scenarios

The three scenarios indicate that the future of Nigeria–EU STI collaboration will be shaped by the interaction between domestic drivers and broader global developments. The first scenario presents a positive outlook in which political will, reliable funding, digital preparedness, and green transition priorities work together to promote deeper co-innovation and more balanced forms of partnership. The second scenario reflects a more cautious path, where cooperation continues but without major structural change. In this case, collaboration remains active and productive, yet uneven, selective, and concentrated within a limited number of institutions and sectors. In contrast, the third scenario highlights the risk that geopolitical tensions, unstable funding, technological concentration, and limited institutional capacity could weaken cooperation, leading to fragmentation and reduced strategic relevance. From a comparative perspective, these scenarios suggest that the future of Nigeria–EU STI relations will depend not only on bilateral intentions, but also on the ability of both partners to respond to an

increasingly complex and rapidly evolving global environment. In this context, digital transformation, climate action, global innovation competition, and geopolitical shifts represent key external forces shaping the direction and quality of cooperation. Accordingly, stronger alignment between domestic reforms, institutional capacity-building, and global innovation trends will be essential if the partnership is to evolve by 2040 into a more resilient, inclusive, and development-oriented framework for STI collaboration.

4.4. Policy Recommendations

Drawing on the scenario analysis, this study proposes nine policy recommendations that are directly linked to the conditions, opportunities, and risks identified across the three future pathways of Nigeria–EU collaboration in science, technology, and innovation (STI). Rather than offering general prescriptions, these recommendations are grounded in the enabling factors associated with Scenario 1, the structural constraints evident in Scenario 2, and the fragmentation risks highlighted in Scenario 3. In this sense, the recommendations are intended not only to strengthen the likelihood of a more strategic and inclusive partnership, but also to reduce the probability that cooperation will remain selective, uneven, or vulnerable to disruption by 2040

Strengthen long-term political commitment to prevent fragmented cooperation

The contrast between the strategic coherence of Scenario 1 and the weakened continuity of Scenario 3 suggests that sustained political commitment is a foundational condition for future cooperation. Nigeria and the European Union should therefore reinforce high-level political support for STI collaboration through durable bilateral commitments, regular strategic dialogue, and long-term policy alignment. Such measures would help prevent the partnership from becoming dependent on temporary priorities or reactive engagement.

Institutionalise governance structures for sustained STI coordination

Scenario 1 indicates that deeper cooperation is more likely where institutional coordination is clear and stable, whereas Scenario 3 illustrates the consequences of weak continuity and fragmented implementation. For this reason, both partners should establish more formalised governance structures capable of coordinating ministries, research agencies, universities, and innovation actors across multiple levels. Stronger governance would improve policy coherence, implementation capacity, and long-term strategic consistency

Develop more stable and diversified funding arrangements

One of the clearest differences between the scenarios concerns the continuity and quality of funding. While Scenario 1 is supported by stable and diversified financing, Scenario 3 is characterised by uncertainty and overreliance on temporary support. A key policy priority is therefore to combine EU funding instruments with stronger domestic STI investment in Nigeria, co-financing arrangements, and wider participation by private and innovation-sector actors. This would increase resilience and reduce vulnerability to external funding fluctuations

Reduce institutional concentration by widening participation

Scenario 2 shows that collaboration may continue without becoming transformative if it remains concentrated in a limited number of institutions and sectors. To address this structural imbalance, policies should aim to broaden participation across Nigerian universities, research centres, and innovation hubs, including those outside the most internationally connected networks. A more inclusive model of participation would strengthen the national innovation system and improve the developmental reach of the partnership.

Invest in institutional absorptive capacity to support deeper collaboration

The scenarios suggest that the quality of future cooperation depends not only on access to partnerships, but also on the ability of institutions to absorb, manage, and translate collaborative opportunities into sustained outcomes. Greater investment is therefore needed in research management systems, postgraduate training, administrative capability, digital research support, and organisational learning. Strengthening absorptive capacity would help Nigerian institutions move from peripheral participation toward more substantive roles in joint research and innovation activities

Prioritise digital readiness to avoid widening technology gaps

Scenario 1 assumes improvements in digital preparedness and technological capability, whereas Scenario 3 highlights the danger of widening gaps in AI, data systems, and advanced research infrastructure. In response, future cooperation should place greater emphasis on digital infrastructure, cloud-based research systems, data governance capacity, and frontier technology readiness. This is essential if Nigeria is to participate more effectively in technology-intensive and innovation-driven forms of STI collaboration

Embed green transition priorities within long-term co-innovation strategies

The first scenario demonstrates that green transition and digital transformation can become mutually reinforcing pillars of the partnership when they are strategically integrated. By contrast, the more limited trajectory in Scenario 2 implies that such collaboration may otherwise remain selective and sector-specific. Policy should therefore support long-term co-innovation in renewable energy, climate adaptation, sustainable agriculture, and environmental monitoring, ensuring that green cooperation is institutionalised rather than confined to isolated initiatives

Expand mobility and research network formation as mechanisms of continuity

Scenario 1 highlights the positive role of researcher mobility, diaspora engagement, and networked collaboration in deepening institutional ties, while Scenario 3 suggests that cooperation becomes fragile when it depends on scattered projects and temporary alignments. Both partners should therefore strengthen mobility schemes, joint postgraduate programmes, collaborative supervision, and interdisciplinary research networks. These mechanisms would help build trust, circulate expertise, and create more durable foundations for long-term cooperation.

Focus cooperation on challenge-oriented fields with high societal relevance

Across the scenarios, the most sustainable and legitimate forms of collaboration are those linked to areas of shared developmental importance, including public health, food systems, climate resilience, digital governance, and inclusive innovation. A stronger challenge-oriented approach would increase the practical relevance of STI cooperation and improve its contribution to broader development goals. It would also reduce the risk, evident in Scenario 3, that collaboration becomes reactive, episodic, and disconnected from longer-term transformation

5. Conclusion

This study examined the future trajectory of Nigeria–EU collaboration in science, technology, and innovation (STI) against the backdrop of increasing global uncertainty and transformation. Using an integrated analytical framework that combined bibliometric analysis, qualitative content analysis, PEST analysis, and scenario development, the study demonstrated that Nigeria–EU STI cooperation already rests on an important scientific and institutional foundation. Existing collaboration is particularly visible in areas such as public health, climate and sustainability, governance, education, and selected digital and technological fields. However, the analysis also showed that the future of this partnership will depend not only on the continuation of current research linkages, but also on the broader political, economic, social, and technological conditions within which such cooperation is embedded.

The findings revealed that Nigeria–EU STI collaboration is supported by growing policy alignment, expanding institutional engagement, and shared interests in green and digital transformation. At the same time, the partnership remains constrained by governance fragmentation, uneven institutional capacity, funding uncertainty, technological asymmetries, and wider geopolitical pressures. On this basis, the study identified a set of key drivers of change, including political commitment, funding continuity, institutional and network capacity, technological readiness, skills development, green transition priorities, and the broader international environment. These drivers were used to construct three plausible future scenarios: a more strategic and co-innovative pathway, a selective but uneven pathway, and a fragmented pathway shaped by instability and weakened cooperation. The

scenarios indicate that the future of Nigeria–EU STI collaboration is neither fixed nor linear. Rather, it will be shaped by how effectively both partners strengthen institutional coordination, reduce structural asymmetries, expand participation, and align cooperation with major global transformations, particularly in digitalisation, artificial intelligence, climate action, and innovation governance. The analysis suggests that the most desirable trajectory is one in which STI cooperation becomes more institutionalised, inclusive, challenge-oriented, and development-focused. Under such conditions, the partnership would be better positioned to move beyond fragmented and project-based engagement toward a more resilient framework of co-innovation capable of generating scientific, technological, economic, and societal benefits by 2040.

The study also contributes to existing literature by demonstrating the analytical value of combining bibliometric evidence with macro-environmental assessment and scenario planning in the study of international STI partnerships. Methodologically, this approach makes it possible to connect present collaboration patterns with long-term strategic uncertainties, thereby offering a more forward-looking basis for analysis than descriptive mapping alone. Substantively, the study highlights that Nigeria–EU STI relations should be understood not simply as a matter of scientific cooperation, but as part of a wider process of institution-building, innovation capacity development, and sustainable transformation within an evolving interregional context. From a policy perspective, the findings suggest that a stronger future partnership will require sustained political commitment, more stable and diversified funding, broader institutional inclusion, improved digital and research infrastructure, stronger absorptive capacity, and a continued focus on challenge-oriented collaboration in fields of shared societal relevance. Equally important is the need to embed foresight and adaptive governance within bilateral and interregional STI policy processes. In this sense, the future of Nigeria–EU STI collaboration will depend not only on preserving existing ties, but on actively shaping the conditions under which cooperation can become more equitable, strategic, and transformative in the years leading to 2040.

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ROLE OF TRUST AND VALUE CREATION IN PUBLIC GOVERNANCE VIA LENSES OF PUBLIC VALUE THEORY

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Abstract. Public trust and value creation in government have declined across many countries due to governance failures, corruption, limited transparency, and growing citizen expectations. This has prompted renewed interest in governance frameworks that emphasise trust and value creation within public institutions. This study explores the role of trust and value in public governance through the lens of Public Value Theory (PVT) in contemporary Africa. The paper examines how governments can move beyond traditional bureaucratic and market-driven models toward newer theories, such as PVT, that prioritise trust and value creation, responsiveness, accountability, and citizen engagement. Through a conceptual and analytical review of existing literature, the study assesses the relevance of PVT in describing the trust and value deficit between governments and citizens. It argues that aligning public institutions' policies, services, and decision-making processes with societal values and collective interests can enhance legitimacy and rebuild public confidence. The study further highlights key governance practices—such as participatory decision-making, transparency, and collaborative governance—that support the generation of public value and confidence in government. The paper concludes that Public Value Theory provides a promising framework for contemporary governance reforms aimed at restoring trust and strengthening the relationship between governments and citizens in increasingly complex and demanding democratic environments.

Keywords: good governance; public administration and governance; public confidence; public trust; public value

Reference to this paper should be made as follows: Gwiza, A. 2026. Role of trust and value creation in public governance via lenses of Public Value Theory. *Insights into Regional Development*, 8(2), 121-135. <http://doi.org/10.70132/q2974752273>

JEL Classifications: H4

Additional disciplines: public administration

1. Introduction

Worldwide, contemporary governments are experiencing significant challenges related to the global economic recession, endemic corruption, technological revolution, natural disasters, pandemics, and ethnic and civil wars, which are diminishing citizens' trust in public goods and service delivery to a greater extent (Ivančík & Dušek, 2026). Recent studies suggest the greatest decline in citizens' trust in governments and public organisations, owing largely to governments' failure to meet the values and expectations of electorates (OECD, 2019; Katelo, Kokina & Raščevskis, 2025). Generally, the majority of the world population relies heavily on public institutions; yet citizens' trust continues to dwindle. Governments require the public's trust and partnership to ensure the success of public development interventions (such as e-government initiatives, new public projects and programmes), and to deliver the anticipated benefits to the entire community (Throntveit, 2023; Lukman & Ndamase, 2026).

Against this background, restoring citizens' trust in public governance has remained a top priority to enhance long-term mutual relations between the government and citizens (Thronveit, 2023). The public value theory (PVT) is gaining momentum as a paradigm to inform emerging scholarly debates on the various ways to address the implications of a weak and fragmented public sector for citizens' trust and confidence in government.

This paper explores the shifting role of government in responding to evolving and complex public needs through the lens of PVT, guided by both theoretical perspectives and practical experience. It examines the utility of PVT as both an interpretive and analytical tool for appreciating the governments' re-orientation towards citizen-centred value creation, underlining the key transformative conduct, attitudes, and responsibilities of public officials. As argued by Jessa and Uys (2018), PVT holds that government bodies and citizens form part of an accountable, inclusive, and open stakeholder network, advancing networked governance practices and relationship-building. Therefore, this study draws on case studies from selected African public services to demonstrate how PVT can serve as a theoretical lens for establishing a vibrant public service underpinned by citizens' trust, thereby offering an in-depth appreciation of the public's values and preferences.

Notwithstanding the growing interest in PVT studies, a significant literature gap exists regarding the theory's use as an interpretive framework to gain deep insights into citizen-centred value creation, especially regarding the evolving trust and legitimacy in public governance. Extant research has underscored the normative or managerial aspects of PVT, raising fundamental questions about its application for explaining the dynamics of linkages between citizens and government offices (Liu & Han, 2026). This paper seeks to address this knowledge gap by leveraging PVT as an analytical tool for exploring the articulation and experiences of trust, collaborative, accountability, and network governance ethos within modern public governance environments. In doing so, the paper provides deep insights that are theoretically salient by advancing the conceptual knowledge of public value as underpinned by citizens' values, perceptions and experiences, and practically by illustrating governance arrangements which can promote more responsive, transparent, and trust-enhancing public service delivery.

2. Conceptualising Public Value Theory

PVT is a framework utilised to understand the responsiveness of public administration to democratically expressed goals, contrasting traditional and new public management approaches (Malang, 2021; Liou & Liou, 2022). PVT serves as an analytical tool that helps study how governments can align their actions to generate value for the public. Guided by this lens, value generation is related to deepening citizens' trust and confidence in government by promoting legitimacy and underscoring key governance fundamentals, including accountability, responsiveness, and transparency (Wu et al., 2022). Furthermore, PVT provides interpretive insights into topical discussions between Traditional Public Administration (TPA) and New Public Management (NPM), assisting with explanations of how diverse governance paradigms understand and advance value creation within the public and, sometimes, the private sector (Turkel & Turkel, 2016). Additionally, PVT provides space to explore the role of government in addressing evolving, complex societal problems, utilising a whole-of-government approach that attracts multiple stakeholders, especially in cases where perceived and experienced challenges exceed the capacity of a single stakeholder (OECD, 2019; Wu et al., 2022).

PVT serves as a fundamental tool in explaining the value of public management through equity indicators, user happiness, and key performance indicators, including appropriateness and efficiency. Based on the above, several scholars have concurred that PVT is a loaded concept, serving to explain communal expression, a product of both processes and outcomes that are key to generating public trust and equity. PVT is further simplified as a comprehensive strategy for public managers to improve public service delivery continuously. Jessa and Uys (2018) argue that PVT provides a framework for understanding both tangible and intangible services and products produced, managed, and evaluated by stakeholder teams that share a common vision arising from public needs, benefits, demands, and expectations.

The above assertion resonates with Moore's (1995) main agenda to design a conceptual framework useful to public managers in addressing strategic issues and the multifarious, complex decisional options required to tackle diverse public needs and expectations. Thus, the application of PVT also follows to meet private value considerations. Having this in mind, Moore's definition of "public value" points to a concept that assists us in linking what the public believes is valuable and expects prudent use of scarce public resources with a view to improving the appreciation of the "public value" essence. According to this famous scholar, 'PVT serves as an ideal framework that can be utilised by the public managers in undertaking their respective mandates and stimulate the 'missing strategic thinking' and 'entrepreneurial action' to address the growing complex issues of contemporary governance.

Importantly, PVT offers significant support and considerable analytic leverage for the present study, insofar as it establishes a normative-instrumental nexus between practices and outcomes in public trust. By considering the theory as a process-oriented and outcome-oriented construct, grounded in legitimacy, stakeholder co-creation, and accountability, the framework enables a critical interrogation of how contemporary governance practices might be reconfigured to support trust and increased confidence in a virtuous polity. Notably, the integrative capacity of the framework, in reconciling the normative foundations of TPA with the efficiency concerns of NPM, positions PVT as an appropriate framework for analysing trust limitations in complex networked governance contexts. Accordingly, the present study adopts the theory of public value not merely as a conceptual construct, but as a substantive evaluative framework within which the relationship between public value, institutional performance, and governance practices might be systematically analysed.

3. Methodology

This research adopted a qualitative approach which, as argued by Creswell & Creswell (2022), focuses on the collection and analysis of non-quantifiable data to deeply appreciate people's perceptions, ideas, experiences and concepts related to a given research phenomenon. In an endeavour to provide deep insights into citizen-centred value generation in public governance, the study utilised a structured literature review of scholarly and policy-based sources, interpreted through the lens of PVT. The PVT's historical and current accounts were also examined to assess the theory's future relevance for explaining the growing demand for citizen-centred public value creation in contemporary public governance. A documentary search was conducted, focusing on key academic databases such as Web of Science, SCOPUS, and Google Scholar. The search process entailed the integration of keywords including "public value", "public sector ethics", "public value theory", "public value management", "value creation", "accountability" and "public management". These keywords were utilised separately and in conjunction to acquire a wider yet critical body of literature.

The literature search focused on publications from 1990 to 2026, ensuring historical context and incorporating the most recent publications in the study field. The first search yielded a broader set of publications, which were subsequently selected based on their contribution to the research focus on trust, governance, and citizen-centred value creation. Inclusion criteria entailed peer-reviewed papers, policy documents, and working paper series which clearly focused on PVT or related governance theories. Sources which did not have explicit contributions to public governance or lacked engagement with citizen-centred value generation or trust were excluded.

Further to the above selection criterion, a further refinement of the most appropriate research was conducted for critical examination and interpretation. The content analysis method was then applied to systematically evaluate the screened literature, allowing the generation of key themes related to trust, legitimacy, accountability, and collaborative governance (Krippendorff, 2018). This method enabled an interpretive appreciation of the conceptualisation and articulation of trust issues, citizen-centred value creation and sustainability within the contemporary public governance discipline.

4. Role of Public Value in the Government Sector

Several attempts to articulate the distinctive value created by government officials possess a long and traceable intellectual pedigree (Mazzucato & Ryan-Collins, 2019). Classical political philosophers such as Aristotle engaged with related notions through concepts such as the 'public interest' and the common good', albeit with varying interpretations across historical contexts (Etzioni, 2014). In contemporary scholarship, nevertheless, the concept of 'public value' has been systematically developed within the fields of public management and governance (Moore, 1995; Mazzucato & Ryan-Collins, 2019). It has increasingly gained prominence as a paradigmatic framework for addressing persistent governance issues, including accountability, declining public trust and operational inefficiencies within the public sector. It underlines the fundamental role of public managers in striking a balance between the basic requirement for efficient services provision and the citizens engagement in developing public policy and services (Mazzucato & Ryan-Collins (2019).

In this respect, public value highlights the role of public managers in mediating between the need to provide an efficient service and the need to facilitate citizen involvement in the development and delivery of public policies (Mazzucato & Ryan-Collins, 2019). This mediation process is evident in the development of reforms across various African contexts. For example, in Kenya, the development of Huduma Centres reflects an attempt to improve service delivery efficiency while simultaneously enhancing the citizen experience and access to government services (Kemboi & Premanandam, 2025; Transparency International Kenya, 2025). In South Africa, participatory governance structures within municipal government reflect a concerted effort to institutionalise citizen participation in decision-making. However, service delivery protests reflect the challenge of translating participation into public trust (Msenge, 2024). These examples of public value as both an ideal and a managerial practice highlight the inherent tension among efficiency, participation, and legitimacy in public sector governance.

Based on Moore's (1995) framework, public sector managers must create public value, despite the assumption that this sector is not generally viewed as a value-producing one, at least not as much as the private sector. Therefore, the day-to-day activities of the public manager within the government structure are expected to align with the aspirations of the people and elected officials collectively. In the context of the political environment, the public manager must be able to address three key dimensions, as conceptualised by Moore's (1995) strategic triangle (Figure 1), namely public value outcomes, legitimacy and support, and operational capacity.

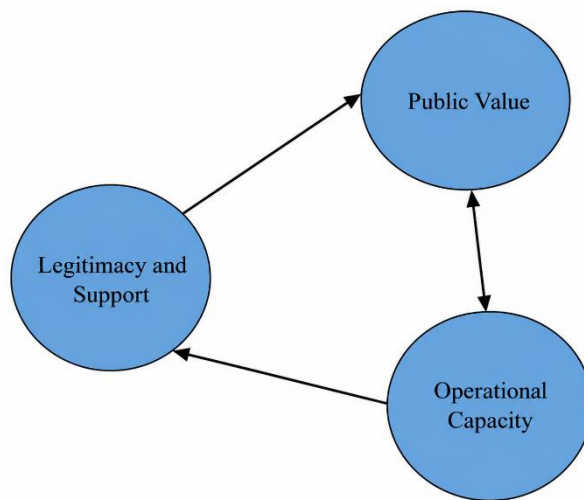


Figure 1. Public value creation framework
Source: Author, based on Moore (1995)

The strategic triangle is an essential concept in PVT, serving as a model for conceptualising, generating, and evaluating public value within government institutions. Legitimacy and support are closely linked with the degree of authority vested in public institutions and actors. This calls for a corresponding integration between political imperatives and stakeholder interests. On the other hand, operational capacity refers to the institutional and organisational capacity that is essential in realising public value. These two aspects are closely linked in their creation of a system that facilitates the creation, evaluation, and communication of public value to the public (Jessa & Uys, 2018).

In practice, the salience of the strategic triangle is evident in the governance systems of various African countries. In Rwanda, for instance, the application of Imihigo contracts for enhanced performance demonstrates a clear connection between legitimacy (based on national development goals), operational capacity (through institutional targets), and identifiable public value in sectors such as health and education (National Institute of Statistics of Rwanda, 2026; International Monetary Fund, 2025). In another African country, Kenya, Huduma Centres reveal the connection between operational capacity (efficiency in delivering services) and legitimacy, as these are required for achieving identifiable public value, such as in improving access to services delivered by the government (World Bank, 2022; Kenya News Agency, 2025; Mwenda, 2026). On the contrary, in Nigeria, the disconnect in the strategic triangle has been revealed in the weakening legitimacy, institutional capacity, and service delivery outcomes, especially in sectors such as electricity and health (World Health Organisation, 2025; Okunola & Ayodele, 2026).

Essentially, the strategic triangle is based on the following three principles of public sector governance: (i) the purpose of government is to create public value, (ii) public actions must be politically legitimate, legally justifiable, and supported by key stakeholders, and (iii) public sector operations must be administratively feasible and supported by sufficient organisational capacity (Mazzucato & Ryan-Collins, 2019). Nevertheless, evidence suggests that such dimensions are not necessarily fully aligned with public sector operations and that public managers must manage trade-offs among values, such as efficiency and inclusiveness, or between political and administrative feasibility (Turkel & Turkel, 2016; Cabral et al., 2019). These issues are exemplified in the South African public sector, where there is considerable constitutional and participatory legitimacy, influencing public service delivery (National Treasury (South Africa), 2024; Auditor-General South Africa, 2025). Therefore, public value initiatives may be subject to change in line with the interests of different stakeholders. Related to Turkel and Turkel (2016), who suggest that the strategic triangle is an instrument of public sector leadership, Jessa and Uys (2018:301) note that public value initiatives must satisfy the dimensions of political sustainability, public confidence, and administrative feasibility.

More fundamentally, the strategic triangle serves as a basic framework for understanding the purpose of government and the imperative to align government institutions' performance with the public's values and expectations. As such, applying the strategic triangle in the African region is essential for understanding its viability, particularly its weaknesses.

5. The nexus between Public Value Theory and Public Trust

Public trust is a multifaceted, multidimensional concept that has attracted significant attention in the governance literature as a key driver of sustainable public administration. The enhancement of citizen trust is increasingly recognised as a key imperative for public organisations, given its significant link to the processes and outcomes of public policy implementation. Generally speaking, trust can be defined as the predisposition of one actor to be vulnerable to another actor's actions, with the expectation that those actions are appropriate or beneficial, even in the absence of monitoring or controlling the actor. From this perspective, public sector organisations recognise the importance of citizen trust as the driver of public value creation.

From the perspective of PVT, trust plays an important role both as an input and an output of public value generation. Citizens' trust in public institutions motivates them to support initiatives that generate public value. This has been witnessed in South Africa, where the decline of the African National Congress (ANC) in recent elections indicates an increase in public discontent resulting from poor governance and other challenges (European Union, 2023; Electoral Institute for Sustainable Democracy in Africa (EISA), 2024). This has led to a shift towards coalition politics, underscoring the importance of trust in public value generation and the need for public institutions to be reconfigured for continuity when trust levels are low.

A similar trend has also been observed in Zimbabwe, where public trust has been undermined by poor election management. For example, during the 2008 elections, several irregularities were reported, culminating in the formation of the Government of National Unity (GNU) (Mwonzora & Xaba, 2020). This entailed a decline in citizens' trust in public institutions (Mwonzora & Xaba, 2020; European Union, 2023). The reluctance of the then-opposition leaders to accept election results also indicates that trust plays an important role in public value generation and that low levels of trust often threaten it. The aforementioned examples demonstrate the importance of trust in the creation of public value and the potential danger of its erosion to that creation. The critical role of PVT as an analytical approach to creating public value cannot be overstated, as the theory redefines the evaluation of government performance from efficiency/effectiveness to public value constructs such as legitimacy, equity, and satisfaction.

The theory further asserts that government performance should be evaluated based on its capacity to improve citizens' lives and align with public expectations. When government performance fails to align with public expectations, the government may be viewed as ineffective, corrupt, and unresponsive to citizens' diverse needs and preferences, leading to a decline in public value. The importance of public value is epitomised by the governance challenges in South Africa, especially in recent times, as evidenced by the high-profile corruption cases involving key government officials such as Jacob Zuma and Cyril Ramaphosa (Patel & Govindasamy, 2021). The recent allegations of state capture and cases such as the Bosasa scandal have significantly affected public trust in political leadership and government institutions (Patel & Govindasamy, 2021; Financial Times, 2026). In this context of challenges, the need to enhance public trust calls for strategic alignment with the essential principles of public values (Thabit, Sancino & Mora, 2025). Three dimensions are essential in this context.

Transparency

This dimension focuses on the openness of the government's operations and processes. For instance, the development of performance monitoring systems in Rwanda has helped improve perceptions of government accountability, thereby enhancing public trust (Sabbi & Ndikubwimana, 2024).

Responsiveness

This dimension focuses on the capacity of public institutions to effectively and promptly attend to citizens' needs. Innovations in the delivery of public services in Kenya, such as the Huduma Centres, have increased citizens' satisfaction with government services (Vignieri & Santoni, 2026).

Consistency and Predictability

This dimension focuses on the government's capacity to implement its policies consistently and predictably. The relatively consistent implementation of sound pro-poor public policies in Botswana has helped to sustain public trust in the government over the years.

Consequently, the link between the importance of transparency within the public sector and the concept of public sector trust is based on the capacity of government institutions to align with the culture, values, and norms of the broader public sector (Esposito et al., 2025). As such, the concept of restoring public trust can be seen not only as

essential from a political standpoint but also as essential to the creation of public sector values as a whole within modern systems of public sector governance.

6. Digital Co-creation, Transparency and Citizen Participation

Contemporary governance systems increasingly reflect the fundamental role of digitalisation in promoting transparency and enhancing public value creation (Luna, Picazo-Vela & Buyannemekh, 2024). Importantly, contemporary societies are widely adopting digital platforms, open data systems, and e-government systems to enhance access to information, rationalise public service delivery, and allow greater accountability (Zyzak, Sienkiewicz-Małyjurek, & Jensen, 2024; OECD, 2024). Additionally, digitalisation is increasingly influencing greater citizen participation in governance systems and the co-creation of public value (Ofoma, 2024; Tang & Fillip, 2025). For example, Kenya presents a strong case with its digital governance platforms, including the eCitizen platform and Huduma centres, demonstrating how new technology adoption can enhance citizen participation and the co-creation of public value. These innovations have allowed millions of users to access quality services more conveniently and, simultaneously, serve as appropriate platforms for feedback and engagement with government institutions (Tang & Fillip, 2025; Liang et al., 2025).

In Rwanda, lived experience shows that digital adoption is key to promoting transparency and rationalising public service delivery. The introduction of the IrengoGov platform enabled public access to online public services, minimising unnecessary bureaucratic inertia and reducing the risk of corruption. Through the decentralisation of service provision and the enabling of digital business, the online initiative has greatly enhanced administrative efficiency and, at the same time, boosted transparency and accountability in government systems and processes. Empirical evidence indicates that such collaborative digital spaces can improve transparency and accountability, thereby boosting public trust, even though issues associated with digital inclusion persist. From the PVT standpoint, these initiatives reflect the evolution of public value from improved accessibility, efficiency, and responsiveness in governance practice (Sangwa & Mutabazi, 2025).

Increasingly, online platforms—such as social media—have been widely utilised by the public to participate in critical policy discussions and monitor the government's actions for transparency and accountability, as demonstrated in recent youth-led mobilisations in most African countries (Rulandari & Silalahi, 2025; Vukethwele, Fihla & Chinomona, 2026). These developments demonstrate the critical role of digital space in broadening inclusive governance practices and promoting the interaction between citizens and the state. Nevertheless, challenges such as the digital divide and a high illiteracy rate, as well as system reliability, continue to influence user experiences and trust outcomes (Liu & Han, 2026).

Digital tools enhance the co-design of policies and services by integrating citizen inputs, values, and experiences into governance systems and processes. They also enable the general public to monitor the performance of public officials within government institutions and to participate actively in decision-making processes, thereby building citizens' trust and institutional legitimacy (Asmawanti et al., 2025). For instance, in Nigeria, the introduction of digital governance platforms led to significant improvements in service delivery and enhanced transparency and accountability within government ministries and departments (Inakefe Inakefe, Bassey, & Amadi, 2024). In particular, the integration of digital platforms and Artificial Intelligence (AI) into state-level civil service reforms improved administrative coordination and transparency (Rulandari & Silalahi, 2025; Ndamase, Ntando & Ncama, 2026). These commitments reflect the future of digitalisation in enhancing public policy outcomes, especially in terms of efficiency and monitoring. Nevertheless, persistent problems—such as infrastructure gaps, limited access to digital tools, and institutional capacity issues—remain a key barrier to the utility of these innovations.

Previous studies reveal that, even though digital platforms may be key to boosting public trust, transparency, and accountability, their contribution is anchored on implementation quality and context-specific considerations. For instance, the Ghanaian experience demonstrates that digitalisation, on its own, cannot automatically result in

enhanced citizen satisfaction, as wider contextual and socio-economic factors also shape public value creation and sustainability (Liu & Han, 2026). This underlines the centrality of taking digitalisation as one aspect within a broader governance ecosystem. Interpreted through the lens of PVT, these experiences point to digitalisation as part of the continuous transformation towards more collaborative and networked governance systems. In such environments, public value is influenced by relationships between government institutions and the public, rather than being exclusively derived from top-down decision-making processes (Ofoma, 2024; Liu & Han, 2026).

7. Practical challenges related to citizen- centred value creation via the PVT lens

PVT is seen as highly significant and influential within the realm of public administration as a whole, although there are notable challenges in translating public value creation into reality. The concept of citizen-centred public value creation has faced certain criticisms for being ambiguous and lacking a clear conceptualisation. It is noteworthy that Moore himself does not discuss the concept in the field of public administration, which creates flexibility but also ambiguity (Malang, 2021). On the contrary, Bozeman (2007) has taken a rather normative approach, arguing that the concept of public value creation is rooted in the values of citizens and political actors. This creates a tension between the normative and managerial aspects of PVT.

A major problem with PVT's influence on government operations is the effective interpretation of people's needs and preferences in a pluralistic society. In most political systems, the people have diverse cultural, religious, and socio-economic backgrounds, leading to conflicting needs and priorities (Malang, 2021; Throntveit, 2023). Therefore, any attempt to define exactly what is meant by the term 'public value' is inevitably an act of judgment by the institution about who is prioritised in the decision-making process. This is especially true in a heterogeneous country like Nigeria, where diversity in ethnicity, regions, and religion makes it difficult to reach consensus on national priorities, leading to conflicting perceptions of the government's legitimacy.

The problem of preference aggregation has long been a concern in welfare economics and decision theory, where reconciling individual and collective choices is inherently complex (Malang, 2021). One of the earliest contributions to this discourse was Arrow's impossibility theorem, cited in Livson and Prokopenko (2025), which showed that no voting system could aggregate individual preferences into a collective choice that satisfies certain reasonable conditions. The findings indicate that realising a well-balanced and reliable combination of distinct and joint preferences remains inherently problematic in practice. This suggests the fundamental challenges embedded in citizen-centred public value creation processes. These constraints demonstrate structural setbacks rooted in shared decision-making instead of limitations of any single conceptual framework. The impossibility theorem has been reflected in some of the challenges experienced in Africa when studying public value. For example, in Kenya, reconciling national and county interests has been a concern since the implementation of the devolution strategy (World Bank, 2022). In South Africa, protests over service delivery during the past decades reflect a significant gap between what the government has identified as priorities and what citizens feel is of value.

Apart from integrating citizens' preferences, governance practice raises an underlying issue in evaluating value, since value is generated and experienced by citizens themselves. Unlike the private sector, this value cannot be easily quantified, especially when the process involves intangible factors such as trust, legitimacy, social cohesion, and equity. These aspects of value are difficult to standardise and compare, especially when they occur in different settings. In the Zimbabwean context, the economic and political challenges have created an environment of mistrust, making it difficult to develop a standard by which the public value can be measured, as highlighted by the European Union (2023). This situation has raised serious concerns about the reliability of PVT performance indicators for explaining public value creation in practice.

Institutional capacity constraints have also increased the complexity of implementing PVT. The creation of public value depends on the availability of skilled personnel, financial resources, and administrative capacity. In most

African countries, the lack of capacities has created an environment that makes it difficult for public institutions to realise the normative value of creating value in the public sphere. In Ghana, the government's efforts to create value at the local level through the decentralisation agenda were not successful in some districts due to a lack of administrative capacity.

Politics and governance can also affect public value creation. Uganda presents a perfect example of how the high prioritisation of limited public resources towards electoral mobilisation and patronage systems has raised great concern regarding equitable service delivery (Kiwanuka, 2026). Equally, in Nigeria, widespread cases of clientelism and politically driven public funds allocation—especially in sectors like energy and infrastructure—have been argued to generate inequitable development policy outcomes (Zovighian, 2026). In the case of DRC, governance issues associated with political instability and elite hegemony have repeatedly undermined the provision of public services (Afrobarometer, 2024).

These experiences demonstrate the negative effects of undue political considerations within governance processes on public resource distribution and ownership, at times benefiting very narrow interests at the expense of broader citizens' needs. Based on public experiences, the above dynamics can result in the erosion of value and trust within public institutions, undermining the co-creation of public value, particularly in equity, legitimacy, and service delivery outcomes. In the face of the above challenges, it is evident that while PVT is a robust framework that is both normatively and analytically sound, in practice, it needs to be adapted to the context. From the inherent tensions and challenges of the theory, it is evident that public value is not a fixed, agreed-upon concept; instead, it is a process in constant flux.

8. Citizen-centred Value Creation and the Future of PVT

The discipline of public administration is characterised by changes in public management from a traditional model underpinned by hierarchies to the NPM, which is punctuated by market systems. The same field has reached a management system via a network, based on "public value". Global evidence of transformative societal concerns and the general public's aggressive demand that the government remain accountable, responsive, and transparent indicates high expectations that PVT can play a larger role in explaining the evolving public trust and value creation in contemporary politics. This study concludes on the fundamentals underpinning PVT to understand the creation and experience of public value within the modern governance system. It underlines the mandate of public institutions to enhance citizen-centred public value creation and sustainability (Moore, 1995), and offers a complementary role in appreciating transformative public sector management practices.

Moore's line of thinking has gained popularity amongst researchers, public sector managers, and practitioners. As has been alluded to earlier, the public administration discipline has, traditionally, been under serious attack for its failure to generate value for society. The classical public management approaches generate value through efficiency in the production process. Modern public management processes and systems are indicative of a gradual transformation of governance frameworks, with a growing focus changing from cost efficiency towards addressing wider, socially anticipated outcomes. These experiences can be meaningfully understood through the lens of PVT. Meeting these diverse public needs and preferences requires the public administration discipline to understand better what is socially desirable and to address emerging transformations in citizens' expectations aggressively. The PVT's thesis revolves around the strategic triangle, which is based on three factors linked to each other to explain the above governance evolution.

One possible role of PVT is to explain the current integration of emerging technologies and data-driven approaches. The global reliance on artificial intelligence (AI), big data analytics, and digital platforms presents governments with a unique opportunity to improve their capacity to deliver public benefit. The incorporation of contemporary technologies into public governance provides a platform for better evaluation of public preferences, more efficient resource allocation, and enhanced service delivery efficiency and responsiveness (Wu et al., 2022).

PVT provides a critical tool for interrogating how these innovations can promote citizens' trust and value creation. Commendably, most countries are investing in advanced technologies to meet the changing public values and presence associated with the digital economy.

Additionally, the future of PVT points to expanding its application beyond interpreting conventional government boundaries to incorporate a wider network of stakeholders and interested parties, key principles for enhancing good governance. Given the growing governance complexity and the involvement of multiple actors and collaborations, PVT can serve as a theoretical basis for explaining the imperative to bind diverse interests, coordinate efforts, and capitalise on overall impact (Vallentin, 2022). Modern public management practice increasingly emphasises integrative, whole-of-government approaches to address multifaceted policy issues. In this vein, PVT provides an important interpretive tool for exploring how government organisations navigate these problems by promoting comprehensive decision-making models that foster trust and legitimacy among different stakeholders (Liu & Han, 2026). This view reflects the centrality of co-creation, partnership, and public engagement as drivers of co-defining public objectives and of mobilising collective resources to address citizens' preferences. As argued by Wu et al. (2022), PVT is expected to have a significant impact on strategic public administration in the coming years by tackling challenges that extend beyond individual businesses through collaborative efforts and community initiatives. Complex societal challenges, such as information overload and technological revolution, can undermine the government's capacity to run effectively and efficiently, thereby eroding public trust (Vallentin, 2022).

This study also predicts a greater emphasis on outcomes-based accountability and performance management, grounded in the fundamentals of PVT. Rather than simply prioritising inputs and outputs, PVT encourages evaluating public institutions' success by examining the tangible outcomes they generate for the general populace (Liou & Liou, 2022). By giving priority to values and preferences such as equity, social justice, and environmental sustainability, PVT can help public institutions demonstrate their strong commitment to operating in the best interests of citizens and generating appropriate value for society. In turn, this can reconfigure public trust and confidence in the government's capacity and dedication to realise significant outcomes.

Modern public governance highlights an increasing emphasis on ethical leadership, integrity, and dedication towards citizen-centred value creation within governmental institutions. Growing public demands for transparency and accountability have underscored the imperative to foster a culture of honesty, responsibility, and ethical decision-making within public institutions (Wu et al., 2022). Anchored on PVT, these developments may be understood as supporting the values which define effective and trustworthy public service. The theory proposes that explaining the nature of governance in the twenty-first century requires encouraging good governance, responsible stewardship, and public engagement, which are likely to instil confidence and trust among the public. This is also supported by Howe (2023), who suggests that PVT can serve as a key interpretive tool in governance studies focused on achieving the outcomes of democracy and on developing a culture of accountability and transparency.

Additionally, the theory serves as a critical tool for analysing the relationship between conventional governance practices and entrepreneurial activities, which intensify wealth creation in the public and private sectors (Liou & Liou, 2022). Therefore, restoring public trust is of utmost importance in the face of an evolving socio-political landscape, as witnessed by the existence of the Russian Federation's National Guard (Throntveit, 2023). Furthermore, the global experience with the COVID-19 pandemic also underscores the need to restore public trust in research, as evidenced by the imperative to follow the dictates of science and accountability. The future of PVT hinges on bolstering public confidence, improving democratic procedures, and promoting active participation for efficient governance in an interconnected global village.

9. Conclusions

The discipline of public administration continues to undergo significant paradigm shifts, reflecting evolving expectations regarding the role of government in complex and dynamic societies. These transformations raise fundamental questions for both scholars and practitioners concerning how public institutions can effectively deliver value while maintaining legitimacy and trust. Within this context, this study has demonstrated the analytical and practical relevance of PVT as an emerging framework capable of shaping the future trajectory of public management and governance. The proliferation of competing public management theories and approaches underscores the growing renewed scholarly and practical interest in identifying models that generate both theoretical insight and real-world applicability. PVT distinguishes itself by challenging the limitations of earlier paradigms—particularly TPA and NPM—which tended to prioritise bureaucratic efficiency or market-oriented performance at the expense of broader societal outcomes. Instead, PVT advances a more holistic understanding of governance, underscoring the creation of collective value, the centrality of citizen engagement, and the importance of trust as a core public-sector outcome.

This study concludes that PVT offers a compelling lens for reconfiguring governance structures by redefining the roles of both the state and citizens in the co-creation and delivery of public services. Empirical illustrations from contexts such as South Africa, Kenya, Zimbabwe and Rwanda demonstrate that while public value principles can enhance service delivery, accountability, and citizen engagement, their effectiveness remains contingent upon the alignment of institutional capacity, political legitimacy, and societal expectations. These cases further reveal that deficits in any of these dimensions can undermine public trust and weaken overall governance outcomes. Central to this reconfiguration is the enduring relevance of Moore (1995)'s strategic triangle, which highlights the necessity of aligning the authorising environment, operational capacity, and public value objectives. This framework not only clarifies the distinct characteristics of the public sector relative to the private sector, but also provides a practical tool for public managers navigating complex governance environments. However, as this study has shown, achieving such alignment in practice remains challenging, particularly in contexts characterised by institutional constraints, political contestation, and diverse societal preferences.

This study provides deep, novel insights by reorienting PVT as an interpretive tool for appreciating citizen-centred value creation in contemporary governments, rather than as a prescriptive or causal tool. Pursuant to the above, the theory demonstrates how issues of trust, legitimacy, and value generation can be more coherently understood when grounded in citizens' perceptions and experiences of governance processes. The study further advances existing scholarship by demonstrating how public institutions can be analysed in terms of their orientation towards accountability, responsiveness, and collaborative engagement, particularly in addressing complex societal challenges. By integrating theoretical perspectives with practical observations, the paper offers a nuanced understanding of how value is conceptualised and realised in contemporary public governance contexts.

Suggested Areas for further study

It is clear that this research has established the analytical and practical significance of PVT for explaining the evolving public trust and value creation within contemporary government institutions, yet several avenues for further research remain. Future research should adopt an empirical approach to explore how citizen-centred public value creation is operationalised and measured across different contexts, particularly in less-researched regions such as sub-Saharan Africa. Future research should also longitudinally assess the relationship between public value creation and trust, particularly in politically dynamic environments such as Uganda, the DRC, Zimbabwe, and Nigeria, where public sector reform and trust are constantly evolving.

Future research should also further develop and assess how public value is measured and evaluated, particularly across less tangible elements such as legitimacy, equity, and satisfaction. Comparative research should also be conducted to assess how PVT could be more universally applied across different administrative traditions, such as in Botswana and Rwanda. Furthermore, there is potential for interdisciplinary research that could combine elements of political science, behavioural economics, and data science to assess further how citizen interests are formed and how they could be more effectively harnessed. Ultimately, advancing PVT requires a shift from predominantly conceptual debates towards more rigorous, evidence-based analyses that can inform both theory development and practical governance reforms in Africa and beyond.

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GRADUATE UNEMPLOYMENT IN SOUTH AFRICA (2016-2025): TRENDS, DRIVERS AND POLICY MATRIX ***Ishmael Obaeko Iwara ^{1*}, Victor Ojakorotu ²**^{1*,2} North-West University, P/Bag X2046, Mafikeng, South AfricaE-mails:^{1*} ishmael.iwara@gmail.com (Corresponding author); ² victor.ojakorotu@nwu.ac.za

Received 11 February 2026; accepted 23 May 2026; published 30 June 2026

Abstract. This study examines the evolving nature of graduate unemployment in South Africa over the past decade, arguing that the challenge has shifted from short-term, cyclical labour market mismatches to a deeply structural failure of economic absorption. Drawing on evidence of employment outcomes and policy experience from 40 publications, the analysis based on the Atlas_{ti} 26.0.0 model demonstrates that graduate unemployment is driven by the interaction of structural constraints—such as slow and uneven economic growth, deindustrialisation, limited expansion of high-skill sectors, and persistent socio-economic inequalities—alongside institutional weaknesses within higher education, labour market entry systems, and recruitment practices. These long-standing conditions have been further intensified by cyclical shocks, notably the economic downturn preceding 2019 and the COVID-19 pandemic, which disrupted school-to-work transitions and generated scarring effects for new labour market entrants. The findings reinforce the National Development Plan 2030's core proposition that employment is the foundation of development, while highlighting a critical gap between human capital production and productive employment creation. Consequently, graduate unemployment should be treated as a systemic indicator of economic performance and inclusion rather than an education failure, and argues for policy approaches that prioritise demand-side job creation, strengthened labour market transitions, and equity-driven absorption strategies to align higher education outcomes with inclusive growth objectives.

Keywords: Graduate unemployment; Higher Education; National Development Plan 2030; Socio-economic imperatives.

Reference to this paper should be made as follows: Iwara, I.O., Ojakorotu, V. 2026. Graduate unemployment in South Africa (2016-2025): trends, drivers and policy matrix. *Insights into Regional Development*, 8(2), 136-149. <http://doi.org/10.70132/p6424849628>

JEL Classifications: J64, I23, I26

1. Introduction

Global graduate unemployment has emerged as a structural outcome of the rapid expansion of higher education amid slower, uneven growth in graduate-level employment. Across both developed and developing economies, governments have promoted university education as a pathway to economic development and social mobility (Chankseliani, Qoraboyev & Gimranova, 2021; Schofer, Ramirez & Meyer, 2021; Fauzi, Abdul Rahman & Lee, 2023; Astuti et al., 2026). While this has increased the number of degree holders, labour market absorption has not kept pace, especially in economies with limited structural transformation (Organisation for Economic Co-operation and Development (OECD), 2025; International Labour Organisation (ILO), 2026). Consequently, a growing share of graduates, specifically in emerging economies, such as those in Africa, face delayed entry into the workforce, prolonged job searches, or exclusion from stable employment (Thetsane, 2023; Iwara, 2025; Sangaré-Oumar et al., 2025). This trend challenges the long-standing assumption that higher education

* The research leading to these results has received funding from the South African National Research Foundation (NRF): Grant Number PSTD250404308801.

automatically guarantees employability and reveals deeper imbalances between education systems and economic capacity.

Common drivers sustaining graduate unemployment in Africa are the persistent mismatch between skills and labour market needs (Pheko & Molefhe, 2017; Demissie et al., 2021; Njeru, 2025), inadequate competence and limited work experience (Mwita, 2018; Fika et al., 2021; Terrance, 2023), systemic failure resulting in weak employment potential and job creation (Mukurunge & Tlali, 2017; Mhazo & Thebe, 2021), and negative self-perception (Sangaré-Oumar et al., 2025). Many higher education systems remain academically oriented, producing qualifications that do not sufficiently align with employer demand for applied, digital, technical, and workplace skills. As a result, graduates are often formally qualified but occupationally mismatched, leading to overqualification, underemployment, or employment outside their fields of study. These patterns cut across African countries, suggesting policy reforms to meet the exigencies of rising graduate unemployment and underemployment. While economies, such as Kenya, Nigeria, and South Africa, experience widespread graduate unemployment, many face outright graduate underemployment due to weak private-sector demand and limited job creation (ILO, 2020; ILO, 2022). In both contexts, graduates compete intensely for a shrinking pool of suitable entry-level positions, reinforcing inequality in access to work.

Broader economic conditions and structural change further intensify this continental challenge (Tinashe & Chinyamurindi, 2019; Thetsane, 2023). Africa's economic downturns, slow growth, and instability disproportionately affect the continent's young graduates, who lack experience and bargaining power in competitive labour markets. Technological change and automation have also reshaped employment structures, reducing routine professional roles while raising skill thresholds for high-quality jobs (Okolie, Nwosu & Mlanga, 2019; Mkansi & Landman, 2021; Gartoumi & Tekouabou, 2024). The consequences are significant: graduate unemployment represents wasted human capital, reduced returns on educational investment, and social frustration that can fuel migration, inequality, and political discontent. While graduate unemployment is a continental, if not global issue, it manifests differently across regions and countries. This study interrogates the challenge from the South African context. It analyses the country's graduate unemployment trends and patterns from 2016 to 2025 and aligns the outcomes with the South African National Development Plan (NDP) 2030. Arguably, the insights will provide an enabling environment for stakeholders to respond from informed direction.

In South Africa, there is yet a comprehensive officially published 'graduate outcome-to-employment ratio' report; however, studies suggest that while many graduates eventually find employment, a significant proportion either remain unemployed or are underemployed, especially in the early years after graduation (Mncayi, 2016; Ramatshekgisa, 2020; Mseleku, 2025). This assumption is consistent with Stats SA (2025), which shows that graduate unemployment in the country remains significantly lower than the national average, but it is rising and increasingly concerning. As of 2016–2025, unemployment among university graduates is estimated at around 8.0%–12% overall (with some figures as low as about 10.3% in the last quarter of 2025), although it can be much higher among young graduates, specifically those under 25 (Stats SA, 2023; 2025). In contrast, the overall national unemployment rate is dramatically higher, standing at approximately 27%–32% between 2016 and 2025 (Stats SA, 2023; 2025). This argument depicts that while higher education still improves employability relative to the general population, it no longer guarantees employment, especially for young graduates entering a highly constrained labour market.

This study is highly significant to NDP 2030 because it directly interrogates one of its core assumptions: that expanding access to higher education will improve labour-market outcomes, enhance spatial employment and support inclusive growth (National Development Commission (NDC), 2013). The NDP is a long-term strategic framework adopted to eliminate poverty and reduce the entrenched inequality in South Africa by 2030 through inclusive economic growth, social cohesion, and capable governance. It sets out a vision for improving education and skills development, expanding employment opportunities, strengthening state institutions, and promoting

active citizenship, to improve the quality of life for all South Africans and enable the country to achieve sustainable development. *“South Africa has set itself the goals of eradicating poverty, reducing inequality, growing the economy by an average of 5.4%, and cutting the unemployment rate to 6% by 2030. Education, training and innovation are critical to the attainment of these goals...” “The education system will play a greater role in building an inclusive society, providing equal opportunities and helping all South Africans to realise their full potential, in particular those previously disadvantaged by apartheid policies, namely black people, women and people with disabilities” (NDC, 2023, p. 78).*

The NDP positions education, particularly at the tertiary level, as a critical driver of productivity, social mobility, equality and employment creation, yet persistent graduate unemployment in South Africa signals a disconnect between human-capital expansion and labour-market absorption (Ncube, Mudau & Kgotlthane, 2018; Terrance, 2023; MacGinty, 2024). Research on graduate unemployment, therefore, provides essential evidence on whether graduates are being effectively integrated into the economy, where and why transition failures occur, and how inequalities are reproduced despite educational attainment. Such studies help the relevant NDP actors move from aspirational targets to informed policy adjustments by identifying structural constraints, transition bottlenecks, and demand-side weaknesses that undermine employment outcomes. In this way, graduate unemployment research functions as both a diagnostic and evaluative tool, informing the NDP’s broader objectives of reducing unemployment, inequality, and poverty through coordinated education, labour-market, and economic reforms.

The subsequent section of the paper outlines the methodology, specifically qualitative approaches and the strategic instruments utilised to conduct the scoping review. The results and discussion of findings were presented in three stages. Stage 1 presents the graduate unemployment trend in South Africa within the scope (2016-2025) of the study. Stage 2 explains the unemployment patterns in this period, while Stage 3 suggests the policy matrix that aligns with the patterns to benefit the country’s NDP and development actors. The conclusions and recommendations followed. Although this study focuses on South Africa, the methodological imperatives, outcomes and recommendations can be relevant in advancing graduate unemployment discourses in other African countries and beyond.

2. Methodology

This study adopts a qualitative research design grounded in a traditional review of existing scholarship and a thematic analysis of the patterns that emerge across graduate unemployment discourses in South Africa. This design was ideal for this study, given that graduate unemployment is a multidimensional phenomenon. In other words, it cannot be fully captured and explained through single and area-context research. Synthesising diverse empirical discourses and inferences from nationwide spheres, therefore, allows the development of a broader conceptual model capable of interpreting the context comprehensively. The focus spans from 2016 to 2025 (10 years). A systematic search of relevant and related literature from databases (Sabinet African Journal, Science Direct, EBSCOhost, ProQuest, PsycINFO and PubMed) was performed to identify publications within the scope. In addition, backwards and forward searches were undertaken on Google Scholar to ensure maximum saturation. The search strategy combined keywords, such as graduate unemployment, graduate underemployment, and National Development Plan 2030. Limiting the search to peer-reviewed articles, chapters in refereed books, academic research theses, and verifiable reports from reputable institutions ensures analytical rigour, reliability and contemporary relevance. In total, 40 publications were retrieved for the analysis. The enrolled publications were modelled in Atlas_{ti} 26.0.0 and examined using thematic analysis. The coding process utilised a deductive approach, following recurring patterns within the literature. As the analysis progressed, these codes were refined into broader themes that captured the structural, institutional and cyclical factors linked to graduate unemployment.

3. Result and Discussion of Findings

Figure 1 presents a graphical trend illustrating graduate unemployment in South Africa (2016–2025) based on the Quarterly Labour Force Survey (QLFS), as reported by Statistics South Africa (Stats SA, 2023; 2025). It is important to note that QLFS microdata are reported quarterly and not always published as a clean annual graduate-only series. The values used here represent consistent annual averages and best available points drawn from Stats SA reports, peer-reviewed and policy studies. The figure is therefore illustrative but evidence-based, intended to show trend direction rather than exact quarterly precision.

Between 2016 and 2019, graduate unemployment rose gradually from about 7% to nearly 9%. This trend reflects weak economic growth and limited absorption of skilled labour despite continued graduate employment advantage. A sharp increase occurred during the COVID-19 shock (2020–2021), with unemployment exceeding 10%, consistent with evidence that labour-market entry for young and recent graduates was disproportionately disrupted. The trend stabilised at an elevated structural level ($\approx 11\text{--}12\%$) from 2022 to 2025, indicating partial recovery but no return to pre-pandemic conditions. QLFS analyses confirm that graduate unemployment in 2023–2024 was more than double its level in the late 2000s, signalling a structural rather than cyclical problem.

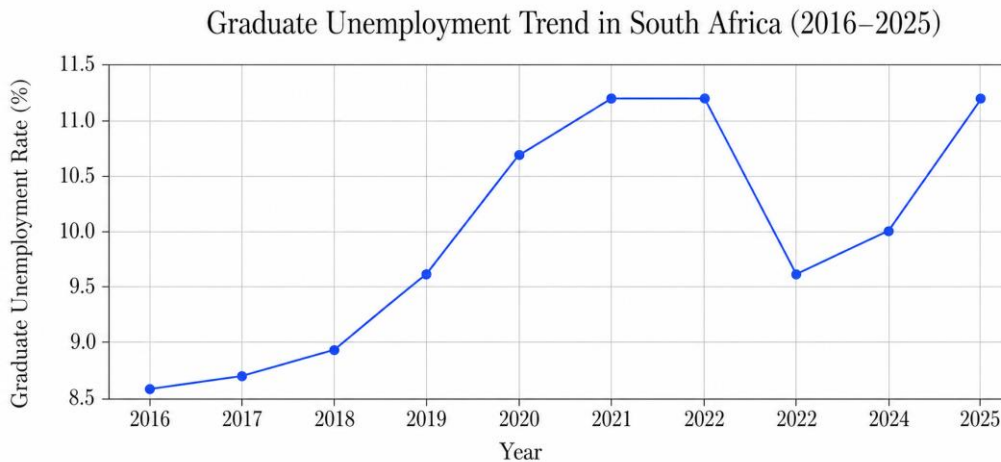


Figure 1. Graduate Unemployment Trend in South Africa (2016–2025)

Source: Authors' illustration based on QLFS reports

As illustrated in Table 1 and further elaborated in Figure 2, graduate unemployment in South Africa has been driven by a combination of structural, institutional, and cyclical factors rather than a single cause. Persistently weak economic growth, deindustrialisation, and limited expansion of high-skill sectors constrained the economy's capacity to absorb rising numbers of graduates (Mncayi, 2016; Moloto et al., 2025). In parallel, skills and qualification mismatch, theory-heavy curricula, and limited work-integrated learning weakened school-to-work transitions (Mseleku, 2022a; Shabangu & Madondo, 2024), while employers' strong preference for prior experience excluded new entrants (Mabiza, Mahlalela & Mbohwa, 2017; Gwala, Mthethwa & Jili, 2023). Institutional inequality, linked to race, socio-economic background, and university attended, continued to shape outcomes despite equivalent qualifications (Baldry, 2015; Ncube, Mudau & Kgotlhane, 2018; Kale, 2024). These pressures were sharply intensified by COVID-19 (2020–2021), which collapsed entry-level hiring and created lasting scarring effects (Mutandiko, 2021; MacGinty, 2024).

From 2022 onward, graduate unemployment stabilised at a high level due to structural absorption failure, characterised by slow job creation, unequal recruitment practices, reliance on social networks, spatial constraints,

and the expansion of short-term or precarious work that failed to translate into sustainable graduate employment (Tshishonga, 2022; Mseleku, 2025; Ngcobo & Cele, 2025).

Table 2. Graduate Unemployment Patterns from 2016-2025

Author	Title	Methodology	Key Findings
Baldry, 2015.	Graduate unemployment in South Africa: social inequality reproduced.	Quantitative analysis based on nationally representative survey data. It focuses on graduates' employment status and how outcomes vary by race, socioeconomic background, and other demographic factors.	Graduate unemployment reflects social inequality rather than individual merit, with race and socio-economic background strongly shaping outcomes. Black and working-class graduates face significantly higher unemployment risk than their White and middle-class counterparts, even with equivalent qualifications.
Mncayi, 2016.	An analysis of the perceptions of graduate unemployment among graduates from a South African University.	Quantitative survey research design conducted at one South African university. Data collected through structured questionnaires administered to graduates. Employs descriptive statistical analysis to identify dominant themes influencing graduate unemployment.	Graduate unemployment is driven primarily by a lack of work experience, skills mismatch between university training and workplace requirements, even for entry-level positions. Slow economic growth and limited job opportunities are viewed as major structural barriers to graduate employment.
Mabiza, Mahlalela & Mbohwa, 2017.	Reducing unemployment rate in south africa through establishment of graduate internship programmes (GIP).	Conceptual and applied policy-analysis approach grounded in labour-market and skills-development literature. The study draws on secondary data, national labour-market statistics, and existing graduate employment policies.	Lack of work experience. Internships are ad hoc or voluntary rather than structured, scaled, and institutionalised.
Ncube, Mudau & Kgotlhane, 2018.	An exploration of challenges faced by unemployed university graduate students: a case of a rural university in the Limpopo Province.	Qualitative case-study approach focusing on graduates from a rural South African university. It uses thematic analysis to explore lived experiences and perceived barriers to employment based on data from in-depth interviews and/or focus group discussions with unemployed graduates.	Lack of work experience, access to job information and employment networks, and financial constraints. Graduate unemployment is shaped by structural, spatial, and institutional inequalities, rather than individual effort or qualifications alone.
Tinashe & Chinyamuri ndi, 2019.	Labour market transition and experiences of unemployed graduates: An exploratory study.	Qualitative, exploratory research design. Thematic analysis was applied to identify patterns from data collected through in-depth, semi-structured interviews with unemployed university graduates.	Lack of work experience is the most significant barrier to entering employment. Unemployment is shaped more by structural labour-market constraints than by individual effort or qualifications.
Graham Williams & Chisoro, 2019.	Barriers to the labour market for unemployed graduates in South Africa.	Qualitative research approach based on in-depth interviews with unemployed graduates in South Africa. It employs thematic analysis to identify recurring barriers to employment.	Lack of work experience, corruption, and socio-economic background and limited social capital constrain access to job opportunities, reinforcing inequality.
Ramatshekgis, 2020.	An investigation on the experiences, causes and consequences of unemployment amongst Graduate Youths in Ga-Kgapane, Limpopo Province of South Africa.	Qualitative case-study approach focused on graduate youth in a rural area. It employs thematic analysis to analyse data collected through interviews and/or focus group discussions with unemployed graduate youths.	Lack of work experience, weak economic activity, and dependency. Geographical and spatial constraints reduce access to job information, networks, and urban labour markets.
Mutandiko, 2021.	The impact of the COVID-19 pandemic on the job-seeking	A qualitative case study was followed. It employs thematic analysis to capture graduates' experiences and responses to labour-market	COVID-19 has intensified existing structural labour-market barriers for graduates. It significantly disrupted traditional job-search

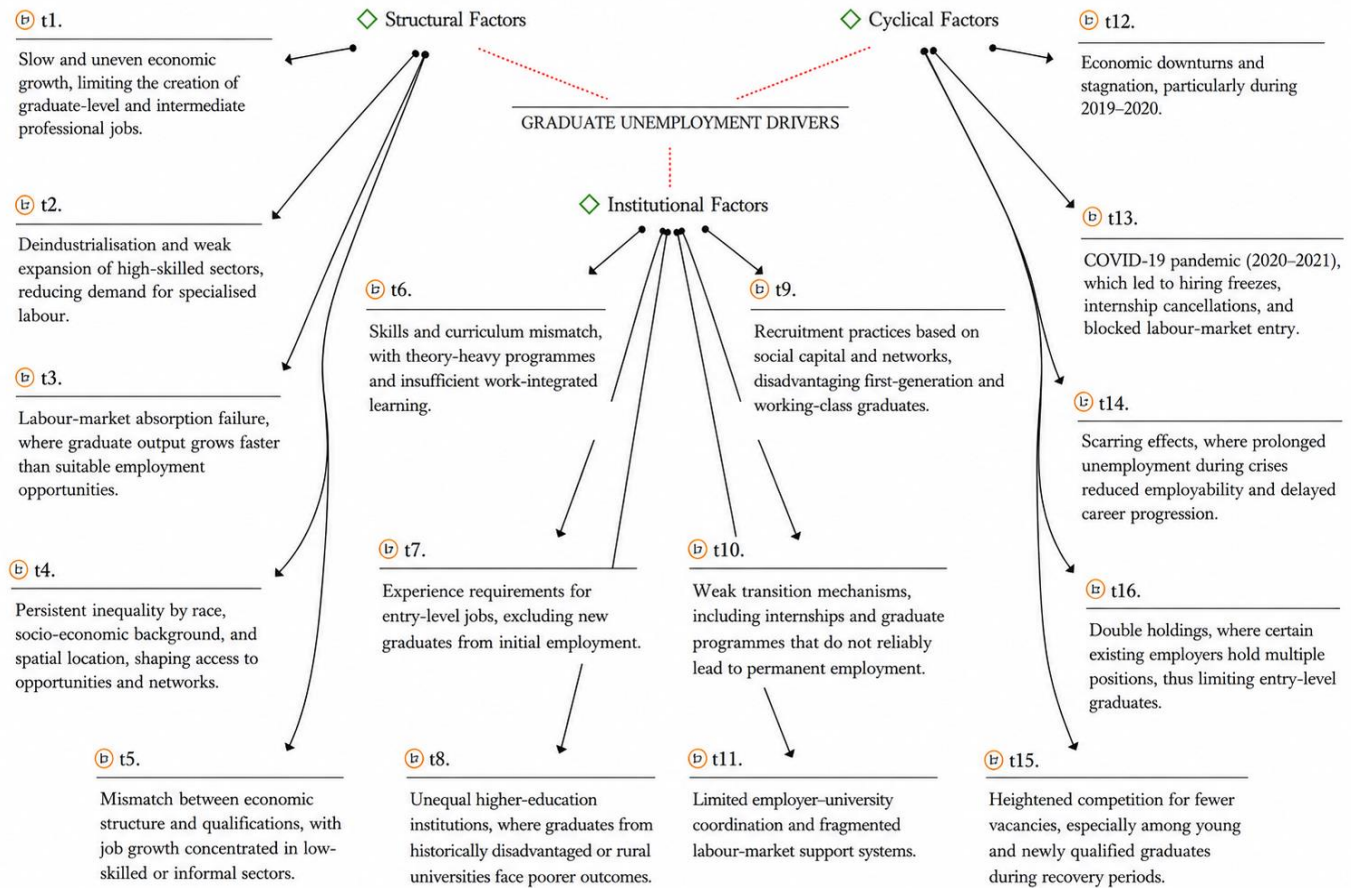
	strategies of unemployed graduates in Johannesburg.	shock from data collected through in-depth interviews during the COVID-19 period.	strategies, reducing vacancies and hiring.
Mseleku, 2022a.	From workplace to joblessness: The determinants of post-internship graduate unemployment in South Africa.	Qualitative exploratory research design. Applies thematic analysis to identify structural and institutional determinants of post-internship joblessness from data collected through interviews with graduates who completed internships but remained unemployed thereafter.	Weaknesses in internship-to-employment pathways, weak employer absorption capacity, and slow economic growth.
Tshishonga, 2022.	Addressing the unemployed graduate challenge through student entrepreneurship and innovation in South Africa's higher education.	Qualitative case-based and conceptual approach, drawing on South African higher-education initiatives in student entrepreneurship and innovation. It analyses policy documents, programme cases, and secondary literature related to entrepreneurship education and graduate unemployment.	Lack of entrepreneurship education and the economy's limited capacity to absorb graduates into formal employment.
Mseleku, 2022b.	Youth high unemployment/unemployability in South Africa: the unemployed graduates' perspectives.	Qualitative research design based on in-depth interviews with unemployed South African graduates. Applies thematic analysis to identify recurring patterns related to skills, labour-market access, and barriers to employment.	Graduate unemployment is mostly driven by structural labour-market constraints rather than by individual shortcomings. Lack of work experience, mismatch between university education and workplace requirements, particularly practical and applied skills, creates a cycle of exclusion from entry-level jobs.
Terrance, 2023.	Determinants and Prospects of Graduate Unemployment in South Africa.	Quantitative empirical approach, using secondary national labour-market data (primarily Statistics South Africa datasets). It analyses determinants of graduate unemployment through econometric and descriptive techniques.	Graduate unemployment is driven mainly by structural economic factors, particularly slow economic growth and weak demand for skilled labour. Education level improves employment chances, but a degree alone does not guarantee employment in a constrained labour market.
Gwala, Mthethwa & Jili, 2023.	An analysis of the factors, effects and experiences associated with high graduate unemployment in the eThekweni Metropolitan Municipality of South Africa.	Mixed-methods approach, combining quantitative survey data with qualitative insights. It employs descriptive statistical analysis and thematic analysis to examine causes, experiences, and socio-economic effects of graduate unemployment from data collected through structured questionnaires and interviews with unemployed graduates.	Lack of work experience, skills mismatch between university training and labour-market requirements exacerbate unemployment, particularly for entry-level positions. Structural factors—such as slow economic growth, employer hiring practices, and inequality—play a greater role than individual effort or qualifications.
MacGinty, 2024.	Graduate unemployment in South Africa	Quantitative design. Conducts descriptive and trend analysis of graduate employment, unemployment, and underemployment on secondary Statistics South Africa QLFS data.	The economy's capacity to absorb graduates has not kept pace with rising graduate output, creating a persistent absorption gap. Graduate unemployment is strongly shaped by inequality linked to race, socio-economic background, and the institution attended. COVID-19 intensified graduate unemployment, with lasting scarring effects evident in post-pandemic labour-market outcomes.
Shabangu & Madondo, 2024.	Addressing graduate unemployment: Aligning higher education curricula with labour market demands.	Qualitative, policy-oriented analysis drawing on document review and stakeholder perspectives. Uses thematic analysis informed by employability and labour-market alignment frameworks.	Curriculum–labour market misalignment: limited and uneven work-integrated learning opportunities weaken graduates' transition into employment.
Kale, 2024.	What now? Experiences of	Qualitative, ethnographic-informed research design centred on in-depth life-history and	Structural inequality continues after graduation: education does not protect Black

	everyday unemployment among Black graduates in South Africa	semi-structured interviews. Thematic and interpretive analysis, grounded in sociological theories of inequality, temporality, and lived experience, was exploited.	graduates from exclusion, contradicting meritocratic narratives.
Moloto et al., 2025.	Graduate Unemployment, Skills Mismatch, and the Dynamics of Labour Mobility in South Africa: A Systematic Literature Review.	Systematic literature review of empirical and policy-oriented studies on graduate unemployment in South Africa. It uses a thematic synthesis approach to identify recurring patterns related to graduate unemployment, skills mismatch, and labour mobility.	Weak labour-market absorption, skills mismatch, uneven economic development, and limited access to opportunities. Existing policy responses focus too heavily on supply-side skills development, with insufficient attention to demand-side job creation.
Mseleku, 2025.	No connections, no employment: Social capital and youth graduate unemployment in South Africa.	Qualitative research approach, drawing on in-depth interviews with unemployed youth graduates in South Africa. It applies thematic analysis to examine the role of social capital (networks, connections, referrals) in labour-market access.	Recruitment processes are network-dependent and informal, limiting access for first-generation and working-class graduates. Social capital deficits intersect with socio-economic background and inequality, reinforcing structural disadvantage.
Nkoana & Raphiri, 2025.	The Impact of Individuals Holding Multiple Jobs on Graduate Unemployment in South Africa.	Quantitative, labour-market analysis using national survey data (drawing on Statistics South Africa labour-force datasets). Uses descriptive and regression-based techniques to examine how the labour-market behaviour of employed individuals affects job availability for graduates.	Multiple job holding reduces employment opportunities for unemployed graduates, particularly at entry and intermediate skill levels.
Ngcobo & Cele, 2025.	Bridging the Gap: Investigating Graduate Unemployment Dynamics in KwaZulu-Natal, South Africa.	Qualitative, exploratory research design. Applies thematic analysis to examine labour-market transitions, barriers, and graduate experiences from data gathered through interviews and/or focus group discussions with unemployed graduates.	Graduate unemployment is driven by limited job creation, lack of work experience, weak absorption, and a mismatch between graduate qualifications and available local job opportunities.

Source: Authors' illustration based on literature review

As illustrated in Figure 2, structural factors explain the deep-rooted features of the economy and labour market that persist over time. These include slow and uneven economic growth, deindustrialisation, weak expansion of high-skilled sectors, labour-market absorption failure, persistent inequality, and a mismatch between economic structure and qualifications. Institutional factors relate to how education systems, labour-market institutions, and employers operate. For instance, skills and curriculum mismatches, experience requirements for entry-level jobs, unequal higher education institutions, recruitment practices based on social capital and networks, weak transition mechanisms, and limited employer–university coordination.

Cyclical factors are time-specific shocks or short-term conditions that intensify unemployment trends, spanning economic downturns and stagnation, the COVID-19 pandemic, scarring effects, heightened competition for fewer vacancies, and double holdings.

**Figure 2.** Graduate Unemployment Drivers*Source:* Authors' illustration

In the early part of the decade (2016–2018), graduate unemployment was primarily driven by weak economic growth and structural unemployment, rather than an oversupply of graduates (see Table 3). South Africa's economy grew slowly, limiting the creation of professional and entry-level graduate jobs. During this period, research consistently showed that graduates still had a strong employment advantage over non-graduates, but this advantage was uneven. Skills mismatch emerged as a key concern: employers demanded work-ready, technical, and digital skills, while universities continued to deliver largely theoretical training. Graduates from non-elite institutions and disadvantaged backgrounds faced particularly poor outcomes, highlighting the role of institutional quality and inequality, rather than education volume, as a main cause.

By 2019, graduate unemployment was increasingly shaped by long-term economic stagnation, low investment, and declining demand for skilled labour. The onset of the COVID-19 pandemic in 2020 marked a structural break in the trend. Graduate unemployment rose sharply as firms froze hiring, internships were cancelled, and new labour-market entrants were excluded. Crucially, the problem was not graduate retrenchment but blocked entry into the labour market. Lack of work experience became a binding constraint, reinforcing employer preference for proven workers and intensifying competition for a shrinking pool of graduate jobs. This period shifted graduate unemployment from a gradual structural issue to a crisis-driven exclusion problem.

In the immediate post-pandemic period (2021–2022), graduate unemployment did not return to pre-COVID levels, revealing scarring effects. Although employment began to recover, the economy failed to absorb new graduate cohorts at the same pace as graduation rates. The dominant causes during this phase were experience barriers, delayed transitions, and occupational mismatch, rather than a lack of qualifications. Many graduates remain unemployed longer, while others accepted work below their skill level. Public-sector hiring constraints and limited private-sector expansion meant that traditional graduate absorbers could not accommodate demand. Graduate unemployment increasingly became a structural absorption failure, not a short-term shock.

By the latter part of the decade (2023–2025), graduate unemployment in South Africa had stabilised at a high structural level, driven by deep and persistent causes. These included weak growth, deindustrialisation, limited high-skilled job creation, and continued skills mismatch, alongside growing graduate supply. Importantly, inequality became central: outcomes differed sharply by race, institution, field of study, and social networks. Graduates were no longer insulated from South Africa's broader unemployment crisis, signalling a shift from “graduate advantage” to graduate vulnerability, particularly for young and first-generation graduates. The dominant cause in this phase is best described as a systemic failure to translate education into employment, rather than shortcomings among graduates.

Table 3. Policy Matrix Towards Graduate Unemployment in South Africa (2016–2025)

Period	Dominant Causes	Policy Lesson	Policy Objective	Key Policy Instruments	Primary Actors	Expected Outcomes
2016–2018	Slow growth, skills mismatch, institutional inequality	Graduate unemployment is demand-constrained and unequally distributed, not driven by oversupply.	Improve alignment between education and labour demand while reducing institutional inequality.	Curriculum reform; work-integrated learning; employer partnerships; targeted placement support for disadvantaged institutions.	DHET, universities, SETAs, private sector.	Improved employability; reduced mismatch; narrower outcome gaps between institutions.
2019–2020	Economic stagnation + COVID-19 entry-level hiring collapse	Entry-level hiring is highly vulnerable to economic shocks.	Protect school-to-work transitions during crises.	Publicly funded internships, graduate placement schemes, and hiring subsidies during downturns.	National Treasury, DHET, public sector employers, and private firms.	Maintained labour-market entry; reduced graduate unemployment spikes during crises.
2021–2022	Scarring effects, experience barriers, and weak job absorption	Labour-market entry barriers can become self-reinforcing.	Prevent long-term exclusion of new graduates.	Large-scale bridging programmes; experience-substitution schemes; wage subsidies for first-time hires.	Government, firms, SETAs.	Faster transitions into work, reduced scarring, and improved post-recovery absorption.
2023–2025	Structural unemployment, inequality, and limited high-skilled job creation.	Graduate unemployment is now structural, and inequality is being reproduced.	Expand graduate-level demand and ensure inclusive absorption.	Industrial policy targeting high-skill sectors; coordinated growth, education, labour strategy; equity-based hiring incentives.	Government (economic cluster), private sector, and industrial agencies.	Sustainable graduate job creation; reduced structural unemployment; more inclusive labour-market outcomes.

The NDP identifies unemployment, inequality, and low economic growth as South Africa's central development challenges, emphasising that job creation is the primary route to reducing poverty and inequality (NDC, 2013). The experience of graduate unemployment between 2016 and 2025 strongly confirms the NDP's diagnosis that economic growth without structural transformation cannot generate sufficient employment, even for skilled labour. Although the NDP assumes that higher education expansion would improve labour-market outcomes, the decade under review shows that education gains alone do not translate into jobs when demand is weak (Terrance,

2023; Mseleku, 2025). The rising graduate unemployment trend, despite the increase in graduate output over the years, therefore, reinforces a central lesson: labour absorption, not skills production, is the binding constraint (Moloto et al., 2025; Ngcobo & Cele, 2025). While stressing human-capital development, the evidence presented in this study suggests that without faster inclusive growth in knowledge-intensive and productive sectors, graduate unemployment becomes structurally entrenched, undermining the Plan's inclusive growth objectives.

The policy remedies identified for 2016–2018 and 2021–2022 align closely with the NDP's emphasis on improving education quality, relevance, and transitions into work. The NDP calls for better alignment between education institutions, SETAs, and employers, along with expanded workplace-based learning (NDC, 2013, p. 87–88). The persistence of skills mismatch and experience barriers over the decade indicates that implementation has lagged behind policy intent (Mseleku, 2022a; Shabangu & Madondo, 2024). In this context, strategies such as large-scale institutionalised internships, experience-substitution programmes, and structured school-to-work transitions give practical expression to the NDP's vision of smoother labour-market entry for young people. Importantly, the graduate unemployment experience highlights that transition failures can negate education gains, suggesting that the NDP's education chapter should be strengthened with clearer mechanisms, funding commitments, and accountability for graduate absorption, not just skills provision.

The 2019–2020 period, marked by economic stagnation and the COVID-19 shock, exposes a vulnerability that the NDP acknowledges but does not fully resolve: the fragility of entry-level employment during downturns (Mutandiko, 2021; MacGinty, 2024). The collapse of graduate hiring during COVID-19 demonstrates that labour-market entry is pro-cyclical and easily disrupted. This reinforces the NDP's call for a capable, developmental state able to intervene counter-cyclically. In this context, publicly funded internships, hiring subsidies, and protected graduate pathways are consistent with the NDP's proposal for active labour-market policies, but go further by emphasising crisis-specific instruments. The lesson is that achieving NDP employment targets requires not only long-term growth strategies but also shock-responsive employment buffers that prevent lasting damage to young and graduate cohorts.

The 2023–2025 period reveals the most serious challenge to the NDP: graduate unemployment has become structural and inequality-reproducing, even among the highly educated. This outcome directly threatens the NDP's ambition to build a more inclusive and less unequal society. Graduate outcomes increasingly depend on race, institution, field of study, and social networks (Kale, 2024; Mseleku, 2025; Ngcobo & Cele, 2025), indicating that labour-market inequality mirrors broader structural inequalities that the NDP seeks to dismantle. These outcomes suggest that while the NDP prioritises job creation, it underestimates the extent to which job composition matters. Generic employment growth is insufficient if it does not generate graduate-level, intermediate, and professional jobs. Industrial policies targeting high-skill sectors, coordinated education-labour-industry planning, and equity-focused absorption strategies, will extend the NDP by sharpening its focus on who benefits from growth and how graduates are absorbed.

4. Conclusion

This narrative review draws on 40 peer-reviewed publications from 2016 to 2025 to interrogate graduate unemployment discourse in South Africa and suggests a mitigative policy strategy that will benefit NDP 2030. The analysis indicates that persistence of graduate unemployment in the country reflects the interaction of structural, institutional, and cyclical forces that have collectively shifted the problem from short-term labour-market friction to deep-seated economic malfunction. Structurally, slow and uneven growth, deindustrialisation, limited expansion of high-skill sectors, and enduring inequalities have constrained the economy's capacity to absorb a rising pool of graduates, while job creation remains concentrated in low-skill and informal activities. Institutionally, skills mismatches, experience barriers, unequal higher education outcomes, network-based recruitment practices, and weak school-to-work transition mechanisms have further excluded new graduates from

meaningful entry into the labour market. These challenges were intensified by cyclical shocks, particularly the 2019–2020 downturn and the COVID-19 pandemic, which disrupted hiring pathways and produced long-term scarring effects that continue to shape graduate employment prospects. Together, this evidence reinforces NDP's insight that employment is central to development, while demonstrating that graduate unemployment is not an education failure but a systemic indicator of economic structure, inclusion, and labour market performance.

The NDP's assumption that expanding access to higher education will improve labour-market outcomes, enhance spatial employment and support inclusive growth needs further interrogation, as a degree alone does not guarantee employment in a constrained labour market like that of South Africa, where certain racial class and socioeconomic class, for instance, black South African graduates and those from historically disadvantaged/rural-based institutions of higher learning face poorer employment outcomes. Consequently, addressing graduates' unemployment in the country requires a decisive shift from supply-side employability interventions towards coordinated strategies that tackle structural inequality, expand demand for graduate labour, and strengthen institutional transitions, ensuring that the economy is capable of absorbing graduates at scale in line with the NDP's goals of inclusive growth, reduced inequality, and social mobility.

Novelty

This study is novel in that it moves beyond descriptive accounts of graduate unemployment in South Africa by critically interrogating the structural, institutional, cyclical and transition dynamics shaping graduate labour market outcomes, while explicitly aligning its findings with the NDP 2030 to propose context-responsive, policy-relevant pathways for improving graduate employability and inclusive economic participation.

Limitations

Because the study relies solely on and draws insights mainly from existing discourses through desktop review techniques, its findings and conclusions were based on the quality, scope, and potential biases of reviewed publications. As a result, the findings should be subjected to further empirical validations using rigorous scientific research approaches to enhance reliability.

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Funding: The research leading to these results has received funding from the South African National Research Foundation (NRF): Grant Number PSTD250404308801.

Author Contributions: Conceptualisation: *Ojakorotu, Iwara*; methodology: *Iwara*; data analysis: *Iwara*, writing—original draft preparation: *Ojakorotu, Iwara*, writing; review and editing: *Iwara*; visualisation: *Ojakorotu, Iwara*. All authors have read and agreed to the published version of the manuscript.

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This is peer-reviewed scientific journal <https://jssidoi.org/ird/page/peer-review-policy>

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ENTREPRENEURIAL EDUCATION IN SOUTH AFRICA: REVEALING CONTEXTUAL PECULIARITIES AND ADDRESSING STRUCTURAL CONSTRAINTS THROUGH STRATEGIC RECOMMENDATIONS**Isaac Msughter Peter ^{1*}, Velisiwe Gasas ²**^{1*,2} *Educational Foundations, University of South Africa, Pretoria*E-mails: ^{1*} peterim@unisa.ac.za (Corresponding author); ² Gasag@unisa.ac.za*Received 15 February 2026; accepted 28 May 2026; published 30 June 2026*

Abstract. The youth unemployment crisis in South Africa has continued to escalate from 60% between age of 15–34-year-olds, despite all efforts put in place by the government. In this regard, entrepreneurship education has become a priority for the government at all levels. The objective of this study is to investigate entrepreneurial education in South Africa, identify its peculiarities, and formulate recommendations. The literature on ecosystem development and entrepreneurial education theory was combined in the literature review. The study revealed that there are four transformative elements: the shift in paradigm, shift from theoretical learning to experiential learning models (Stellenbosch University's IGNITE programme and Centennial Schools' NextGen Founders); collaborative ecosystem emergence (KwaZulu-Natal universities' networked approach generating employment and jobs for students, integration of digital and the industrial revolution skills growth and national policy coordination through the draft National Entrepreneurship Strategy. It was also found that the adoption of theory-based learning leads to producing half-baked graduates who have inadequate innovation skills, the gap between institutions and the historical advantages and disadvantages, cultural barriers which look at entrepreneurship as the last choice or career to pursue in school, and outcome misalignment with market demands, compounded by data coordination failures. This paper presents a novel analytical framework for understanding the trend-tension dynamic in entrepreneurial education within developing-economy contexts. Also, policymakers, educational leaders, and entrepreneurship educators should enhance the effectiveness of entrepreneurial education by reducing financial constraint environments.

Keywords: entrepreneurial education; peculiarities; constraints; South Africa

Reference to this paper should be made as follows: Peter, I.M., Gasas, V. 2026. Entrepreneurial education in South Africa: revealing contextual peculiarities and addressing structural constraints through strategic recommendations. *Insights into Regional Development*, 8(2), 150-163. <http://doi.org/10.70132/f2635832366>

JEL Classifications: I25, L26, O12, J24, M13**1. Background**

The South African government is facing a serious economic crisis, yet it is becoming harder for the country to recognise the significance of entrepreneurial education to economic progress. Youth unemployment among the 15–34 age group is expected to rise dramatically from 38.2% in 2018 to 60.8% in 2024, according to Mpako and Ndoma (2025). This demonstrates the existing job paradigm's catastrophic inability to accommodate the country's growing youth population. Resolving this issue so quickly is necessary, considering the reality. The most practical choice is the small, medium, and micro-enterprise (SMME) sector, which is the mainstay of the economy in South Africa, contributing to creating jobs for employment of 80% of the labour force of the nation and contributing more than R5 trillion to the GDP each year (Mgweba & Lungisa, 2024). However, there is a disturbing inconsistency; despite being Africa's largest economy and one of its most attractive places for entrepreneurship, the country has recorded the highest SMME failure rate in Africa, with 80% of enterprises failing within their first

quarter of operation in five years. A country that cannot sustain the SMME sector, which safeguards its economy, is in an organisational structure conflict, and no amount of entrepreneurial ambition can compensate for systemic failure.

In this regard, policymakers and universities have begun treating entrepreneurship education as a key strategy, rather than an afterthought. Back in 2025, the Deputy Minister of Higher Education and Training put it plainly: entrepreneurship has moved to the forefront and is now a top priority for universities (Universities South Africa, 2025). The new National Entrepreneurship Strategy, which the Cabinet cleared for publication in September 2025, goes even further. According to Bizcommunity (2025), schools are now treating entrepreneurship as a practical career that enables students to create jobs for themselves and society rather than an option or last resort.

However, the path from policy intent to educational practice is fraught with challenges. A comprehensive review of entrepreneurship education literature, analysing 55 studies, found that despite "massive investment in resources, staff, and infrastructure, the entrepreneurship education outcomes are unfavourable; entrepreneur graduates are 'half-baked', lack innovative and creative skills, undertake 'copycat' businesses, and become job seekers rather than job creators" (Vorvornator & Midiniso, 2025). This sobering evaluation highlights the main point of this article: that improving entrepreneurial education in South Africa requires addressing the structural conflicts that compromise its efficacy, as well as recognising creative trends. Despite extensive research on entrepreneurship education, existing studies tend to focus more on other aspects of entrepreneurship, such as Kennedy et al. (2025), which focused on co-creative pedagogies: learning through uncertainty in higher education.

There is limited research that conceptualises these elements as **interconnected and mutually shaping phenomena**. Also, while previous studies have accounted for poor entrepreneurial outcomes among people in South Africa, they have not adequately illuminated the structural, institutional, and cultural tensions that underlie these failures. There are several gaps in multi-level, **context-sensitive analyses** that integrate policy frameworks, institutional ecosystems, and student-level outcomes in South Africa. This study addresses entrepreneurial education in South Africa, identifies peculiarities, and formulates recommendations not merely as constraints but as **drivers of innovation** within entrepreneurial education systems.

2. Literature Review: Drivers of Entrepreneurial Education

Theoretical Framework

Entrepreneurship education has changed in recent times, from a narrow focus on business plan development to a broader conceptualisation encompassing the entrepreneurial mindset, self-efficacy, and intention formation (Fayolle & Gailly, 2015; Mohamed et al., 2024; Ye et al., 2025; Azimi, & Saleh, 2025). According to Lackéus (2015), there are three distinguishable categories of Entrepreneurship education: education "about" entrepreneurship (theoretical content), education "for" entrepreneurship (skill development for venture creation), and education "through" entrepreneurship (experiential learning in which students learn by engaging in entrepreneurial processes). This typology provides a useful framework for analysing the pedagogical shifts observed in contemporary South African practice.

The concept of individual entrepreneurial orientation (IEO) has gained prominence in understanding how education influences entrepreneurial outcomes. IEO encompasses five dimensions: risk-taking, innovativeness, proactiveness, autonomy, and competitive aggressiveness (Amaral et al., 2024). In many South African universities, students are found to be more interested in entrepreneurship education than students in Scottish universities (Amaral et al., 2024). Entrepreneurship education influences students' desire to pursue self-reliance and independence. In contrast, Scottish students show less interest in entrepreneurship education due to the different educational programmes available to them across different economic contexts.

Recent research in developing economies has emphasised the importance of cognitive and transversal skills in connecting entrepreneurship intention and education. Parker et al. (2025) report that Ghanaian university students lack knowledge of the effects of the entrepreneurial mindset and skills, which may be significantly associated with entrepreneurial content and intentions. According to Parker et al, entrepreneurship education guiding principles usually focus on developing good practices and pedagogies that enhance university students' cognitive and transversal skills.

Conceptual Framework

The authors developed an original research design to address the indicated research gap, as shown in Figure 1 below.

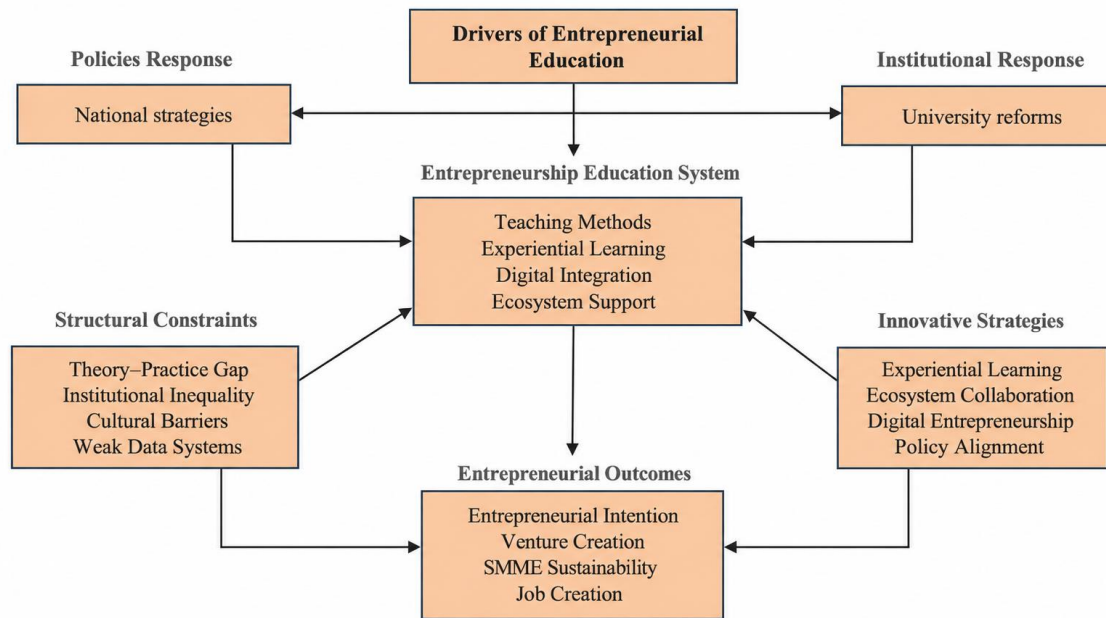


Figure 1. The scheme diagram for interaction between Entrepreneurial Education in South Africa: Revealing Contextual Peculiarities and Addressing Structural Constraints

This study uses a multi-level research design that views South African entrepreneurship education as a dynamic system influenced by institutional practices, policy responses, contextual factors, and structural limitations. According to the plan, entrepreneurship education acts as a mediator between national economic pressures and entrepreneurial results. This relationship is not deterministic or linear, though. New innovations strategies, such as experiential learning, digital integration, and collaborative ecosystems, coexist with structural constraints, including institutional capacity shortages, cultural perceptions, and curriculum misalignment. Moreover, how well these innovations address underlying structural tensions will determine the efficacy of entrepreneurship education. In the end, the paradigm connects these interactions to quantifiable outcomes such as venture development, entrepreneurial intention, and SMME sustainability.

Policies response

National strategies and Government Framework

The South African economy has provided a compelling rationale for entrepreneurship education centres across the board and programmes in the various universities. The formal economy cannot absorb the growing number of young people graduating from higher institutions; hence, many are left to wander in the labour market each year. According to Bizcommunity (2025), over 60% of South African companies identify skills shortages as a key

barrier to business transformation by 2030. This phenomenon describes the mismatch between the educational skills required by South African employers and those needed by the government, which unemployed youths need to secure jobs for themselves or become job creators.

Entrepreneurship education addresses societal challenges beyond the country's economy. Due to South Africa's long history of poverty, unemployment, and inequality, authorities were compelled to implement entrepreneurship courses in colleges with the specific goal of "inculcating entrepreneurial skills regardless of racial background to solve social problems" (Vorvornator & Midiniso, 2025). This social dimension is particularly significant, given that many students from low-income families often do not have the opportunities to acquire desirable skills or professions due to a lack of financial resources that would otherwise facilitate such opportunities.

Institutional Response

University reforms and Curriculum

The concept of university-based entrepreneurship ecosystems (UBEE) has emerged as a framework for understanding the multifaceted support required for effective entrepreneurial education. According to Movahedi et al. (2025), there are six elements necessary for the functioning of a university-based entrepreneurship ecosystem: governance and policy; socio-cultural; support services; economic and financial; human capital; and university communication and networking. They found that socio-cultural factors were the most important and influential, serving as foundations for other ecosystem components. This finding has resonance in South Africa, where cultural perceptions of entrepreneurship remain a significant barrier. According to Mathew and Anjali (2025), entrepreneurship extends to an ecosystem that includes thinking about how universities could cultivate entrepreneurial mindsets in students who may not launch businesses right away but can apply entrepreneurial thinking within existing organisations. This study emphasises the real-world challenges students face when juggling their studies and business endeavours, as well as the role institutional support and faculty mentoring play in fostering entrepreneurial success.

Entrepreneurship Education System

Teaching Methods

Despite the existing literature on entrepreneurship education in South Africa, few studies investigate it, revealing contextual peculiarities and addressing structural constraints through strategic recommendations. Numerous studies discuss the value of entrepreneurial education in South Africa, including how it helps young people find employment, nurtures creativity, and strengthens communities. However, there is still a lot to learn about how institutions and the real world impede progress. Even though entrepreneurship programs are becoming increasingly popular, there is little concrete evidence that they have an impact on things like launching new companies, moulding entrepreneurial behaviour, or creating long-lasting ventures (Sathyanand et al., 2025). The literature seems disjointed, with studies concentrating more on objectives than measurable results, such as long-term effects or successful companies.

The literature review indicates that entrepreneurship education in South Africa is hampered by a few persistent structural issues. To begin with, there is little to no precise structure that dictates how students should learn about entrepreneurship. The curriculum simply does not fit together as it should; students are not very interested, and there is not enough practical experience (Nwachukwu et al., 2024; Mefi & Asoba, 2025a,b).

Lawmakers have attempted to remedy the situation by enacting new regulations and updating courses, but the outcomes have been inconsistent; although some institutions have improved, others have not, and many are overburdened and unable to keep up (Maka, 2024; Manchidi, 2025). What students learn in the classroom and what they need to execute in practical business circumstances still differ significantly. Students are not closing the gap, even with more recent teaching approaches such as mentoring, hands-on learning, and ecosystem-based education. Furthermore, according to Lose and Cheteni (2024), although these programmes boost students'

confidence to launch a business, the same issues still arise, such as low self-esteem, inadequate support systems, and more significant environmental obstacles (Lose & Cheteni, 2024). There is still a significant disconnect between what students are taught in the classroom and what they are required to execute in actual business settings. Students are not fully narrowing the gap, even with more recent teaching approaches like mentoring, hands-on learning, and ecosystem-based education. Additionally, studies reveal that although these programs boost students' confidence to launch a business, the same issues still arise, such as low self-esteem, inadequate support systems, and more significant environmental constraints (Lose & Cheteni, 2024).

In addition, there appears to be a dearth of studies on entrepreneurship education, particularly in South Africa. Inequality, scarce resources, and long-standing historical concerns are mentioned by academics, but rather than delving deeply into them and making them important to their study, they are typically treated as side notes. Models and instructional frameworks that truly include these local circumstances into their design are hard to come by. Nobody seems to make the connection between more recent developments, such as innovation or experiential learning and more significant, long-standing issues like inequality or misaligned curricula. The overall picture of how entrepreneurship education takes shape in challenging situations feels inadequate because each piece of the puzzle is addressed separately.

In this regard, the present study addresses the literature gaps by a framework that sees trends and tensions as interconnected rather than separate. Entrepreneurship emerges as a direct reaction to the revealing contextual peculiarities and addressing structural constraints. This is due to dissatisfaction with theoretical practices that drive experiential learning programmes, and collaborative ecosystems emerge to address the lack of capacity among youth to become job creators rather than wait for jobs that are unavailable. This could also be attributed to the limited capacity of educational institutions to provide the education students need to excel. The question is whether these innovative strategies effectively address the underlying conflicts or merely shift them, which will determine their effectiveness.

Experiential Learning

Entrepreneurship education cannot be learned solely through theory. However, it is the most important development in South African entrepreneurial education (Fourways Review, 2025). Previously, traditional business education, which focuses on accounting, marketing, and administrative duties, was considered an important foundation for entrepreneurship, but it is not sufficient to make a good entrepreneur. Programmes that expose students to real-world business challenges have been developed in response to this recognition. According to Nazneen et al. (2024), experiential learning, self-efficacy, and individual innovativeness positively affect entrepreneurial attitude. This means that an entrepreneurial attitude positively affects students' entrepreneurial intention. According to Thomsen et al. (2021), experiential learning contributes to outcomes, including comprehension of the entrepreneurship content taught. This enhances entrepreneurial competencies and the intention to start a business (Motta & Galina, 2023; Taneja et al., 2024). This paper focuses on entrepreneurial competencies as an outcome of experiential learning. Entrepreneurial competencies are "skills, abilities, and attitudes, which, together with performance, lead to greater satisfaction in a professional job" (Silveyra et al., 2021, p. 3). According to Kozlinska et al. (2023), experiential learning demonstrates that entrepreneurial experience leads to the acquisition of entrepreneurial skills, greater knowledge, and improved attitudes.

Digital Integration and Ecosystem Support: Case Studies

Stellenbosch University's IGNITE initiative best illustrates this experiential approach. To "ignite the entrepreneurial spirit among both undergraduate and postgraduate students," the university-wide experiential learning and extracurricular program Spark was introduced in 2024 (Stellenbosch University, 2025). The programme provides free, online, self-paced learning focused on the Business Model Canvas (BMC). This strategic tool helps students "conceptualise and develop a business plan" by mapping "target customers, value proposition, revenue streams and operational structure."

What distinguishes IGNITE is its emphasis on practical application. Students create their own Business Model Canvas after completing classroom activities designed to deepen their understanding of entrepreneurship. Sabrina Matthee, the project organiser, tells. It ensures that students not only know about entrepreneurship but also understand it. However, also implement their ideas. Students would have developed a business strategy by the end of the semester, which they may work on alone or with collaborators (Stellenbosch University, 2025). The institution's dedication to recognising entrepreneurial success alongside academic achievement is demonstrated by the official acknowledgement on students' academic transcripts for those who complete the 24-hour programme.

Centennial Schools in Sunninghill has really shaken things up at the secondary level. They do not just dump business skills into the curriculum; they weave them into everything. Starting as early as Grade 8, students dive into entrepreneurship modules. Moreover, with NextGen Founders, kids from Grade 6 to 11 roll up their sleeves and run businesses right inside the school. It is not just about learning how money works; they are building the confidence to solve real problems, think critically, and be creative.

Ecosystem Support

A transformative trend is the emergence of collaborative entrepreneurship ecosystems; for example, in recent years, KwaZulu-Natal has improved, as several universities demonstrate that working as a team is effective for achieving results. They can control competition among themselves as they pursue students to succeed beyond what they achieved previously.

Every university in this KZN group is doing something different. One such example is Mangosuthu University of Technology (MUT), which is a "community-rooted innovator." They emphasise maintaining ties to the community and engaging students in practical tasks. The Economic Activation Officer of MUT, Mrs Ntombi Mthembu, described it this way: "We have moved away from teaching entrepreneurship in a lecture room. We want students to experience every step of building a venture." That is not just talk, either. MUT's Wadhvani Computer Laboratory runs a 14-week programme launched in November 2024, which guides students through practical business journeys rather than keeping them stuck in classrooms.

The Durban University of Technology (DUT) showcases the potential of scale and infrastructure. Since 2018, DUT's Innobiz Centre for Entrepreneurship and Innovation has raised awareness of entrepreneurship among over 25,000 of its 38,000 students, trained 15,000 students through various programmes, and 500 businesses. However, these businesses are still running strong, generating more than R150 million in turnover and creating 3,000 jobs altogether (Universities South Africa, 2025). DUT put over R15 million toward seed funding, showing they are serious about backing students with real financial support, not just training.

Structural Constraints in Entrepreneurship Education in South Africa

Structural constraints are universal hindrances that affect institutions, policies, and society, which limit the effectiveness of entrepreneurship education. These constraints are the following.

The Theory-Practice Divide

The disagreement between theoretical instruction and practical competency continues despite efforts to promote experiential learning. The main issue, according to Vorvornator and Midiniso (2025), a poor curriculum creates confusion about labour market demands. Despite significant investment, entrepreneurship education is not making any headway, as many graduates lack the knowledge and creative, innovative abilities. This curricular inadequacy reflects a deeper pedagogical tension. While traditional business studies provide foundational knowledge, they often fail to develop the "resilience needed to adapt to an evolving landscape" (North-West University, 2025). In a similar view, Martin Manmohan from the Bhive Enterprise Development Centre (North-West University) states that the teaching theory in several educational institutions lacks practical entrepreneurship training, such as financial literacy, business planning, and digital marketing." Furthermore, students need support with soft skills

like negotiation, leadership, and resilience, which are often underdeveloped" (North-West University, 2025). This issue is exacerbated by the fragmentation of entrepreneurial education in the current curriculum. Instead of being a stand-alone subject with a specific pedagogical focus, entrepreneurship is currently integrated into existing courses such as Life Skills and Economic Management Sciences in South African schools. According to the Department of Basic Education (2025), 96% of instructors identify a lack of training as a major barrier to the successful implementation of entrepreneurship education, highlighting a crucial leverage point.

Institutional Capacity and Equity Gaps

The disparity in South African universities' ability to provide quality entrepreneurial education is a second significant source of conflict. "Leadership incompetence in delivering curriculum content, mismanagement, and embezzlement, resulting in a lack of funds to provide practical entrepreneurship skills," according to Vorvornator and Midiniso (2025). These governance failures are particularly acute in historically disadvantaged universities, where environments are "also not conducive to entrepreneurial learning. The distinction between well-resourced and under-resourced institutions is striking. While DUT has provided over R15 million in seed funding and established comprehensive incubation infrastructure across numerous locations (Universities South Africa, 2025), historically disadvantaged universities face basic resource constraints. UNIZULU noted that only three of their four faculties actively participate in entrepreneurship activities with ongoing engagement in the educational sector. This could have negative implications for students from disadvantaged backgrounds. Several graduates lack personal savings or collateral to secure loans, as Manmohan noted. In South Africa, many financial institutions favour loans to seasoned business owners over novices launching new ventures (North-West University, 2025). Students from historically underprivileged universities must contend with both low personal resources and a lack of institutional assistance.

Cultural Limitations

Cultural attitudes towards business lead to misunderstandings among people. Several individuals see entrepreneurship as a last resort rather than a first choice, despite its contribution to job creation and employment, helping lower the country's high unemployment rate (North-West University, 2025). Families often "push graduates towards 'safe' careers" and in poorer communities, others see entrepreneurship as unstable or unsuitable. The result is "a paradox: at a time when the economy urgently needs new ventures, the very people best positioned to create them hesitate to take the leap.

This perceptual challenge extends to students' engagement with entrepreneurial education. In line with the directives from the Department of Higher Education, South Africa, many universities now offer entrepreneurship education programmes (Tumpa et al., 2022). For example, although North-West University designed a curriculum that boosts bootcamps and mentorship programmes, including "peer-led resilience circles" and "'fail-forward' workshops where failure is treated as a learning opportunity," Manmohan reports that "participation is low, because entrepreneurship is not yet seen as a key activity by students". According to North-West University (2025), the cultural barrier is accompanied by other factors, such as psychological factors. "Most of our students lack confidence, or in some cases, they are overconfident. Both need careful guidance," says Manmohan. "Fear of the unknown also holds back, as they simply have little exposure to entrepreneurship" (North-West University, 2025). The theory has provided focus for this result by illustrating that socio-cultural factors are the most important and influential in forming successful university entrepreneurship ecosystems (Movahedi et al., 2025).

Outcome Misalignment and Data Coordination Failures

The ultimate tension in entrepreneurial education concerns outcomes. Despite the significant intervention, Vorvornator and Midiniso (2025) state that "entrepreneur graduates are 'half-baked', lack innovative and creative skills, undertake 'copycat' businesses, and become job seekers rather than job creators." They "contribute to existing unemployment, inequality, and poverty" rather than alleviating these challenges. This failure is coming from the poor mismatch between what education can provide and what the labour market can take from the pool

of unemployed youths. Challenges hamper the accuracy and coordination of the killing system's data. At the same time, the Skills Development Act (SDA) provides an institutional framework that affects the system, especially the data challenge. According to Bizcommunity (2025), there are intricacies of educational agencies, such as Sector Education and Training Authorities (SETAs), which make the process difficult and affect poor employers. Due to the lack of a systematic, empirical approach to labour market research, the system has limited visibility and is unable to meet industry needs.

Innovative strategies

Experiential Learning

UKZN takes a research-driven path that connects its academic strengths with real-world commercial projects. They have rolled out some impressive stuff, including an AI chatbot that resolves legal issues in African health research, a high-tech rocket from their aerospace team, and fresh advances in solar manufacturing. As Professor Thea van der Westhuizen explained, "The approach at UKZN is practice and research-based. The combination of two approaches of academic entrepreneurship and extracurricular entrepreneurship, making students grow in an ensemble, in a parallel way" (Universities South Africa, 2025).

The University of Zululand (UNIZULU) brings a distinctive focus on indigenous knowledge and rural innovation. Working with the departments of Consumer Sciences and Botany, they are developing products from traditional plants and creating Zulu herbs for various health applications. "We are tapping into indigenous plants that are all around us to build our business," said Professor Makhosazana Vezi-Magigaba. She pointed out how traditional knowledge is not just old wisdom. It sparks fresh business ideas and opportunities.

Ecosystem Collaboration

Several universities, such as Nelson Mandela University, Cape Peninsula University of Technology, and Walter Sisulu University, formed the Business Incubation Web Association (BIWA), which has since grown to seven universities and tackles the difficulties of commercialising research outputs through technology transfer (Nelson Mandela University, 2025). Stella Tembisa Ndabeni, Minister of Small Business Development, commended the initiative's emphasis on "bridging the gap between scientific innovation and real-world application". The program's emphasis on "bridging the gap between scientific innovation and real-world application" was commended by Stella Tembisa Ndabeni, Minister of Small Business Development.

Digital Entrepreneurship

The integration of digital skills into entrepreneurial education represents a third significant trend. Similarly, Stephen et al. (2022) report that only 52% of businesspeople in South Africa have access to digital technology to sell their products and services. This is contributing to the lower rating among developing economies (Fourways Review, 2025). School-level entrepreneurship programmes include several digital facilities, such as AI and coding, to address the digital skills deficit. The South African government's 2025 plan for Entrepreneurship Development in Higher Education (EDHE) explicitly addresses this gap, with sessions exploring "how artificial intelligence tools can enhance research and innovation" and examining "opportunities arising from the Fourth Industrial Revolution" (University of South Africa, 2025). This focus reflects recognition that students who are unable to leverage technology to build and scale enterprises would struggle to compete globally (Rozputnia et al., 2025).

Policy Alignment

The development of coordinated policy frameworks for entrepreneurial education in South Africa represents a fourth creative trend. The draft National Entrepreneurship Strategy is a big step toward a methodical rather than disjointed approach. The National Development Plan (NDP), the Economic Reconstruction and Recovery Plan (ERRP) and the National Integrated Small Enterprises Development (NISED) plans are strategies designed to align with and add value to other major national plans (Bizcommunity, 2025).

The Department of Basic Education has been pursuing a Sector Plan for Entrepreneurship Education in Schools: 2030, and its E3 (Entrepreneurship, Employability and Education) initiative, launched in 2018, has been piloting project-based learning methodologies in schools to cultivate an entrepreneurial mindset among learners. By 2030, the ambitious goal of the E3 effort is to ensure that all students acquire the skills, knowledge, and solution-focused attitudes needed to complete school, pursue higher education, find work, or launch their own businesses (Department of Basic Education, 2025).

Entrepreneurial Outcomes

Entrepreneurial Intention

Entrepreneurship education (EE) occupies a particularly critical space in the development strategies of emerging market countries where entrepreneurs and small businesses are required to drive economic growth and job creation (Price & Ronnie, 2021). In South Africa, universities of technology (UoT), which provide vocation-focused tertiary education, are considered vital vehicles of EE. Contextual peculiarities are the unique national, institutional, economic, and socio-cultural conditions that shape how entrepreneurship education (EE) operates in South Africa. Context is a crucial element of EE research for gaining understanding into when, why, and how entrepreneurship appears, and who is implicated. Price and Ronnie (2021) therefore argue that studies could explore ‘how context factors influence the nature and extent of entrepreneurship and not how entrepreneurship impacts its contexts’. In addition, few studies have examined the background of a supportive context for entrepreneurship (Bergmann et al., 2018). Further, most EE research focuses on entrepreneurship skills-building within a narrow context: the business school. This omission is predominantly in South Africa, where other tertiary institutions, such as universities of technology (UoTs) and comprehensive universities, constitute the majority, necessitating further study (Ramchander, 2019). In particular, the basic philosophy of the university provides vocation-focused tertiary education, combined with its broader accessibility, in terms of cost and years of study, compared with traditional universities, makes it a critical site for EE research in the South African context. The following are peculiarities of entrepreneurship education in South Africa.

Need for Venture Creation

South Africa’s EE is strongly shaped by extreme youth unemployment, where graduates are expected to become job creators rather than job seekers. Youth unemployment remains structurally high, especially among ages 15-34, forcing universities to reposition entrepreneurship as a survival and development strategy (Price & Ronnie, 2021). Piperopoulos and Dimov (2015) found that courses with a more theoretical focus led to higher self-efficacy among students but lower entrepreneurial intention, whilst courses with a greater practical focus resulted in both higher self-efficacy and higher entrepreneurial intention. Therefore, the preferred methods of teaching entrepreneurship include experiential learning (Botha & Bignotti, 2016), new venture simulations (Buchnik et al., 2018; Costin et al., 2018), and mentoring (Buchnik et al., 2018).

SMME Sustainability

Driven by an entrepreneurial spirit to create and achieve, small, micro, and medium enterprises (SMMEs) stimulate competition, improve productivity, and catalyse economic development and job creation (Erasmus, Strydom & Rudansky-Kloppers 2013). For any country, ‘accelerating entrepreneurial activities has always been the hallmark of achieving socio-economic development and goals for growth’ (Ghafari, 2020, p. 218). To underscore its national importance, the coordination, development, and promotion of entrepreneurship is under the umbrella of the South African Department of Small Business Development (DSBD), established in 2014, to strengthen the SMME sector as part of its strategy to enhance growth and alleviate poverty through job creation (DSBD 2020). Yet, South Africa has struggled to create programmes that effectively inspire, train, and prepare people to become entrepreneurs.

Job Creation with the help of the Curriculum

The educators in their study displayed autonomy and largely influenced the curriculum design of the entrepreneurship courses. Ruskovaara et al. (2015) agree that when teachers are involved in planning EE in schools or in the entrepreneurship curricula more generally, it yields positive results, including increased teacher commitment. Another EE study that included educators as a variable found that educators' role was not just to teach the course, but also to build students' confidence by fostering creativity, curiosity, and analytical ability (Costin et al., 2018).

3. Navigating through Entrepreneurial Peculiarities

Entrepreneurship education often emerges in direct response to tensions. Entrepreneurship education often emerges in direct response to tensions. Experiential learning provides people with the capacity to adapt to ecosystems, overcome institutional gaps, integrate digital technology to address skills misalignment, and for policy organisations to respond to fragmentation. However, the success of these innovations depends on whether they adequately address the underlying tensions or merely discard them. According to KZN, the most effective way for organisations to handle this dynamic is through KZN's collaborative ecology. To create a whole greater than the sum of its parts, the four universities have integrated their distinctive strengths: DUT's infrastructure, MUT's community connections, UKZN's research capabilities, and UNIZULU's indigenous knowledge (Universities South Africa, 2025). This collaborative model demonstrates that the equity gap between institutions can be partially addressed through ecosystem approaches that enable resource sharing and complementary experience. However, the model also reveals constant challenges that youth face. According to UNIZULU (2025), only three faculties are involved in entrepreneurship activities, indicating that the institutionalisation remains a challenge within successful collaborations.

Limitations of Entrepreneurship

The innovation in entrepreneurship education is constrained due to the absence of complementary procedural and structural reforms. Even though experiential learning enables practical capabilities beyond what theoretical learning alone can provide, its impact is limited when broader institutional conditions remain unchanged. Similarly, digital innovation contributes to the development of entrepreneurial skills, yet it does not sufficiently challenge entrenched cultural perceptions that frame entrepreneurship as a last-resort career option. In the same vein, improved policy coordination may enhance alignment among government actors, but it does not adequately address persistent deficiencies in labour market data infrastructure, which are critical for informed decision-making. Further, Parker et al. (2025) demonstrate that entrepreneurial mindset and skills mediate the association between entrepreneurship education and entrepreneurial intentions. This suggests that improvements in contextual delivery alone are insufficient; rather, the effectiveness of entrepreneurship education depends on its capacity to nurture bigger cognitive and behavioural changes within a sympathetic institutional and socio-cultural context.

Implications for Theory

This study contributes to the theory of entrepreneurship education by advancing a dynamic framework that considers trends and tensions as interconnected rather than separate phenomena. This dynamic framework for entrepreneurship education suggests that by drawing attention to the gap between educational opportunities and society's demands, tensions are generative forces that promote innovation. The effectiveness of a trend depends on its context and how well it resolves the conflicts that gave rise to it. A trend's efficacy may vary depending on its context, which is an important consideration. No single invention can resolve the numerous interrelated conflicts that define the entrepreneurial education environment in emerging nations; systemic reform is necessary. The current ecosystem approach is expanded upon in this dynamic framework for entrepreneurial education (Movahedi et al., 2025; Mathew, 2025).

Implications for Practice

The results suggest the following for educational leaders: First, rather than being limited to elective add-ons, experiential education ought to be incorporated into the entire curriculum. The GNITE model is an effective illustration of how co-curricular activities can provide scalable, accessible entrepreneurship education; yet this calls for acknowledgement and participation (Stellenbosch University, 2025). Second, a collaborative ecosystem needs to be fostered. The ZN model is a powerful example of how a region can leverage limited resources to deliver specialised solutions that benefit both parties. However, this requires facilitation and a common goal (Universities South Africa, 2025). Third, teacher training needs to be prioritised. As 9 % of teachers report a lack of training as a major impediment to implementation (Department of Basic Education, 2025), teacher training programs are critical for successful implementation. Public-private partnerships can provide teachers with the training and support they need to succeed. Fourth, culture needs to be shifted. Storytelling about successful entrepreneurs from disadvantaged backgrounds can be a powerful way to shift culture and make entrepreneurship a viable career option for young people. "Students need to see these examples and realise entrepreneurship is possible" (North-West University, 2025).

4. Conclusion

Entrepreneurship education is at a crossroads in South Africa. The country's economic development relied on the success achieved in areas such as small-scale businesses and enterprises. However, the situation in South Africa has recorded a high number of failures. The emergency entrepreneurial education has become a strategic priority for governments, universities, and other private sectors to reduce youth unemployment and drive economic transformation.

The advancement of innovative skills investigated in this paper provides grounds for many higher institutions across the globe to develop strategies that can foster practical knowledge, thereby developing an entrepreneurship mindset, intentions, skills, and abilities in youths to become self-reliant and independent human beings who can contribute to the development of the country's economy. However, the challenges of addressing this remain significant. However, in curtailing these, it does not need force but a systematic change and adjustment in the school curriculum that prioritises practical knowledge, engagement with the appropriate partners such as captains of industry, role models in the society, mentors, funding agencies that will support emerging businesses, and cultural change that influences entrepreneurship from the first choice rather than seeing it as the last resort.

This study concludes that if the government of South Africa intends to reduce youth unemployment, diversify its economy, and unlock growth, it should change the mindset that sees entrepreneurship as a fallback option when the first choice is not working. The government might help by providing venues for financial institutions to build networks, acquire useful skills, and foster a culture that values creativity and resilience. The government cannot approach entrepreneurship education as an afterthought in South Africa's present youth unemployment crisis.

5. Recommendations

Based on these findings, the following recommendations were made:

1. The Government of South Africa should ensure that there is advancement of innovative skills to provide grounds for many higher institutions across the globe to develop strategies that can foster practical knowledge, thereby developing an entrepreneurship mindset, intentions, skills, and abilities in youths to become self-reliant and independent human beings who can contribute to the development of the country's economy.
2. To reduce youth unemployment, there must be diversification of the South African economy, and to unlock growth, it should change the mindset that sees entrepreneurship as a fallback option when the first choice is not working.

3. The government should provide good policies that will help youths and individuals to access loans through financial institutions to create networks, acquire useful skills, and promote a change in culture that values creativity and resiliency. The government cannot approach entrepreneurship education as an afterthought in South Africa's present youth unemployment crisis.

Limitations and Future Research

However, this research has several limitations. Firstly, the research has mainly relied on secondary sources. Therefore, future research should focus on empirical studies to examine the trend-tension dynamic in specific contexts. Secondly, the research has mainly concentrated on South Africa. Therefore, future research should focus on comparative studies across other developing economies in Africa. Last year, the research mainly concentrated on a specific period. Therefore, future research should focus on longitudinal studies to examine the trend-tension dynamic over time.

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Author Contributions: Conceptualisation: *Issac Msughter Peter*, *Velisiwe Gasa*, methodology: *Isaac Msughter Peter*, data analysis: *Isaac Msughter Peter*; writing original draft preparation: author, *Isaac Msughter Peter*; review and editing: *Velisiwe Gasa*; visualisation: *Velisiwe Gasa*. All authors have read and agreed to the published version of the manuscript.

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This is peer-reviewed scientific journal <https://jssidoi.org/ird/page/peer-review-policy>

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AN APPRAISAL OF SOUTH AFRICAN INTERNAL POLITICAL DYNAMICS VIS-À-VIS ITS BRICS MEMBERSHIP**Sandile Blessing Mkhwanazi***School of Government Studies, Faculty of Humanities, North-West University, Potchefstroom Campus, South Africa**E-mail: blessingsandile2000@gmail.com; 56220693@mynwu.ac.za**Received 30 March 2026; accepted the 2nd June 2026; published 30 June 2026*

Abstract. South Africa during the apartheid era and shortly after the demise of apartheid was an embodiment of the Western liberal order, which it pursued and implemented as it largely influenced both domestic and foreign policy. However, the complex interplay of different factors, including the decline of neoliberal hegemony led by the West and the emergence of the BRIC alliance, led to South Africa joining BRIC, which subsequently became BRICS. This largely shaped South African public policy and its development. South Africa remained the only African country in the BRICS bloc until 2023, when two other African countries joined BRICS. BRICS membership for members, especially for South Africa, implies that they operate in what is perceived as informal institutions, and these institutions shape their public policy and development trajectory; however, BRICS member states are still members of formal global institutions such as the United Nations, which are under the dominance of the West. After 2023, there were internal political changes in South Africa, following the general elections in May that saw the formation of the coalition government with different political parties, which are pro-West and anti-BRICS. These political changes imply that South Africa, as a member of BRICS, has forces within it that are opposed to the BRICS agenda; thus, there will be changes in public policy outlook and actions as the new political arrangements in South Africa have forces with pro-West ambitions. This article scrutinises South African policy and development as a BRICS member facing internal crisis and argues that internal political arrangements will impact South Africa's participation in BRICS and will adversely affect South Africa as far as benefits from the BRICS alliance are concerned. The quest for a multi-polar world will be challenging for South Africa due to its history with the West, as there are forces that would resist the change in favour of the established status quo.

Keywords: policy; development; internal politics; institutions; multipolar

Reference to this paper should be made as follows: Mkhwanazi, S.B. 2026. An appraisal of South African internal political dynamics vis-à-vis its BRICS membership. *Insights into Regional Development*, 8(2), 164-177. <http://doi.org/10.70132/w2376247294>

JEL Classifications: B2, E60, O55

Additional disciplines: political sciences

1. Introduction

South Africa as a polity has a complex history characterised by forces, codes and agencies that are in variance with each other. The complexity of South African history has shaped the current realities, as even in the contemporary era, there are still forces, agencies and codes opposed to each other; and these opposing forces are manifest in socio-economic and socio-political landscape of South Africa which is characterised by both racial and intra-racial bifurcation. The complexity of South African history and politics has its roots from the eras of Dutch occupation (1652-1795) and British rule (1795-1803). These two settler groups in South Africa brought with them different institutions that were to shape the history and politics of South Africa, often resulting in what is termed as Colonialism of Special Type (Fourie & Von Fintel, 2014; Nxumalo, 2026). Explicitly scrutinising the history of settler colonialism and how it shaped the politics and realities of modern South Africa is beyond the

scope of this article, however, few variables will be identified as their impact in South Africa are still felt and continue to shape lived realities in South Africa.

South Africa, after wars between the British and Dutch descendants adopted a code of being a British colony, albeit with a significant number of Dutch descendants settling in the colony. The British agents shaped the realities of the polity, and segregation was utilised as a strategy where well organised local initiatives and tribal authorities were used to govern the natives, in a quest to minimise the costs of overt coercion, albeit allied to the British crown (Allsobrook & Boisen, 2017). It must be noted that segregation was not a British invention in South Africa, it has its roots at the arrival of Jan van Riebeeck and his fellows in 1652, who distanced themselves from the natives due to perceived differences in values and lifestyles (Strauss, 2022; Marco-Gracia et al., 2026). The practice of segregation has been a cornerstone in South African politics and has largely shaped socio-political and socio-economic dynamics of the country. In the segregated South Africa, Black Africans were governed by Whites (Waddy, 2010; Marco-Gracia et al., 2026).

The apartheid policy in South Africa was also based on segregation, albeit a different form of segregation from that of the United Party that governed South Africa prior to 1948. The National Party was also different from the United Party as it was made of Dutch descendants (the Afrikaners) opposed to the United Party which was a mixture of both English and Afrikaans speaking Whites. The National Party was opposed to urbanisation of Black South Africans as it associated them with the vice of crime and other social ills. Furthermore, the National Party's policy of apartheid was vague in 1948, hence observers at the time wrongly predicted that it will not win in the elections (Waddy, 2010). The effects of segregation and other racist legislations in South Africa are still being felt; and the racist legislations prior and during the apartheid era triggered resistance, largely from Black Africans and other races, however due to Black Africans being a majority, it is Black resistance that is largely noticeable. The most noticeable resistance movement to segregation and later apartheid policy was the African National Congress (ANC), which was formed in 1912, and was banned by the apartheid government in 1960 and unbanned in 1990 (van Wyk & van Wyk, 2024). The ANC later became the ruling party in a post-apartheid South Africa and has won all the elections for three decades. Under the governance of the ANC, South Africa joined the economic bloc constituted of Brazil, Russia, India and China (BRIC), which was a different stance from its pro-Western roots and outlook.

2. Review of literature

A prelude to democratic era

Prior to the official demise of apartheid regime, the ANC as a liberation movement entered into negotiations with the apartheid government and it adopted other economic views and this culminated to adoption of neoliberal policies in South Africa, thus perpetuating poverty, unemployment and inequality. Further, this created resistance against the ANC, starting with opposition from social movements and later opposition political parties and recently this culminated with the decline in ANC support (Kgatle, 2020). During the negotiation period, the ANC was less of a political party, but more of a liberation movement that later converted into a conventional political party. The negotiations in South Africa were not the negotiations of equals, they can be deemed as negotiations between the liberation movement and the government. Further, the ANC had Nelson Mandela at helm, a leader who epitomised leadership through negotiation (Jordaan & Anstey, 2025; Rantete & Giliomee, 1992). Rantete and Giliomee (1992) point out that the transition in South Africa implied that the apartheid's regime control declined, however, the authoritarian elites still possessed greater capacity to shape political processes. Therefore, the negotiation processes subjected the ANC and set it up for failure and opposition in the future as it adopted macro-economic policies that has failed to reverse the effects of both colonialism and apartheid, especially in the economic front. Further, as Nelson Mandela adhered to negotiation, this became the basis of the future contradiction between multipolarity and dependency.

Prior to the formal negotiations between the liberation movements and the apartheid government, there were other negotiations to shape multiparty negotiations known as Convention for a Democratic South Africa (CODESA) (Jolobe, 2014; Alegi & Bolsmann, 2010). The negotiating period was characterised by complexity as different groups inhabited South Africa, namely Black South Africans, European descendants, Asian descendants and those with mixed ancestry (classified as Coloureds). Due to the prolonged eras of segregation, these groups had different rights and different socio-economic statuses, hence the complexity during negotiations. The complexity can also be attributed to access and control of resources, as South Africa under the British monarch was largely a racist polity, with most of the land reserved for White South Africans and prohibiting meaningful political participation of other racial groups that were categorised as non-White. It was the exclusion of Black South Africans that prompted the formation of the South African Native National Congress in 1912 (which later became the African National Congress in 1923) with an aim of fighting for inclusion and equality (Lodge, 2016; Twala, 2014). Therefore, the CODESA negotiations were not only about transition to democracy, they also challenged the entrenched ideas of the state and deployment of state power, and also entrenched identities and concepts tied to race. Since the negotiations were not the negotiations between equals, I hypothesise that the ANC was weaker compared to the apartheid business sector and government, hence this weakness was to influence its approach to negotiations and later trigger resistance to the democratic government as weaken South Africa as a polity.

Codes, agencies and political actors prior to BRICS

South Africa became a republic in 1961, a different code from its formation as Union of South Africa in 1910 (Johnson, 2025; Feather, 2019). Although the code changed, some dynamics remained the same as apartheid was still intact, and this code solidified White supremacy and Black segregation. Feather (2019) further states that as South Africa became the Republic based on White supremacy, there were changes in the geopolitical space as African countries were gaining independence from their colonial masters, while resistance to White rule in South Africa was already present, and South Africa was being increasingly isolated internationally due to apartheid policy. This is one of the codes that shaped the negotiated settlement in South Africa prior to the democratic era. South Africa changed the code in 1994, becoming a democracy after centuries of White rule and governance. The changing of this code necessitated the creation of democratic agencies in the form of institutions and different political actors were to emerge in the South African political landscape, and this time, and for the first time, Black Africans were to gain prominence in the political landscape. Further, as South Africa became a republic, it increased the use of repression and state-sponsored violence against liberation movements; and changed from having a prime minister to having a presidential system (Johnson, 2025).

The change of the codes did not imply the changes in some agents or attitudes held by some agents in South Africa. Considering that South Africa is a heterogeneous society, with long history of racial oppression, discrimination and segregation; the support for democracy intertwined with historical realities. As of 2003, nine years into democracy, Gibson (2003) finds that there was a racial and ethnic bifurcation in the support of democracy in South Africa. Gibson (2003) posits that the majority Black South Africans did not gain attitudes and skills to enable them to participate in democracy, while other groups, especially White South Africans were allowed to acquire such skills and exposure to function in a democracy. The question may be raised pondering if agencies in South Africa did change as democracy matured. The answer to such question must be multi-pronged as it must consider different perspectives and variables and different theories to explain if there was a change in agencies and democracy was fully embraced to ensure the stable growth both economic and politically. From institutional perspective, there has been an inertia of forces resulting in racial stratification, inequality with racial character and poverty (McKeever, 2024). This inertia was inherited by the democratic government in 1994, and later triggered protest action against the government. Ngwane (2010) reveals that as from 2004 civil society began protesting against the government, and these protests were largely in the urban peripheries; where Black Africans reside. The resistance against government in South Africa has received much scholarly attention. It has been termed as “rebellion of the poor”, “national revolt”, “turmoil”, “peripheral protest action” and “service delivery protests” (Mkhwanazi & Matyana, 2025; Ndasana et al., 2022; Alexander et al., 2018; Bond & Mottiar, 2013; Alexander, 2010). A scrutiny of this inertia and the resultant resistance indicates structural and governance

dimensions in South Africa. Therefore, prior to South Africa joining BRICS there were internal challenges as far as the agencies are concerned, and these challenges were not resolved by an act of South Africa joining BRICS. Further, there was a deficit of trust in democratic institutions.

The state of inadequate trust in democracy and democratic institutions in South Africa did not improve as democracy matured. A complex interplay of both political and economic variables eroded public trust in institutions and resulted in decline of ANC support and emergence of different political actors. Tsheola and Sebola (2023) associate democracy with lived experiences and those lived experiences are proportional to trust in public institutions. Deducing from Ngwane (2010) that South Africa has faced the challenge of one of the most frequent protest actions directed to the government, it is evident that the lived experiences of the significant number of people do not reap the expected benefits of democracy, thus inadequate trust in democratic institutions. Tsheola and Sebola (2023) indicate that South Africans are reluctant to trust public institutions and this has created political leadership vacuum. The authors also state that the decade long state capture is one of the culprits in reduced public trust of democratic institutions.

South Africa as a polity during the democratic era has been so far largely shaped by the ANC as it has been the dominant party for three decades. Under the ANC governance, South Africa has failed to resolve the challenges of unemployment, poverty and inequality. Macroeconomic policies that has been implemented under the governance of the ANC are characterised by failure to grow the economy in a manner that reduces both poverty and inequality while creating employment. Starting with the Reconstruction and Development Programme (RDP), the ANC faced numerous challenges in implementing the RDP, which resulted in its failure. When the Growth, Employment and Redistribution (GEAR) was approved as a macroeconomic policy after RDP, it also failed and inequality and unemployment increased, as GEAR resulted in 30% unemployment rate. GEAR was replaced by the Accelerated and Shared Growth Initiative for South Africa (AsgiSA), which aimed to minimise high unemployment by 2014. During the era of ASGISA public expenditure in infrastructure increased, however, both unemployment and poverty rates remained constant. As Mbeki left the office, ASGISA was replaced by the New Growth Path (NGP). NGP was short-lived, resulting in difficulty to quantify its effects, and it was soon replaced by the National Development Plan (NDP) in 2012. The NDP aimed to minimise poverty and inequality in South Africa by 2030 (Mahadea, 2014; Ansari, 2017; Rapanyane, 2022). With 2030 less than five years from the time of this writing, there are no solid indications that South Africa will fulfil the objectives of NDP by 2030. Maemu et al. (2025) tracked the progress towards the goals of the NDP, and findings indicate that the progress is below what was planned. Further, the emergence of COVID-19 did much damage as far as NDP goals are concerned.

To enhance understanding of South Africa vis-à-vis BRICS membership and its position within BRICS, it is crucial to briefly scrutinise South African heads of state as far as leading South Africa in different regions and economic blocs. Since South Africa joined the economic bloc of BRICS during the democratic era, South African democratic heads of state will be scrutinised, starting from Nelson Mandela as South Africa did join other regional blocs during Mandela era. South Africa re-joined the Commonwealth of Nations under the presidency of Nelson Mandela after leaving the Commonwealth in 1961 and also joined the Southern African Development Community (SADC) in 1994 (Dubow, 2017; Mahadew, 2024). The Commonwealth is a bloc of former British colonies made of 54 states, with Africa having 19 as members. This bloc has been a geopolitical agent, as it is based on a commitment that its member states are democratic and pro-human rights (Faseke, 2021). The Commonwealth was also vocal about racial treatment of Black Africans in South Africa, hence the issues of racial and political equality were central to the Commonwealth (Mole, 2017). Concerning Nelson Mandela, he supported exclusion of South Africa from the Commonwealth and also supported Commonwealth member states who challenged South Africa because of racial policies (Mole, 2017). There is a possibility that South Africa re-joined Commonwealth due to memories about opposition to apartheid, of which Commonwealth member states contributed.

Under Nelson Mandela's presidency, from political perspective much changed, however, from economic perspective, especially concerning access to and control of resources by the previously marginalised Black population, a lot remained the same. The government led by Nelson Mandela adopted neoliberal policies, and neoliberal influences can be observed in much of the ANC policy debates and policies that were implemented, ranging from RDP to more neoliberal GEAR (Williams & Taylor, 2000). As far as neoliberalism is concerned, and considering that it is supported by the West and Europe, there are debates that it is a form of neo-colonialism (Hanson & Hentz, 1999; Xie, 2018; Chen, 2024). Therefore, scrutinising the blocs that South Africa joined during the presidency of Mandela as well as the macro-economic policies implemented, South Africa was still an embodiment of the Western liberal order.

During the presidency of Thabo Mbeki South Africa was the founding member of IBSA Dialogue Forum in 2003. This is the geopolitical institution between three like-minded democracies of the global South to promote trade relations, security and scientific collaborations (Chevallier et al., 2008; Sidiropoulos, 2013). However, IBSA was not different from other regional blocs that South Africa has joined before, as it was not deemed as an opposition to Western liberal order. Further, as South Africa was the member of IBSA which aimed to foster South-South cooperation, internally it was still implementing GEAR and in 2006 adopted ASGISA. Evidence indicates that both GEAR and ASGISA failed to reach their goals of minimising unemployment and inequality in South Africa (Rapanyane, 2022). However, the ANC under the leadership of both Mandela and Mbeki was strong as there was only one splinter party, the UDM and it did not have massive voter support compared to the later splinter parties.

South Africa in BRICS: an alliance of unequals

South Africa joined BRICS in 2010. Before scrutinising the position of South Africa within BRICS to establish the thesis that South Africa is the weakest link in the BRICS, it is necessary to scrutinise the questions on South Africa's economic performance when compared to other BRICS members as well as scanning the international arena as South Africa joined BRICS after years of being an embodiment of the Western liberal order.

BRICS differ from other blocs that South Africa has membership as it is a powerful force to contend with as it represents 41% of the world population, 31.5% of global GDP and 16% of global trade, hence its bargaining power cannot be underestimated. In 2022, other countries applied to join BRICS, namely Iran, Argentina and Algeria, while numerous other countries expressed the desire to join (Papa et al., 2023). This indicates that BRICS alliance has the capacity to challenge the Western hegemony, and is a force to reckon with when it comes to global governance. Papa et al. (2023) also observe that there are other blocs that challenge the US led global dominance, such as RIC (Russia, India, and China) and IBSA (India, Brazil and South Africa) and these blocs utilise soft power as an instrument to neutralise US dominance. South Africa as a polity is a member of two regional blocs that neutralise US hegemony, namely BRICS and IBSA.

From head of state perspective, Jacob Zuma lobbied for South Africa to be the member of BRICS bloc, and this culminated to the invitation to join BRICS in 2010; and at the BRICS Summit of 2011, South Africa was formally a BRICS member (Besada et al., 2013). However, prior to joining BRICS, South Africa has experienced economic decline due to 2008 recession, and the recession's effects were also felt by BRIC bloc with Brazil also experiencing economic decline (Agarwal et al., 2022). Since the 2008 recession was largely linked to finance and financial instruments, the BRICS countries proposed to trade in their own respective currencies to protect themselves from the shocks associated with volatility of convertible currencies such as the United States dollar (Besada et al., 2013). South Africa after being an embodiment of the Western liberal order for the first time adopted a stance that challenges the Western hegemony through its affiliation with BRICS, and I hypothesise that this stance was bound to trigger resistance within South Africa and from the West due to perceived decline in influence. However, South Africa joined BRICS from the point of weakness, considering that it had an experience of failed macroeconomic policies since the democratic era.

Besada et al. (2013) states that South Africa upon joining BRICS was a smaller economy when compared to other economies that contended for BRICS membership such as Mexico, Turkey and South Korea. In 2010, comparing economic indicators for South Africa, the economy grew at 2.8% per annum, compared to China, India and Brazil which had growth at 10.3%, 9.7% and 7.5% respectively; thus, making BRICS an alliance of unequals as far as South Africa was concerned. Further, the other BRICS members are regional powers, with China being the regional hegemon in Asia. South Africa has been observed as having two separate foreign policies, one influenced by the state and the other influenced by non-state actors (especially the large business sector) thus making South Africa's soft power bifurcated (Shaw, 2015). Shaw (2015) points out that despite South Africa not being a regional hegemon, it is a regional power, as it hosts a diverse set of diasporas which influence economic activity in the region through remittances. In examining literature on BRICS and South Africa, most of the literature has narrowly focused on economics, especially GDP size, trade imbalances, investment capacity, and comparative economic weakness relative to China, India, and Russia (see Karagöz et al., 2025; Osinubi et al., 2025; Umair et al., 2025). Most of these studies are positivist in their outlook. Issues such as deeper structural, geopolitical, and governance dimensions behind South Africa's perceived weakness have received inadequate scholarly attention. As early as 2013, on one hand there were expressions of criticism and scepticism about the ability of the BRICS to sustain economic growth, and there were predictions that China will witness economic regression with declining rate of investments and India will start witnessing economic decline by 2018. This critique was largely from the West, and questions were raised about institutions BRICS sought to create (Pant, 2013). Pant (2013) on the other hand points, that other analysts predicted that BRICS economies have to capacity to grow and rival the G-7 countries (made of United States, United Kingdom, France, Germany, Italy, Canada, and Japan). However, the 2008 recession resulted in global economic decline, the West and Europe were more adversely hit compared to the BRICS bloc; and China experienced massive growth despite the global recession of 2008, and there are projections that economic power will shift from the West to the East (Arora & Kalsie, 2018; Agarwal et al., 2025).

As there are Western voices critical of BRICS, South Africa and Brazil share the same characteristics in that both states were colonised and have a huge population of European descendants who later became economic elites and these elites utilise the instrument of the media to criticise the elected governments citing democratic immaturity, institutional incompetence and other perceived vices against the governing political organisations. The major narrative pushed is against the hegemony of the governing political organisations as they are associated with corruption, foreign policies lacking Western orientation, and media regulation (De Albuquerque, 2016). Considering that South Africa has been an embodiment of the Western values, the economic elites were against the move towards the East, hence, joining BRICS was a move against the economic elites in South Africa and would trigger opposition. As the economic elites in South Africa would oppose the BRICS, BRICS has also started creating alternative institutions of global governance, and started proposing a multipolar world order, which is different from the current order that is dominated by the United States (Laidi, 2011). Opposition to BRICS in South Africa occurs in the context where there has been minimal redistribution concerning access to and ownership of production factors such as land, mineral resources and corporate power; and failed economic policies of the past are a factor. This implies that the economic elites with Western interests can oppose the government intentions. BRICS is mostly presented as an anti-Western or multi-polar project while South Africa is largely tied to Western financial systems, European trade, Bretton Woods norms, and Western capital. This is a contradiction that is seldom theorised in literature. This article aims to answer the two questions:

1. Is South Africa simultaneously anti-hegemonic rhetorically but dependent materially?
2. Does BRICS actually diversify dependency rather than eliminate it?

In answering these questions, the article will utilise theoretical perspectives borrowed from neo-Gramscian theory, world systems theory, dependency theory and uneven development theory.

3. Research methods

To execute the purpose of this article, systematic review of literature was conducted. In utilising systematic review, there was an inclusion and exclusion criteria for this study. The inclusion and exclusion criteria was based on how the literature answers the research questions posed by this article, as well as the relevance of theoretical literature. The researcher adhered to the advice by Lame (2019) that in undertaking systematic review there are steps to be considered. Steps such as formulation of the review question, definition of criterion, location and selection of the studies, assessment of study quality, data extraction, analysis and presentation of results and interpretation of results were conducted. Different databases were consulted to source data. The consulted databases included Web of Science, Scopus, Sabinet, EBSCOhost and Sage. The researcher used keywords such as: “Democratic negotiations in South Africa”, “Republic AND South Africa”, “Democracy AND race in South Africa”, “Neoliberalism AND neo-colonialism”, “Economic indicators in BRICS countries” from period 2000 to 2026.

4. Resulting insights: is South Africa the weakest link?

It has been established above that South Africa has faced internal challenges prior to joining BRICS and after joining BRICS, internal challenges did not subside, but increased. The major political changes in South Africa came after the 2024 general elections which ushered a new political dispensation in South Africa, as the country came under the coalition government, dubbed Government of National Unity (GNU). As South Africa joined BRICS under the leadership of Jacob Zuma, the GNU happened under the leadership of Cyril Ramaphosa. Cyril Ramaphosa differs from other ANC presidents before him as he is a business tycoon, hence making class difference between him and significant number of voters. Assumption of power by economic elites results in skewed economic policies that usually works against the voter interests (Justesen & Markus, 2024). Justesen and Markus (2024) argue that evidence suggests that voters approach business tycoons with scepticism, hence this may explain the ANC's performance under the leadership of Ramaphosa. However, business excellence can be interpreted that a candidate has the capacity to succeed in government. Ramaphosa further differs from the ANC presidents before him as he lacks prison or exile background, and this has prompted some critical voices against him as he is perceived as a weak leader (Musitha, 2019). Musitha (2019) indicates that as Ramaphosa ascended to ANC leadership, he was deemed as a savior of the ANC and saved it in the 2019 elections; and his ascension to power resulted in positive reactions of the markets, despite the ANC being in the state of decline. The decline of the ANC began as Zuma assumed power, implying that there were those opposed to him as a political actor. However, there were splinter parties from the ANC prior to Zuma's ascension to power. The first party formed during the democratic dispensation was the United Democratic Movement led by Bantu Holomisa who was expelled from the ANC in 1996. His party contested the 1999 election and gained 3,5% of the votes. In 2008 a new political party was formed by the political actors who were unhappy of removal of the president Mbeki as a president of the country and was called Congress of the People (COPE). It contested the 2009 elections and received 7.4% of the votes. Lastly in 2012 Julius Malema who was the president of the ANC Youth League was expelled from the ANC and he formed the EFF, which received 6.4% of votes in 2014 elections. These splinter parties have been instrumental in the decline of ANC voter support (Musitha, 2019). There are crucial factors and questions as far as Zuma and Ramaphosa are concerned. Ramaphosa as a political actor was approved by the markets and he is a business tycoon. How does Ramaphosa's ascension to power influence South African membership in BRICS? Considering that the economic elites are largely represented by White South African, how conducive or detrimental are the policies adopted during Ramaphosa's administration to BRICS? The weakness of South Africa within BRICS lies in the answers to these questions.

If theoretical perspectives are adopted in relation to the political dynamics in South Africa, insights get deeper. Utilising the concept of clientelism from neo-Gramscian theory; where it is defined as a long-term relationship of unequal power where actors exchange goods and services that include political allegiance (Newman, 2025); provides better theoretical perspective to analyse South Africa. The relationship in BRICS as far as South Africa

is concerned somehow fits clientelism, however, there is inadequate equity amongst alliance partners as South Africa has a relatively smaller economy and population size compared to other BRICS members. However, as Gramscian theory states that clientelism aims at inducing subordination, I cannot argue that other BRICS member states, especially China is aiming to subordinate South Africa, as the concept of voluntary participation and sovereignty still applies in BRICS alliance. Further, for BRICS to be an alternative to the Western hegemony, it has to guard against full clientelism that will place either China or Russia at the position of being a patron. However, considering characteristics of a state such as military, population, territory and economic output, South Africa becomes a natural client in BRICS alliance. Clientelism is a crucial concept in analysing political relationships, as political relationships gravitate towards clientelism, unless there are factors that counter this natural gravitation (Newman, 2025).

As neo-Gramscian theory is concerned with power relations, and how power shapes the global order, Sundaram and Parmar (2026) expanded neo-Gramscian theory by examining multiplexity and international relations. In global order, powerful actors such as the US, European Union and China dominate any negotiation process in a way that favour their economic interests while less powerful actors are marginalised. This indicates that participation does not result in equity (Sundaram & Parmar, 2026). South Africa as far as international relations is concerned is not a powerful global actor, it is a powerful regional actor, hence, in the global stage it can be marginalised. Looking at the current leader of South Africa, Cyril Ramaphosa, there is no evidence that indicates that he acquired his wealth using alternative systems from Western financial systems, dollarized markets, European trade and World Bank or International Monetary Fund norms. This indicates that South Africa, despite being a member of BRICS, is still dependent on the Western norm while in rhetoric, is anti-hegemonic. Despite South Africa opposing the hegemony of global North in rhetoric, it is still dependent on the very systems it purport to oppose, as alternative systems are not mature enough to challenge the Western dominance.

Scrutinising the global trade, the share of the United States dollar is estimated at 59% in 2023, and most of the BRICS members cannot escape the dollar dominance. Further, BRICS member states still function within the neoliberal orthodoxy it purports to oppose (Sundaram & Parmar, 2026).

Further, in global systems, evidence indicates that more powerful actors can behave recklessly with impunity and the consequences will be borne by less powerful actors. The 2008 financial crisis is a case indicating this. As global South movements are integrated into neoliberal order, they perpetuate it instead of altering it, hence protest action in the global South is largely ignored. The neo-Gramscian theory holds that dominant factions in the global arena always seek to maintain the rules, norms and institutions that guarantee their dominance, as well as counter other actors who aim to challenge the established hegemonic status (Sundaram & Parmar, 2026; Albert, 2025). South Africa as an actor in BRICS, albeit still under global neoliberal orthodoxy, will face resistance from the dominant factions of global capital; both from within South Africa and outside of South Africa. This also partly explains the actions by Trump where he weaponised aid against South Africa (see Sundaram & Parmar, 2026). However, alliances are not only formed based on interests of capital alone and events of global magnitude cannot be reduced to capital alone. There are other systems that trigger responses from hegemonic actors, such as racism, patriarchy and history. It must be considered that South Africa for a long time has been the only polity with majority Black African population in BRICS, while utilising Western systems.

Other theoretical perspectives are adopted from world systems theory and dependency theory. The world systems theory is based on the tenet that capitalist world has expanded to encompass every feature of life, that states are now part of the capitalist world. The capitalist expansion has evaded democracy, and triggered inequalities, and resulted in global division of labour. The global division of labour is not equal, it is driven by interlinked forms of subordinations, each feeding each other. Further, these divisions are based on geography (Ruvalcaba, 2024). The divisions in South Africa that has produced inequality can be observed in different spaces in South Africa as inequality is both racial and spatial. Further, capitalism also do not only produce the core and peripheries, but it also has systems of dispossessions that results in different forms of dependencies. Capitalist practices such as

slave trade, extractivist mining, the mercantile circulation of gold and silver in the new global financial system and emergence of world powers in Europe shaped how we think about Western modernity (Fernández, 2022). South African development as a polity is linked to extractivist institutions whose effects are still not minimised. Joining BRICS does not minimise the effects of these institutions. Based on dependency theory, certain polities are the peripheries of the global capitalist system. Countries that have low industrialisation levels are deemed as the peripheries (Ruvalcaba, 2024). Comparing South Africa to other BRICS countries, its industrialisation levels is low, hence it can be deemed as a semi-periphery thus increasing its dependency. Further, South Africa is not industrially mature to compete with highly industrialised states. As South Africa has joined BRICS, and the increasing investments by China in South Africa, I argue that BRICS has diversified dependency than eliminating it. This argument is based on comparison of South African investments in China against Chinese investments in South Africa.

Dependency theory indicates that dependency is based on colonial history, as former colonies inherited or were given institutions that failed them, thus creating and perpetuating dependency. Peripheral states inherited poverty as they inherited extractive institutions and this thwarts economic growth and development (Kumar, 2020). South Africa is no exception from other peripheral states, as it inherited extractive institutions. From economic perspectives extractive institutions such as migrant labour system, the Native Land Act of 1913 and the hut tax during the colonial era were extractive. Further, the economy of South Africa has been largely extractive as it has been based on mining, cheap Black labour and land disposessions. In the democratic era, South Africa has remained partly extractive as there has been an institutional inertia that is challenging to fundamentally change. The country's economy is still largely dependent on energy-mineral monopolies; inequality is still high; land ownership patterns have mostly remained the same and local government inherited uneven capacity. The dependency school of thought recognises that the global South will not develop as long as the structure derived from colonial era stands. Further, the dependency theory posits that the relationship in the international arena is characterised by dependency and dominance between two sets of states. States in the global North are deemed as the core, while states in Asia, Latin America and Africa are the periphery (Kumar, 2020).

If uneven development theoretical insights are considered, the question of uneven development is linked to the questions of racial capitalism, social reproduction and coloniality. The dynamics of capital mobility also produces uneven development. Uneven development can be observed in spatially unequal patterns of investments, employment, economic growth, and socio-ecological impact (Ortiz, 2025; Omstedt & Ebner, 2024). Omstedt and Ebner (2024) argue based on the concept that borders are created to create uneven spaces, as borders demarcating different countries create otherness based on uneven development. Within polities there are also mechanisms that create uneven spaces. In South Africa borders were utilised to create uneven polities in the form of homelands, resulting in differentiated citizenship. Further, racialised labour markets were a norm in South Africa and the effects of such institutions are still felt in South Africa. Further, in Southern Africa, Special Economic Zones also perpetuate uneven development.

From literature, the political changes in 2024 resulted in ANC losing majority status for the first time in 30 years and entered into coalition (GNU) government. The South African coalition between the major actors, the DA and ANC is characterised by ideological divergence, administrative fragmentation, and the absence of formal coalition protocols which results in constrained governance capacity (Noutchie, 2025). It is also possible to conceive a coalition between the ANC and its splinter parties which would have worked differently than the present coalition. Further, a state with constrained governance capacity is weak in any regional bloc due to its internal challenges. Noutchie (2025) further argues that due to ideological divergences between the ANC and the DA, consensus building and implementation of key legislative priorities have been delayed. It also created uncertainty for the business community and the public. This implies that the economic elites may oppose South African membership in the BRICS, and within the government there are actors who oppose South African membership in the BRICS due to ideological divergence which was not strong during the administration of Jacob Zuma.

Although South Africa is governed by the GNU, it does have experience of a different form of GNU in 1994. The original GNU in South Africa was unnecessary as the ANC secured an election victory at 62.65%, however, the GNU was formed to foster inclusion and reconciliation. The parties that formed the GNU were ANC, National Party (NP) and Inkatha Freedom Party (IFP). The IFP was initially resistant to form the GNU, and the NP later pulled out of the GNU (Ihembe et al., 2024). Considering that the NP and DA are comparable in that they represent largely the White constituents and voter base, the question arise if the DA can pull out of the GNU as the NP did? The DA also stated that it aimed to prevent the coalition between the ANC and EFF or the newly formed uMkhonto weSizwe Party (MKP) (Ihembe et al., 2024). This has to be considered as the DA is a major actor in the coalition and pushes the narrative that a coalition where it is included is constitutional, while where the parties such as EFF and MKP are included is out of constitutional bounds. This indicates that in South Africa there are political forces that aim to influence policies and ensure that policies that are implemented favour the economic elites which has been largely adhered to Western values and liberal order. This shapes the position of South Africa within the BRICS.

5. Conclusion

South Africa got its democracy partly through negotiated settlement, resulting it adopting neoliberalism, which is ahistorical; and this perpetuated poverty, unemployment and inequality that was there during the demise of apartheid. Although the economy did grow, it failed to result in meaningful employment creation, as there was no fundamental redistribution of access and ownership of factor of production. Further, despite the change of South African code in the international arena, the agencies within South Africa largely remained; and the Black majority do not have meaningful agency as they do not control the economic apparatus, only the state apparatus through the ANC. As time progressed, the Western liberal order began to decline and as BRICS emerged as an alternative mode of global governance, which challenged the West, and South Africa joined, the agencies within South Africa are resistant to BRICS as their economic interests are aligned with the West, hence opposition to BRICS as well as the political actors which are pro-BRICS. Further, historically the ANC has opposed Western intervention to states such as Iraq, Libya and others; a stance that is interpreted as anti-West by Western aligned forces within South Africa and elsewhere.

There are fundamental and crucial perspectives that emerge from the findings of this article. Analysis of theoretical contributions indicate that South Africa is a 'sub-imperial' yet dependant state. While South Africa is regionally dominant in Southern Africa, it is structurally subordinate within BRICS and global capitalism. Neo-Gramscian approaches explain the contradictions of South Africa, as it acts as a transmission belt for neoliberal global capitalism into Africa; while it is constrained by global North finance, dollar dependency, and external capital. Further, South Africa lacks autonomous hegemonic capacity inside BRICS itself.

Another crucial perspective that emerged is how South Africa is a semi-peripheral shock absorber. Inputs from the world-systems theory indicate that South Africa absorbs contradictions between core and periphery, but it cannot fundamentally alter global accumulation structures. This leads to a conclusion that South Africa's weakness is not accidental failure, but it is structurally functional within the world system. Furthermore, inequality exist within BRICS, as other states dominate in different spheres while South Africa is industrially vulnerable. BRICS is not a balanced coalition, deducing from uneven development theory, BRICS is an uneven geopolitical bloc.

South Africa's inclusion in BRICS was geopolitical as opposed to economic. The inclusion of South Africa has largely benefitted China more than it benefitted South Africa; hence, South Africa's strategic value exceeds its material power. BRICS needed African representative and legitimacy more than South Africa needed BRICS membership. South Africa needed geopolitical prestige. However, material asymmetries remained unresolved, hence, placing South Africa in a weakest position.

This article has limitations that can be observed. The first major limitation was the focus of the article, as it prioritises structural explanations over micro-level social dynamics. Further, this article did not expand on how BRICS is an internally diverse bloc. The article may focus heavily on South Africa relative to the bloc, but did not fully explore factors such as intra-BRICS tensions, India-China rivalry, Russia sanctions and Brazil changing political and foreign policy orientations. The other limitation is the difficulty in measuring 'weakness'. The study conceptualises weakness primarily through structural dependency and uneven integration into global capitalism. Lastly, the study did not engage with global modern changes due to Fourth Industrial Revolution and technological changes and how they shape the arguments. Traditional dependency and world-systems frameworks were developed during industrial capitalism. Hence, they fail to capture the advent of 4IR. This includes factors such as platform capitalism, AI dependency, data colonialism, digital extraction, and fintech domination.

There are potential future research directions that can be pursued. Linked to the first limitation, future research can investigate internal hegemonies within BRICS, comparative semi-peripherality, and competing development trajectories inside BRICS. On measuring weakness, future research can operationalize "semi-peripheral weakness" quantitatively, develop composite geopolitical indices, and compare BRICS through longitudinal data.

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PUBLIC BODIES' SUPPORT FOR THE SUSTAINABILITY OF SMALL AND MEDIUM-SIZED TOURISM ENTERPRISES IN THE EASTERN CAPE PROVINCE, SOUTH AFRICA

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Received 15 January 2026; accepted 4 June 2026; published 30 June 2026

Abstract. This study examines the role of public bodies in supporting SMTEs. The authors acknowledge that the involvement of public entities in strengthening the capacity and resilience of SMTEs is becoming increasingly critical in today's economic environment. SMTEs comprise a substantial portion of the tourism industry, accounting for over 80% of business activity in many regions. Their growth fosters local economic development, encourages cultural exchange, and promotes innovation within communities. Public bodies play a vital role in facilitating this growth through various strategic actions, such as providing financial support, developing policies, and offering resources essential for the sustainability of these businesses. The research was conducted with the understanding that, although multiple studies have explored the topic, a significant gap exists regarding the role of public bodies in promoting the sustainability of SMTEs, particularly in the Eastern Cape Province, South Africa. A quantitative approach was used, involving a cross-sectional survey of 160 respondents, SMTE owners in the Eastern Cape, to gather insights from key stakeholders knowledgeable about SMTE ownership in the region. To ensure the instrument accurately measured what it intended to, the study tested its validity, specifically using the content validity index technique. A pilot survey was conducted with 45 respondents from a different population than the main sample. Based on this pilot, the content validity index for the entire instrument and individual items was calculated. The validity indices ranged from 0.79 to 0.81 for the overall instrument and for the scales POG, GF, POR, POAI, PORF, and SOTSMEs, respectively. All coefficients exceeded or closely approached the 0.78 threshold, confirming the instrument's validity. The study tested eight hypotheses, of which four were rejected, and four were supported.

Keywords: Public bodies; small-medium tourism enterprises; SMEs; entrepreneurship; government

Reference to this paper should be made as follows: Nguza-Mduna, B., Masha, A.K. 2026. Public bodies' support for the sustainability of small and medium-sized tourism enterprises in The Eastern Cape Province, South Africa. *Insights into Regional Development*, 8(2), 178-190. <http://doi.org/10.70132/g5629275836>

JEL Classification: L26

1. Introduction

The role of SMEs in economic development is multifaceted, extending beyond mere job creation to encompass broader socio-economic benefits. SMEs act as the backbone of the economy, providing essential employment opportunities that help alleviate poverty and foster economic resilience (Javadi et al., 2024; Musabayana, 2024; Masha & Mdeni, 2025). Thus, this impact is equally critical in advanced economies, wherein SMEs play a pivotal role in maintaining economic dynamism and adaptability.

SMEs are increasingly recognised as vital contributors to socio-economic development across various regions, particularly in developing nations. Their role extends beyond mere economic output to encompass job creation,

innovation, and enhancement of income distribution, thereby fostering an inclusive economic environment (Yáñez-Valdés et al., 2023; Gamede, 2023; Odeyemi et al., 2024). As numerous studies highlight, SMEs significantly contribute to employment and Gross Domestic Product (GDP); they represent approximately 90% of businesses globally and employ around half of the world's workforce (Nyikana & Bama, 2023; Hutmanová et al., 2024). This underlines their fundamental role not just as businesses but as engines driving socio-economic change and resilience.

Worldwide, governments continually struggle to manage and address microeconomic problems. Although “no software can predict the future”, SMEs have been seen as a solution to South Africa’s future unemployment dilemma (Cilliers, 2017, p. 105), as well as to macroeconomic problems of stagnation or recession. Therefore, many governments are consequently and actively seeking ways to promote and encourage entrepreneurship among their citizens. Notably, the promotion and support for SMEs have become pivotal in the South African government's strategy to combat unemployment and foster economic growth, in line with the National Development Plan (NDP) of 2015, which indicates that the sector is expected to create 90% of employment by 2030.

The role of SMEs in times of economic crisis is indispensable, as they tend to preserve jobs and help keep the community stable even when the rest of the economy is facing difficulties (Daraojimba et al., 2023). Therefore, to address the challenges, the government of South Africa has taken several steps to enhance SMEs. Government agencies such as the National Youth Development Agency (NYDA), the Small Enterprise Finance Agency (SEFA), the Industrial Development Corporation (IDC), and Business Partners. Moreover, other government departments aid SMEs. These are: The Department of Trade and Industry (DTI), the Department of Economic Development (DED), the Presidency, and the Department of Agriculture.

Moreover, the initiatives and enabling policies provided by the government to improve the performance and sustainability of SMMES are essential for maximising their capacity to generate employment (Rochman et al., 2024). These policies are White Paper on National Strategy on the Development and Promotion of Small Businesses of 1995 (WPNSDPSB), the ten-point plan on procurement reform, 1995 (TPP), the South African National Small Business Act 102 of 1996 (NSBA), the Green paper on public sector procurement reform in South Africa of 1997 (GPPSPR), the Skills Development Act 97 of 1998 (as amended in 1999, 2003 (BBBEEA), and the revised preferential procurement regulations of 2011 (RPPR).

The special attention in public policy to Small and Medium-sized tourism enterprises (SMTEs) contributes to their resilience. This is consistent with the results of Seow et al. (2024), who explain that adaptive power and cross-supply chain partnerships are essential to SMTEs to succeed during crises. The government agencies like the Department of Trade and Industry (DTI), the Eastern Cape Development Corporation (ECDC), the National Department of Tourism, the Small Enterprise Development Agency (SEDA), the Small Enterprise Development Agency (SEDA), the Eastern Cape Department of Economic Development and Environmental Affairs and Tourism, the Eastern Cape Socio-Economic Consultative Council (ECSECC), the National Small Business Act of 1996, and the Tourism Enterprise Programme (TEP) (2011) can expand the functional capabilities of SMTEs and empower them to manage external shocks, including economic downturns or global pandemics.

This study focuses on the role of public bodies in boosting SMTEs. The authors recognise that the involvement of public bodies in enhancing the capacity and resilience of SMTEs is increasingly essential in today's economic landscape. SMTEs constitute a significant share of the tourism industry, accounting for over 80% of business volume in many regions (Wang & Zhang, 2024). Their proliferation supports local economic development, promotes cultural exchange, and drives innovation across communities (Anaba et al., 2024). Public bodies play a crucial role in facilitating this growth through strategic interventions, including financial support, policymaking, and the provision of resources necessary for the sustainability of these enterprises.

2. Statement of the Problem

SMEs in tourism, also known as SMTEs, are gaining momentum. These ventures not only contribute to economic diversification but also serve as cultural ambassadors, promoting Africa's rich heritage and creativity on the global stage. By nurturing these industries, African entrepreneurs can contribute to a more balanced and sustainable economic portfolio (Kenji, 2024; Adaga et al., 2024). Beyond their economic impact, SMTEs serve as powerful tools for social empowerment and community development in South Africa. When entrepreneurs succeed, they not only uplift themselves but also create a ripple effect that positively influences the communities around them.

Globally, governments consistently endeavour to address and resolve microeconomic issues. Consequently, to address the challenges, the South African government has implemented various measures to enhance SMTEs. As Several government agencies and departments, along with supportive policies, exist to boost SMTEs. Although several studies have examined the above-mentioned topic, a notable gap in the research is the lack of research on the role of public bodies in enhancing the sustainability of SMTEs in the Eastern Cape Province, South Africa. This study examines the role of public bodies in supporting SMTEs, a vital aspect of today's economic landscape.

3. Review of Selected Literature

Role of Public Bodies in Boosting SMTEs

The involvement of public bodies in enhancing the capacity and resilience of SMTEs is increasingly essential in today's economic landscape. SMTEs constitute a significant share of the tourism industry, accounting for over 80% of business volume in many regions (Wang & Zhang, 2024). Their proliferation supports local economic development, promotes cultural exchange, and drives innovation across communities (Anaba et al., 2024). Public bodies play a crucial role in facilitating this growth through various strategic interventions, such as financial support, policy-making, and the provision of resources necessary for the sustainability of these enterprises.

Public policies directed at SMTEs foster their resilience through targeted support. This aligns with the findings of Seow et al., who emphasise that adaptive capability and collaboration across supply chains are crucial for SMEs to thrive in the face of crises (Seow et al., 2024). Government initiatives, including funding programs and regulatory frameworks, can enhance SMEs' operational capacities and enable them to better withstand external shocks, such as economic downturns or global pandemics. Specifically, the Ministry of Tourism and Creative Economy in various countries has implemented policies to empower local tourism enterprises, leading to a rejuvenation of the tourism sector post-COVID-19.

Moreover, the digital transformation of SMEs is pivotal in enhancing their competitiveness and efficiency. As noted by Wang and Zhang (2024), SMTEs must adopt innovative digital tools to navigate the challenges presented by globalisation and technological advancements (Wang & Zhang, 2024). Such digital inclusivity allows SMEs to engage consumers more effectively and streamline their operations, thereby contributing to their overall growth. The use of digital marketing strategies is particularly impactful, as highlighted by Purnawati (2024), who notes that technological integration directly correlates with increased sales turnover in SMTEs.

Financial inclusion is another critical area in which public bodies can have a substantial impact on SMTEs. According to Li et al. (2024), financially inclusive measures, such as access to credit and investment opportunities, can directly influence tourism demand and profitability. This is particularly crucial for small businesses that often struggle with funding constraints. By facilitating access to capital, the public sector can enable SMEs to invest in their growth, thereby increasing their resilience and capacity to adapt to market changes.

The regulatory environment established by public bodies also plays a crucial role in shaping the operational landscape for SMTEs. Overly restrictive regulations can stifle innovation and growth, while supportive legislative frameworks can propel SMEs towards competitive prominence. Altman and Cheng (2024) emphasise the

importance of establishing a holistic regulatory framework that addresses the specific needs of SMEs and facilitates their integration into broader economic strategies.

Moreover, the involvement of public bodies in SMTEs extends to providing technical and educational support. Training programmes designed to enhance managerial skills and operational knowledge can significantly strengthen the capabilities of SMTE owners and staff. This educational component is essential in equipping tourism enterprises with the skills necessary to thrive in increasingly competitive and technologically advanced environments. As noted by Giraldo et al. (2024), such efforts can improve customer experience and enhance service delivery in the tourism sector.

To further facilitate SMTEs' growth, public bodies must also encourage collaboration among enterprises across tourism sectors. By fostering networks that promote knowledge sharing and resource pooling, SMEs can enhance their market reach and operational efficiency. This collaborative approach not only nurtures innovation but also strengthens community bonds, ensuring that the benefits of tourism are distributed more equitably among local populations, as suggested by Ngondo et al. (2024) in their exploration of domestic tourism dynamics.

The interplay between public bodies and SMEs in the tourism sector is characterised by a multifaceted approach that includes financial support, policy advocacy, capacity building, and the promotion of sustainable practices. The successful enhancement of SMTEs is contingent on a strategic partnership between the government and these enterprises, which ultimately bolsters local economies, enriches the tourism landscape, and prepares these businesses for future challenges. The resilience, innovation, and adaptability of SMTEs can be considerably enhanced through continuous support from public bodies, ensuring that they not only survive but thrive in an ever-changing industry landscape.

Hypotheses

Our research hypotheses are as follows:

H₀1 There is a significant relationship between the provision of grants by public bodies and the sustainability of SMTEs in the Eastern Cape Province, South Africa.

H₀2 *There is a significant relationship between funding by public bodies and the sustainability of SMTEs in the Eastern Cape Province, South Africa.*

H₀3 There is a significant relationship between the provision of rebates by public bodies and the sustainability of SMTEs in the Eastern Cape Province, South Africa.

H₀4 There is a significant relationship between adequate infrastructure and the sustainability of SMTEs in the Eastern Cape Province, South Africa.

H₀5 There is a significant relationship between the provision of recreational facilities and the sustainability of SMTEs in the Eastern Cape Province, South Africa.

H₀6 There is a significant relationship between respondents' perceptions of public bodies' support for the sustainability of SMTEs and gender.

H₀7 There is a significant relationship between respondents' perceptions of public bodies' support for SMTEs' sustainability and age group.

H_0 8 There is a significant relationship between respondents' perceptions of public bodies' support for the sustainability of SMTEs and their occupation.

5. Methodology

This study employed a non-experimental, descriptive, and correlational design and evaluated reliability and validity using statistical analysis. The study used a quantitative research approach because it was able to look for ways to find relations between variables (Bartley & Hashemi, 2024), and it allowed for the use of large sums of questionnaires to allow for generalisation, which is referred to by Anakpo and (2024) as the extent to which the research findings in one setting can be applied to other settings.

The study employed a cross-sectional survey of 160 SMTE owners in the Eastern Cape Province, South Africa, to elicit the perceptions of well-informed stakeholders in SMTE ownership.

This study is premised on positivism viewpoint. A paradigm refers to a particular style of perceiving the universe, implying that paradigms are patterns or systems by which reality is seen (Means & Mowatt, 2024; Bartley & Hashemi, 2024). This research required a systematic approach grounded in empirical studies. Positivism in this context enabled the understanding of knowledge as a product of a systematic procedure involving quantifiable analysis, scientific methodology, and an empirical outlook for grasping the world. The positivist research paradigm had a profound effect on the methodology and findings of the study (William, 2024). The rigidity and even quantitative nature of positivism were observed in the use of numerical data and statistics in this study. The deductive reasoning method, in which ideas are rigorously evaluated against empirical evidence, is situated within a positivist framework, the primary paradigm of this research. Positivists promote the application of natural-scientific methodologies to investigate phenomena, including social phenomena, and prioritise the pursuit of truth through empirical validation, thereby facilitating the collection and interpretation of data using quantitative techniques. In this study, positivism emphasised the need for rigorous techniques that enhance the trustworthiness of research outcomes (William, 2024). The study questions of this paradigm were formulated to elicit information and can solely be addressed using a quantitative research methodology. Consequently, this research affirmed positivism, which holds that only scientific approaches can elucidate the universe, encompassing both the natural and social realms.

The study used stratified random sampling to select the participants. Stratification was done based on the status of stakeholders (owners, managers) and the unemployed, and respondents were selected using the lottery technique based on the statuses of respondents within each stratum, with simple random sampling.

6. Study Findings

6.1 Test for Validity

To ensure the instrument measured what it was intended to measure, the study tested its validity. Specifically, the content validity index technique was used. A pilot test was conducted with 45 respondents from a population different from that of the main study. Using responses from this pilot test, the content validity index for the instrument's scale (entire instrument) and item levels was calculated. The content validity indices ranged from 0.79 to 0.81 for the whole instrument and for POG, GF, POR, POAI, PORF, and SOTSMEs, respectively. All coefficients were above or approximately 0.78. Therefore, the instrument meets the validity requirements, as the threshold of 0.78 is consistent with those reported by Inegbedion et al. (2024) (see Table 1).

Table 1. Validity Tests

Construct	S-CVI	I-CVI	Number of Items
Entire Instrument	0.80		24
Provision of grants		0.81	4
Government funding		0.80	4
Provision of adequate infrastructure		0.78	4
Provision of recreational facilities		0.79	4
Sustainability of SMTEs		0.80	4

The study also tested the instrument's reliability to ensure internal consistency. In this respect, it used the Cronbach's alpha technique. The calculated Cronbach's alpha values were 0.774, 0.68, 0.78, 0.71, 0.69, 0.74 and 0.74 for the entire instrument, use of quantitative techniques provision of grants, government financing, provision of rebates, provision of adequate infrastructure, provision of recreational facilities, and the sustainability of tourist small, micro and medium enterprises respectively. All the computed alpha values were approximately 0.7 or above. Consequently, it is reasonable to conclude that the instrument is reliable, in line with Hair et al. (2021) (see Table 2). It is pertinent to note that Cronbach's alpha values for government funding and rebate provision were initially 0.48 and 0.18, respectively; however, after revising the number of items used to measure the two indicators and retesting, the values increased to 0.78 and 0.71, respectively (See Table 2).

Table 2. Validity Tests

Construct	Cronbach's Alpha	Number of Items
Entire Instrument	0.774 (0.88)	24
Provision of grants	0.68	4
Government funding	0.48 (0.78)	4
Provision of rebates	0.18 (0.71)	4
Provision of adequate infrastructure	0.69	4
Provision of recreational facilities	0.74	4
Sustainability of STMEs	0.72	4

Following favourable validity and reliability test results, the study administered the instrument to the sampled respondents. The questionnaires were administered through Google Forms. The results of the tests are presented below:

T-test for the significance of the respondents' perception of public support for SMTEs.

The study examined the significance of respondents' perceptions of how public support through grants affects the sustainability of SMTEs. The results indicated that respondents who agreed that public support through grants influences the sustainability of SMTEs had a mean of 3.49 and a standard deviation of 0.646. Compared to a test value of 3.000, this produced a mean difference of approximately 0.490. A t-test for the significance of this mean difference yielded a computed t-value of 9.31 ($p < 0.01$), indicating the result is statistically significant. Therefore, grant funding has a significant impact on SMTE sustainability (see Table 3).

Secondly, the study tested the significance of respondents' perceptions of how public support, through government financing of SMTEs, influences SMTE sustainability. The results showed that respondents who agreed that public support through government financing influences the sustainability of SMTEs had a mean of 3.12 and a standard deviation of 0.6282. Against a test value of 3.000, this resulted in a mean difference of approximately 0.1188. A t-test for the significance of the mean difference yielded a computed t-value of 2.39 ($p = 0.018$), indicating statistical significance. Considering this finding, the provision of grants to SMTEs has a significant impact on their sustainability (see Table 3).

Thirdly, the study tested the significance of respondents' perceptions of how public support through rebate provision influences the sustainability of SMTEs. The results showed that respondents who agreed that public support through rebates influences the sustainability of SMTEs had a mean of 3.48 and a standard deviation of 0.4428. Against a test value of 3.000, a mean difference of approximately 0.4800 was obtained. A t-test for the significance of the mean difference yielded a computed t value of 13.66 ($p < 0.01$), indicating that the difference is statistically significant. Based on this finding, the provision of rebates to SMTEs has a significant impact on their sustainability (see Table 3).

Fourthly, the study examined the significance of respondents' perceptions regarding the impact of adequate infrastructure on the sustainability of SMTEs. The results showed that respondents who agreed that public support through adequate infrastructure influences the sustainability of SMTEs had a mean of 3.34 and a standard deviation of 0.4409. Against a test value of 3.000, this resulted in a mean difference of approximately 0.3400. A t-test for the significance of the mean difference yielded a computed t-value of 10.11 ($p < 0.000$), indicating that the difference is statistically significant. Given this finding, adequate infrastructure significantly influences the sustainability of SMTEs (see Table 3).

Fifthly and lastly, the study tested the significance of respondents' perceptions of how public support, through the provision of recreational facilities, influences the sustainability of SMTEs. The results showed that respondents who agreed that public support through the provision of recreational facilities influences the sustainability of SMTEs had a mean of 3.58 and a standard deviation of 0.4606. Against a test value of 3.000, this resulted in a mean difference of approximately 0.4606. A t-test for the significance of the mean difference yielded a computed t-value of 16.15 ($p < 0.000$), indicating that the difference is statistically significant. Considering this finding, the provision of recreational facilities significantly influences the sustainability of SMTEs (see Table 3).

Table 3. Provision of public support for the sustainability of SMTEs

Variable	Mean.	Std Dev.	Mean Difference	t	Sig (2-tailed)
POG	3.49	0.6463	0.4859	9.51	0.000
GF	3.12	0.6282	0.1188	2.39	0.018
POR	3.48	0.4428	0.3516	13.66	0.000
POAI	3.34	0.4409	0.3516	10.11	0.000
PORF	3.58	0.4606	0.5844	16.05	0.000
SOTSMEs	3.52	0.4032	0.5234	16.42	0.000

6.2 Tests for Goodness of Fit

This section presents tests of the study's model fit to the cross-sectional data.

The results of the adjusted R-square are 0.715, and the value of the adjusted R-square is 0.708. The implication is that 70.8% of the variation in the variability in the sustainability of SMTEs is caused by variability in the hypothesised indicators of the public support for the sustainability of SMTEs (provision of grants, government financing, provision of rebates, provision of adequate infrastructure, and the provision of recreational facilities) (See Table 4).

Table 4. Overall Model Fit

Model	R	R-Square	Adjusted R Square	Durbin-Watson
1	0.846	0.715	0.708	1.69

Predictors: constant, POG, GF, POR, POAI, PORF

Dependent variable STSMEs

The F test for the goodness of fit reveals that the computed F statistics and the associated p-value are 71.434 ($p < 0.000$). To this end, the null hypothesis that the model is not a good fit for the data is rejected at the 1% level. The implication is that the model is a good fit to the data (See Table 5).

Table 5. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.494	5	3.699	77.434	0.000
	Residual	7.356	154	0.048		
	Total	25.850	158			

Predictors: constant, POG, GF, POR, POAI, PORF

Dependent variable STSMEs

6.3 Test for Significance of Data

The study tested for the degree of association between the hypothesised indicators of public bodies' support and the sustainability of SMTEs (provision of grants, government financing, provision of rebates, provision of adequate infrastructure and the provision of recreational facilities). The results showed that four out of the six indicators (government financing, provision of rebates, provision of proper infrastructure and the provision of recreational facilities) have significant relationships with the sustainability of SMTEs. One of those essential relationships is negative (i.e., the relationship between rebate provision and SMTEs' sustainability). However, the provision of grants is positively associated with the sustainability of SMTEs, but this relationship is not statistically significant.

The positive relationship between government financing and the sustainability of SMTEs is statistically significant, indicating that government financing has a considerable influence on SMTE sustainability in South Africa.

In addition, the provision of adequate infrastructure and the sustainability of SMTEs, as well as the positive relationship between the provision of recreational facilities and SMTEs, and the negative relationship between the provision of rebates and the sustainability of SMTEs, are all significant, as indicated by p-values less than 0.05. Consequently, the associated null hypotheses are rejected accordingly. Thus, government financing, adequate infrastructure, and recreational facilities have statistically significant positive effects on the sustainability of SMTEs in the Eastern Cape Province, South Africa. In contrast, rebates have a statistically significant adverse impact on the sustainability of SMTEs (See Table 6).

Table 6. Regression Coefficients

Model	Unstandardised Coefficients		Standardised Coefficients	.t	Sig.
	B	Std. Error	Beta		
Constant	0.879	0.182		3.738	0.000
POG	-0.005	0.031	- 0.008	-0.171	0.864
GF	0.105	0.032	0.163	3.314	0.001
POR	- 0.499	0.070	- 0.548	-7.091	0.000
POAI	0.792	0.055	0.864	14.320	0.000
PORF	0.451	0.059	0.516	7.631	0.000

The study's seventh hypothesis examined the relationship between respondents' perceptions and demographic variables (gender, Age, and Occupation). The results indicate that the Fender test and the associated significant probabilities for gender, age, and occupation are 1.297 (0.276), 1.282 (0.311), and 1.794 (0.170), respectively. Given that none of the p-values are less than 0.05, we do not reject the null hypotheses that respondents' perceptions of the influence of public bodies' support are unrelated to respondents' demographic variables (gender, age, and occupation) (see Table 7).

Table 7. Respondents' Perception of The Public Support for SMTEs And Demographic Variables (Gender, Age, and Occupation)

Demographic Variable	F	Sig (2-tailed)
Gender	1.297	0.276
Age	1.282	0.311
Occupation	1.794	0.170

6.4 Interpretation of Findings

The study's first objective was to determine the extent to which public bodies' grant improvements enhance the sustainability of SMTEs in the Eastern Cape Province, South Africa. This objective was achieved in hypothesis one by examining the relationship between public support for SMTEs through grant provision and SMTE sustainability. The results of the one-sample t-test indicate that grant provision has a significant impact on the sustainability of SMTEs. However, the regression results reveal that the positive coefficient is not statistically significant. The discrepancy between the one-sample t-test results and the regression findings suggests that, while grants may have the potential to boost the sustainability of SMTEs, as indicated by the one-sample t-test, the actual situation is that grants have not had a meaningful impact on SMTEs, possibly because there are no grants currently, or the grants provided are minimal.

The study's second objective sought to determine the extent to which government financing enhances the sustainability of SMTEs in the Eastern Cape Province, South Africa. This objective was achieved in hypothesis two by examining the relationship between public support for SMTEs through government financing and SMTE sustainability. The one-sample t-test and regression results indicate that the positive coefficient is statistically significant. The implication is that government financing is significantly associated with the sustainability of SMTEs. The agreement between the one-sample t-test and the regression results suggests that SMTEs in the Eastern Cape Province, South Africa, are feeling the impact of government financing.

The study's third objective sought to determine the extent to which public support through rebates enhances the sustainability of SMTEs in the Eastern Cape province, South Africa. This objective was realised in hypothesis three by testing the association between public support for SMTEs through rebate provision and SMTE

sustainability. The one-sample t-test and regression results indicate that the provision of rebates has a statistically significant effect on SMTEs' sustainability. However, while the one-sample t-test yields a positive result, the regression yields a negative result. The implication is that there is an expected positive relationship between the provision of rebates and SMTEs' sustainability. The negative relationship in the regression model suggests that there are currently no significant rebates. The provision of rebates does not have any positive predictive power for the sustainability of SMTEs.

The study's fourth objective sought to determine the extent to which public support, through adequate infrastructure provision, enhances the sustainability of SMTEs in the Eastern Cape Province, South Africa. This objective was realised in Hypothesis Four by testing the association between public support for SMTEs, as reflected in adequate infrastructure, and the sustainability of SMTEs. The one-sample t-test and regression results indicate that the positive coefficient is statistically significant. The implication is that sufficient infrastructure is significantly associated with the sustainability of SMTEs. The agreement between the one-sample t-test and the regression results suggests that the government is doing its best to provide infrastructure that facilitates the effective functioning of SMTEs in the Eastern Cape Province, South Africa.

The study's fifth objective was to determine the extent to which public support, through the provision of recreational facilities, enhances the sustainability of SMTEs in the Eastern Cape Province, South Africa. This objective was realised in hypothesis five by testing the association between public support for SMTEs, as reflected in the provision of recreational facilities, and the sustainability of SMTEs. The one-sample t-test and regression results indicate that the positive coefficient is statistically significant. The implication is that the provision of recreational facilities is significantly associated with the sustainability of SMTEs. The agreement between the one-sample t-test and the regression results suggests that the government is doing enough to provide recreational facilities that enable the effective functioning of SMTEs in the Eastern Cape Province, South Africa.

Lastly, an F-test of the differences between subgroups of the demographic variables (gender, age, and occupation) shows that the F-values were not significant, as none of the p-values was less than 0.05, the assumed level of significance. Consequently, none of the null hypotheses is rejected. The implication is that the demographic variables do not significantly influence respondents' perceptions. This finding is very insightful because it shows that the respondents' perceptions of the research problem are not influenced or distorted by any of the examined demographic characteristics. Consequently, the respondents are well-informed about the research problem, regardless of the demographic subgroup to which they belong.

Table 8. Test of hypotheses

Number	Hypothesis	Accept/Reject
H_01	There is a significant relationship between public bodies' grant provision and the sustainability of SMTEs in the Eastern Cape Province, South Africa.	Do not Reject
H_02	There is a significant relationship between funding by public bodies and the sustainability of SMTEs in the Eastern Cape Province, South Africa.	Reject
H_03	There is a significant relationship between public bodies' provision of rebates and the sustainability of SMTEs in the Eastern Cape Province, South Africa.	Reject
H_04	There is a significant relationship between the provision of adequate infrastructure and the sustainability of SMTEs in the Eastern Cape Province, South Africa	Reject
H_05	A significant relationship exists between the provision of recreational facilities and the sustainability of SMTEs in the Eastern Cape Province, South Africa.	Reject
H_06	There is a significant relationship between the respondents' perception of public bodies' support for the sustainability of SMTEs and gender.	Do not reject
H_07	There is a significant relationship between the respondents' perception of public bodies' support for the sustainability of SMTEs and age group.	Do not reject
H_08	There is a significant relationship between the respondents' perception of public bodies' support for the sustainability of SMTEs and their occupation.	Do not reject

7. Conclusions and Recommendations for Future Studies

This study examines the role of public bodies in supporting SMTEs. The authors acknowledge that the involvement of public entities in strengthening the capacity and resilience of SMTEs is becoming increasingly critical in today's economic environment. SMTEs comprise a substantial portion of the tourism industry, accounting for over 80% of business activity in many regions. Their growth fosters local economic development, encourages cultural exchange, and promotes innovation within communities. Public bodies play a vital role in facilitating this growth through strategic actions such as providing financial support, developing policies, and offering resources essential to the sustainability of these businesses. The research was conducted with the understanding that, although multiple studies have explored the topic, a significant gap exists regarding the role of public bodies in promoting the sustainability of SMTEs, particularly in the Eastern Cape Province, South Africa.

A quantitative approach was used, involving a cross-sectional survey of 160 respondents, SMTE owners in the Eastern Cape, to gather insights from key stakeholders knowledgeable about SMTE ownership in the region. To ensure the instrument accurately measured what it was intended to measure, the study tested its validity using the content validity index. A pilot survey was conducted with 45 respondents from a population different from that of the main sample. Based on this pilot, the content validity index for the entire instrument and individual items was calculated. The validity indices ranged from 0.79 to 0.81 for the overall instrument and for the scales POG, GF, POR, POAI, PORF, and SOTSMEs, respectively. All coefficients exceeded or closely approached the 0.78 threshold, confirming the instrument's validity. The study tested eight hypotheses, of which four were rejected, and four were supported.

This study was based in one of the nine provinces in South Africa. The study used a quantitative research approach and a questionnaire to collect data from respondents. Respectively, it is recommended that future studies be based on other South African provinces and employ either a qualitative or a mixed-methods approach to gain insights from interviews, which typically provide rich descriptions of participants' narratives.

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Funding. We acknowledge the funding received from Walter Sisulu University for charges associated with this article.

Author Contributions: Conceptualisation: *Bulelwa NGUZA-MDUBA*; methodology: *Anthony Kambi MASHA*; data analysis: *Anthony Kambi MASHA, Bulelwa NGUZA-MDUBA*; writing, original draft preparation: *Bulelwa NGUZA-MDUBA*; review and editing: *Bulelwa NGUZA-MDUBA, Anthony Kambi MASHA*; visualisation: *Anthony Kambi MASHA, Bulelwa NGUZA-MDUBA*. All authors have read and agreed to the published version of the manuscript.

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ENTREPRENEURSHIP EDUCATION IN THE TECHNICAL VOCATIONAL EDUCATION AND TRAINING COLLEGE SECTOR**Ntokozo Gwala ¹, Steven Kayambazinthu Msosa ^{2*}, Bright Mhlongo ³**^{1,2*,3} Mangosuthu University of Technology, South AfricaE-mails: ¹ Gwala.ntokoza@mut.ac.za; ^{2*} Kayambazinthu@outlook.com (Corresponding author); ³ Bright@mut.ac.za

Received 15 March 2026; accepted 10 June 2026; published 30 June 2026

Abstract. Technical Vocational Education and Training (TVET) colleges are essential for helping young people receive vocational training in a variety of trades, thereby boosting economic expansion and reducing unemployment. Thus, TVET colleges play a crucial role in preparing South African youths for entrepreneurship. This study sought to analyse the supply side of entrepreneurship education in the TVET college sector. The study adopted a quantitative, descriptive research design to collect data from a random sample of 106 lecturers. Given that entrepreneurship is a component of most business courses offered by colleges, the results demonstrate that TVET institutions were well-positioned to invest in entrepreneurship courses. Additionally, the faculty who taught business studies and entrepreneurship were well-equipped, with capable administrators and the necessary instructional materials at their disposal. The results also revealed that TVET institutions, despite their having capabilities, faced certain challenges. These include, among other things, available funds, management support, and a lack of passion among certain students, which hinders the effective delivery of entrepreneurship courses and limits student engagement and success. The study suggested that rather than considering entrepreneurship as a quick course or a single module, it would be necessary to introduce the subject at the elementary level of post-secondary education. Therefore, TVET colleges must consider integrating entrepreneurship into their core curriculum rather than merely adding it to existing business courses. This could be accomplished by undertaking a consultative process with external experts in entrepreneurship and by establishing terms of reference that include researching the course material for entrepreneurship courses offered by accredited institutions.

Keywords: entrepreneurship; TVET college; higher education; curriculum

Reference to this paper should be made as follows: Gwala, N., Msosa, S.K., Mhlongo, B. 2026. Entrepreneurship education in the technical vocational education and training college sector. *Insights into Regional Development*, 8(2), 192-204. <http://doi.org/10.70132/p9383622489>

JEL Classifications: L26, L3, I23**Additional disciplines:** educology**1. Introduction**

The government and the Department of Higher Education have taken note of the role that Technical Vocational Education and Training (TVET) colleges, also known as Ex FETs, play in providing the intermediate-level skills the nation needs to advance the National Development Plan (Sebola, 2022). Given the tremendous unemployment that the nation suffers, particularly among young people, young South Africans must be given the tools they need to support themselves. Thus, entrepreneurship entails starting businesses that provide people with the goods and services they need and generate employment; hence, it is crucial to recognise that entrepreneurship is a topic of immense significance and relevance to any economy. The goal of the entrepreneurship course or module is to stimulate students' enthusiasm for entrepreneurship so they can return to their communities and start new firms, grow existing ones, and create much-needed jobs in their countries (Msosa & Radebe, 2022). An admirable step towards empowering the youth is the South African government's plan to require TVET colleges to formalise

entrepreneurship courses. TVET institutions' entrepreneurship curricula place strong emphasis on the value of starting with little and using it to create something valuable, such as a firm or enterprise. Resources are obviously crucial, but a lack of them can still hamper entrepreneurship (Gamede & Uleanya, 2019). TVET colleges' curricula need to address the resource availability gap adequately. The primary goal of entrepreneurship in higher education is to provide goods and services that benefit people, communities, organisations, and society. Therefore, it is critical to remember that entrepreneurship is all about creating sustainable cash flow streams and long-term value, and what makes it so exciting is that it can be built from scratch. Thus, with the right instruction and preparation, people can be inspired to become bold, imaginative, and dynamic (Smith, 2020).

Public TVET institutions have a major role to play in imparting the entrepreneurial skills needed to achieve the National Development Plan (NDP). Entrepreneurship is still a vital component of South Africa's economy (Gamede & Uleanya, 2019). Nonetheless, there appears to be a lack of understanding among instructors about how to teach entrepreneurship as a subject that may effectively foster an entrepreneurial mindset in students (Ncube & Lekhanya, 2021). Thus, the purpose of this study is to close this gap by examining the current state of entrepreneurship education within the TVET college sector. In particular, this study examined the supply side of entrepreneurship education in the TVET college sector.

2. Literature Review

Theoretical Background of Entrepreneurship

Diandra and Azmy (2020) define entrepreneurship as the process of creating value from almost nothing. Consider starting a firm or company with just an idea, without necessarily needing to raise enormous amounts of capital. Urban and Maswabi (2021) point out that while ideas and knowledge about entrepreneurship remain crucial, the number of resources available to engage in entrepreneurial activities has little bearing on the success of entrepreneurship. According to Di Vaio, Hassan, Chhabra, Arrigo, and Palladino (2022), entrepreneurship is advantageous for people at the individual, group, organisational, and societal levels. Instead of becoming wealthy quickly, the goal of entrepreneurship is to create long-term value and reliable income flow sources (Diandra & Azmy, 2020). Thus, entrepreneurship is seen as crucial to society's advancement, as it creates long-term value and a steady income stream for individuals, teams, organisations, and the broader community.

According to Urban and Maswabi (2021), being an entrepreneur means combining concepts, skills, tools, and markets to create a profitable business. This definition emphasises starting a business that will boost employment and the economy. Camacho-Miñano et al. (2017) assert that post-secondary education can help build the specific knowledge, abilities, and aptitude needed for entrepreneurial success. The development of these abilities is required of TVET colleges in South African higher education; however, it is unclear whether these institutions are adequately equipped and prepared to fulfil this duty. Tondi (2023) warns that TVET colleges may not foster certain character qualities beneficial to entrepreneurship. These attributes include perseverance, dedication to businesses, participation in organisations, a propensity to take risks, solid interpersonal relationships, inventiveness, and an optimistic outlook on life. Typically, entrepreneurship education (Ghafar, 2020) may not impart these innate traits. The role of creativity in entrepreneurship cannot be overstated. According to recent studies, creativity involves not only coming up with original ideas but also putting them to use in ways that capitalise on market opportunities and unmet needs (Camacho-Miñano et al., 2017). TVET colleges have a significant role in developing this creativity, depending on the readiness and effectiveness of their entrepreneurship education programs (Uleanya et al., 2018).

Entrepreneurship has long been recognised as a catalyst for innovation and societal progress. Recent research supports the idea that entrepreneurship drives the creation of new products, services, technologies, and knowledge, all of which significantly impact communities by effectively and efficiently addressing their needs (Urban & Maswabi, 2021). The ability to learn quickly and adapt to changing environments is closely linked to

entrepreneurial success, as it fosters the development of new ideas and innovative solutions to problems and opportunities (Bauman & Lucy, 2021; Blesia et al., 2021). This dynamic process of learning and creativity is essential for generating business ideas that can be transformed into successful ventures. Entrepreneurship also requires constant engagement with the market to identify opportunities for improvement and innovation. This involves listening to consumers, observing market trends, and continually seeking ways to enhance existing products or create new ones (Ncube & Lekhanya, 2021). Therefore, targeted training and education can cultivate the creativity and entrepreneurial skills needed to generate business ideas. For instance, TVET colleges have a critical role in developing this creative mindset, depending on their readiness and the effectiveness of their entrepreneurship programmes (Keelson et al., 2025). By nurturing creativity, these institutions can better prepare students to identify and capitalise on business opportunities, thereby contributing to economic growth.

The importance of Entrepreneurship Education

Doran, McCarthy, and O'Connor (2018) contend that entrepreneurship is essential to the economics of both nations and the global community. According to Bersouli et al. (2024), entrepreneurship and the development and assistance of small business ventures are essential for a nation's economic and social welfare, and entrepreneurship education can foster an entrepreneurial spirit that propels an organisation to new heights. Ayonmike and Okeke (2020) suggest that the scope of entrepreneurial education is broad, encompassing the abilities that can be imparted and the traits that can be developed in people to bring fresh, creative ideas to life. Mbete (2021) found that entrepreneurship education equips students with practical skills and a comprehensive understanding of business outcomes, organisations, and their interplay with socio-economic factors (Msosa, 2023).

In their paper on vocational and technical education, Ayonmike and Okeke (2020) discovered that business studies taught in elementary school have a positive impact on many students who may be highly interested in considering entrepreneurship after completing the corresponding business management courses. According to Chan, Chui and Yip (2019), entrepreneurship education programs in secondary schools in Hong Kong were successful in enhancing students' awareness of the business world and in helping them improve their personal attributes. Fayolle (2018) found that entrepreneurship education programs in the US and Europe are highly beneficial. According to Forcher-Mayr and Mahlknecht (2020), South African TVET institutions did not receive sufficient funding to equip young people for entrepreneurship adequately. Understanding individual biographical factors such as age, gender, and educational background may further enhance the effectiveness of entrepreneurship education, according to Khuboni, Msosa, and Ntshangase (2023). They discovered that more effective entrepreneurial outcomes could result from programme customisation to match the unique requirements and features of diverse student populations.

A study by Ramani, Solomon, and Alabduljader (2018) recognises the value of entrepreneurial studies. It proposes that up to 1,200 post-secondary institutions in the USA alone should offer courses in small business and entrepreneurship, thereby generating employment opportunities. The United States has a low unemployment rate of less than 5%, which can be attributed to the high quality of entrepreneurial education provided by universities, high schools, and vocational colleges in the country's economy (Saboori et al., 2022). Ramani et al. (2018) contend that if other nations could benefit from entrepreneurship education, there would be no reason why South Africa couldn't implement comparable initiatives (Cechvala & Ganson, 2024). According to Doran et al. (2018), promoting entrepreneurship education in society may increase people's desire to launch their businesses. Similarly, Kim, Kim, Lee, and Joung (2020) note that before the colleges become a waste of time, there is an urgent need to re-evaluate the level and substance of the entrepreneurial education provided by the enormous TVET. This is necessary for a truly inclusive economic revolution to occur in South Africa. South Africa may find a solution to the growing need to update or re-evaluate the entrepreneurial programs offered by TVET universities (Gamede & Uleanya, 2019).

Job opportunities will result from the business transformation that TVET colleges may help bring about (Kana & Letaba, 2024). Many young people in most African countries are unemployed, and stimulating their business mindset through entrepreneurial education and behaviour would, realistically, produce more jobs (Di Vaio et al., 2022). In the majority of South Africa, entrepreneurship is a major force behind economic expansion and welfare (Camacho-Miñano et al., 2017). Bauman and Lucy (2021) argue that entrepreneurship education enhances economic development across various economies by increasing commercial activity.

Entrepreneurship education included in higher education packages rekindles students' interest in launching independent small enterprises that may eventually become part of the mainstream economy. These small businesses may make a substantial contribution to a nation's economic development, and South Africa is making great efforts to encourage young people to start their own small businesses (Ncube & Lekhanya, 2021). As part of the Enterprise Development Department's efforts to promote entrepreneurship, particularly among women, young people, and residents of rural areas, the South African government has recognised the value of entrepreneurial education and established entrepreneurship schools across the nation, with the first ones located in the provinces of Gauteng and the Western Cape, respectively. Additionally, the department has designated several TVET colleges to launch Centres for Entrepreneurship (CfE) initiatives. The goal of this program is to increase the proportion of alumni who are keen on launching enterprises. The majority of Africans, young and old, continue to hold the view that working for the government or big businesses is the safest and most secure career path. When it comes to launching their businesses, the majority of South Africans have very low levels of self-reliance and self-confidence, according to Thakhathi (2019). They believe that some TVET colleges disregard the entrepreneurship instruction they provide. However, Sebola (2022) contends that the family career culture prevalent at the time and the educational backgrounds of the majority of previously marginalised individuals are to blame for citizens' aversion to entrepreneurship. One could argue that the Apartheid regime's Bantu education system is to blame for South Africa's dearth of entrepreneurship (Thakhathi, 2019).

As previously discussed, entrepreneurship education is crucial because it can play a major role in a nation's economic development, help address a range of social evils, including unemployment and poverty, and lower crime rates (Kana & Letaba, 2024). The best way for public TVET colleges to develop and produce entrepreneurs is through entrepreneurship programs that instil the right mindset, values, and a culture of entrepreneurship. This involves engaging primary, secondary, and university educators and students to guide them towards self-reliance and a career path (Kim et al., 2020). Entrepreneurship education is recognised as a strategic intervention by educators to equip learners with essential entrepreneurial qualities and skills necessary for success in the business world. Recent studies support that entrepreneurship education aims to inspire learners to become innovative entrepreneurs and expose them to real business environments, enabling them to gain practical experience (Liguori & Winkler, 2020; Nabi et al., 2017). TVET colleges have integrated entrepreneurship into their curricula, requiring students to engage in practical tasks, such as visiting businesses and conducting assessments, in South Africa. However, concerns arise that students may focus more on obtaining marks than on genuinely learning from the experience, casting doubt on the effectiveness and authenticity of this educational approach (Zulu, 2019).

Entrepreneurship education has been described as a structured process designed to impart essential entrepreneurial competencies—skills, concepts, and awareness—that individuals use when starting and developing their ventures (Lackéus, 2020). This field of education is increasingly recognised worldwide as an important academic field and a respected career option among youth, who are drawn to the opportunities it offers (Acs et al., 2020). TVET colleges are well-positioned to deliver this education, particularly to students who show enthusiasm for entrepreneurship. Research emphasises that teaching learners to aspire to become job creators rather than job seekers is crucial in fostering a strong entrepreneurial culture in society (Fayolle, 2018). Historically, large corporations and the public sector have dominated the South African economy. However, post-apartheid economic reforms have led to significant growth in the informal sector, particularly small and medium enterprises

(SMEs) (Fotoyi, 2026). This shift led to growth in the informal sector, epitomised by an increase in small and medium-sized enterprises (SMEs) (Fatoki, 2019).

3. Methodology

A quantitative descriptive research design was used for this investigation. A descriptive research design was used to describe the phenomenon under investigation (Creswell & Creswell, 2017). Thus, creating a more holistic picture of a phenomenon is one of the major benefits of a descriptive research design. In addition, this study adopted a positivist research paradigm. The positivist paradigm tries to establish a generalisation of objective truth to either prove or disprove any theory or belief (Saunders, Lewis, & Thornhill, 2019). The sampling frame for this study comprised 1112 lecturers from three colleges. Data collection was done through a self-administered questionnaire in 2016. Cluster sampling was used to identify the respondents. In this sampling technique, the sampling unit comprises a group of natural members of a population rather than a single member, as is normally the case with other sampling techniques (Saunders et al., 2019). The cluster sampling technique was used: three colleges were randomly selected as representatives of the clusters, followed by random sampling. Random selection and identification of respondents constitute the 'random sampling method'. To select 106 lecture respondents, a simple random sampling method was used within each of the three strata. A self-administered questionnaire was provided for respondents to complete at their convenience. Descriptive statistics were performed using SPSS.

4. Results and Discussion

Demographic Profile of Respondents

As shown in Table 1, female respondents made up a small majority of respondents. Out of the 106 participants who disclosed their gender, 49% were men and 51% were women. Given the minimal disparity between the genders, both were equally represented in the study. The majority of the participants worked as regular lecturers. Of the 106 participants, 5.7% were in senior lecturing roles, while 94.3% were lecturers. As shown in Table 1, 4% of the academic staff worked part-time, while the remaining 96% were full-time employees.

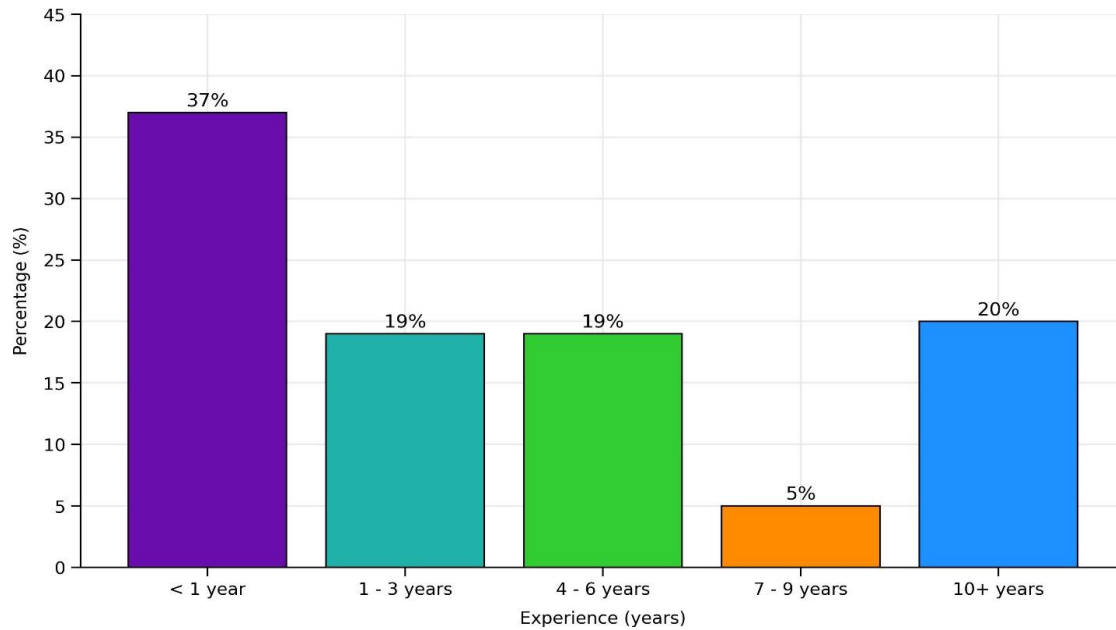
Table 1. Demographic profile of respondents

Description	Frequency	Percent
Male	51	49
Female	55	51
Full-time	102	96
Part-time	4	4
Lecturer	100	94.3
Senior Lecturer	6	5.7
Total	106	100

Source: Authors' construction

Years of Experience

The purpose of this section was to ascertain how long the participants had been lecturers. Figure 1 displays the distribution of their lecture expertise and years of service.

**Figure 1.** Years of experience

Source: Authors' construct

The majority of participants, as seen in Figure 1, were novice lecturers with less than a year of experience (37%). Lecturers with at least 10 years of experience, representing 20% of the participants, followed this group. One-to-three-year-experienced lecturers made up 19% of the participants. Lecturers who had worked for 4-6 years also contributed 19% to the sample. Lecturers with seven to nine years of experience were the least represented category; only five (5%) of the participants belonged to this group. This may indicate that the majority of the lecturers were inexperienced with TVET college programmes, particularly in entrepreneurship. The reality is that any work requires experience, and the fact that more lecturers are known to be less experienced suggests that the final product would be only partially developed.

Entrepreneurship Offerings at TVET Colleges

A descriptive analysis was conducted to ascertain lecturers' perceptions across various campuses regarding entrepreneurship issues in TVET colleges. The following discussion examines each objective in detail, relating it to the items or various statements posed to the respondents. The first objective sought to determine entrepreneurship offerings at TVET colleges. "Entrepreneurship offering" refers to entrepreneurship courses taught at a specific college or university. This integration becomes crucial when considering how entrepreneurship education fits within the overall curriculum of these universities. The majority of entrepreneurship education courses offered at TVET colleges use fairly traditional approaches. As noted by Mustapha, Evangelista, and Marir (2023), educational institutions are increasingly involved in knowledge dissemination, and guest lectures and classroom discussions are common practices. Ghafar (2020) argues that the stories entrepreneurs themselves build require more attention. Each participant was asked to list as many subjects as possible that their department offered, of which they were aware, to obtain a general idea of what their department had to offer. Table 2 below tabulates these themes. Entrepreneurship was the most frequently listed subject, as seen in Table 2. 57 of 106 respondents (54%) reported that their departments offer entrepreneurial subjects. 19 out of 106 respondents (18%) stated that their departments offered New Venture Creation as a subject. The third- and fourth-most common subjects were accounting and business management, accounting for 16% and 15% of respondents, respectively. Four subjects accounted for 70% of the 158 hits on the frequency distribution of subjects (as indicated by the cumulative % in Table 2).

Table 2. Subjects offered at the Durban area TVET colleges

Subject	Frequency	Percent (n=106)	Percent (n=158)	Cumulative % (n=158)
Entrepreneurship	57	54	36	36
New Venture	19	18	12	48
Accounting	17	16	11	59
Business Management	16	15	10	69
Financial Management	12	11	8	77
Economics	10	9	6	83
Management	5	5	3	86
Computer	4	4	3	89
Marketing	3	3	2	91
Mathematics	3	3	2	92
Office Practices	3	3	2	94
English	3	3	2	96
Food and Hospitality	3	3	2	98
Travel and Tourism	2	2	1	99
Sales Management	1	1	1	100
Total	158		100	

Source: Authors' construct

Further inquiry was made to assess whether entrepreneurship was offered as an individual subject or incorporated into other subjects to provide further clarity on the subject matter. As shown in the above table, 77% of the 106 participants indicated that at least one course or subject offered an entrepreneurship focus but had a business focus that differed from entrepreneurship. Of the six suggested in Table 3, this is the most commonly used entrepreneurship education method. The main initiative towards entrepreneurship education was offering multiple courses focusing on entrepreneurship. This conclusion is supported by the 73% of participants who indicated it. It was also observed that 38% of the 106 participants' departments offer the NGV certificate in entrepreneurship. The least commonly offered entrepreneurship education packages were the NATED diploma, short courses, and infrequent seminars, which accounted for 32%, 31%, and 26% of the 106 participants, respectively. The results presented in Table 3 are consistent with current research on TVET offerings, as suggested by Sebola (2022). Liao, Nguyen, and Caputo (2022) suggest that TVET curricula should emphasise entrepreneurship in all fields, aligning with the DHET recommendations. It is the role of the TVET committee within the DHET to ensure the successful implementation of the entrepreneurship modules in TVET curricula (Ncube & Lekhanya, 2021).

Table 3. Entrepreneurship offerings at the Durban area TVET colleges

Entrepreneurship offerings	Frequency	Percent (n=106)	Percent (n=294)	Cumulative % (n=294)
At least one course that focuses on other business activities also covers entrepreneurship.	82	77	28	28
Entrepreneurship is taught in at least one dedicated course, module or elective.	77	73	26	54
NCV certificate in entrepreneurship	40	38	14	68
NATED diploma in entrepreneurship	34	32	12	79
Short courses in entrepreneurship	33	31	11	90
Occasional seminars in entrepreneurship	28	26	10	100
Total	294		100	

Source: Authors' construct

Among other things, such support should include curriculum harmonisation, approval of learning materials for the entrepreneurship module, monitoring and evaluation, report compilation, and lecturers' upskilling through workshops, training sessions, etc. Two major programs are offered at TVET colleges: the National Certificate Vocational (NCV Levels 2-4) and the NATED (N2-N6). For entry into NATED, one needs a grade 12 pass, while for the NCV, one only requires a grade 9 pass (Department of Higher Education and Training, 2020). There are seven subjects in NCV: three are foundational, and the remaining four are vocational/practical. The content and approach of these two are different. The NATED curriculum, unlike NCV, places greater emphasis on theoretical aspects (McGrath & Yamada, 2023).

Content Delivery

Table 4 presents the methods respondents used to provide entrepreneurial skills training to students. From the table below, respondents were asked to select as many methods as possible for frequency counts. All the respondents made 453 picks, or hits. Table 4 shows that formal lectures were the most popular method for delivering content. 21% of the 453 hits for this parameter (content delivery method) were lectures. Close to 91% of respondents who made this choice reported using this technique, among others. Thus, it is safe to conclude that this approach is the primary method of delivery. Personal projects were the second-most popular strategy for producing materials. This particular technique combined a teaching approach with a lecture. Orals and group projects were mentioned among other popular teaching approaches. These methods account for 9.5% and 9.3% of the 453 hits for this parameter, respectively.

Table 4. Content delivery methods

Content delivery method	Frequency	Percent (n=106)	Percent (n=453)
Lecturers	96	90.6	21.2
Individual Projects	48	45.3	10.6
Group Projects	43	40.6	9.5
Student oral presentation	42	39.6	9.3
Role playing	36	34.0	7.9
Local case studies	35	33.0	7.7
Prescribed text	33	31.1	7.3
Readings	31	29.2	6.8
Business simulations	28	26.4	6.2
Essays	21	19.8	4.6
Guest speakers	14	13.2	3.1
Entrepreneurs interviewed by students	12	11.3	2.6
Multimedia exercises	7	6.6	1.5
International case studies	4	3.8	0.9
Videos	3	2.8	0.7
Total	453		100.0

Source: Authors' construct

Video and international case studies accounted for less than 1% of all hits for this characteristic. Four lecturers used international case studies as their primary teaching method, whereas only three respondents relied on video materials (see Table 4 above). The findings indicate that the most effective methods used include teaching, personal projects, and oral presentations. International case studies and films are at the bottom of the list. As noted by Ncube and Matlala (2024), the results coincide with the findings indicating that conventional teaching approaches, primarily lectures, were employed in TVET colleges in Africa for entrepreneurial education. However, according to Camacho-Miñano et al. (2017), current TVET colleges are gradually moving away from a lecture-based approach towards a knowledge-sharing model that involves guest speakers and class discussions. Sebola (2022) argues that we should prioritise entrepreneur narratives grounded in practical experience.

Challenges that TVET Colleges are Facing in Offering Entrepreneurship as a Programme

This study also sought to determine the challenges participants faced in their colleges when implementing entrepreneurship programmes. The respondents were provided with a list of 5 possible problems to choose from, each representing a problem facing their institutions. Table 5 displays the results. Curriculum development has been the primary problem in implementing entrepreneurship programmes in TVET colleges, as shown in Table 6 below. Curriculum development, as a significant challenge, accounted for 32 of 155 occurrences (the largest number). Entrepreneurial efficacy of students was the second-highest-ranked major problem associated with the implementation of entrepreneurship programs in these institutions. The involvement of college management in providing an entrepreneurship programme does not pose a significant challenge.

Table 5. Challenges faced by TVET colleges in offering entrepreneurship education

Challenges	Frequency	Percent (n=106)	Percent (n=155)
Curriculum development	50	47	32
Students' entrepreneurial efficacy	47	44	30
College management buy-in	27	25	17
Lecturers' entrepreneurial efficacy	19	18	12
Operational and pedagogic impediments	12	11	8
Total	155		100

Source: Authors' construct

Lecturers' entrepreneurial efficacy and operational and pedagogical problems ranked lowest among the challenges faced. Educators/lecturers' attitudes toward a subject not only influence their decision to teach it and their teaching performance, but also affect students' attitudes toward the subject and their achievement in the class (Idris et al., 2019). These results are corroborated by Williams (2021), who identifies curriculum development as the major challenge facing TVET colleges in South Africa and across the African continent. The focus of TVET colleges is supposed to be on developing curricula for entrepreneurship education (Buthelezi, 2018; Mahlangu & Mtshali, 2024). Research should drive the rationale for developing and revising syllabi (Peschl et al., 2023). However, the syllabi presently prepare students for the "take-a-job" rather than the "create-a-job" approach.

5. Conclusions

Based on the findings, it is evident that most TVET colleges use lecturing as their primary teaching method for delivering entrepreneurship education. The study further showed that challenges such as "lecturer's entrepreneurial efficacy" and "operational and pedagogic impediments" are among the least encountered in the institutions. Therefore, it is recommended that TVET colleges develop entrepreneurship curricula that involve scholars and practitioners to integrate entrepreneurship concepts from both industrial and academic perspectives. In this way, the curriculum will equip learners with the skills to facilitate self-employment in the future. The curriculum in this case needs to instil interests, skills, attitudes, and appreciation through innovation and intellectual engagement. The results showed that TVET colleges are able to conduct entrepreneurship training due to the availability of skilled personnel and competent management within the institutions. However, it is also

important to note that there are some minor challenges in such TVET colleges. These include poor funding for teaching materials, low financial incentives, limited management involvement in conducting entrepreneurship training, and reluctance by some students towards the courses. Despite the positive findings regarding entrepreneurship education in TVET colleges, this study faces several limitations. First, the research took a supply-side perspective, analysing institutional preparedness, teaching methods, and instructors' competencies, without considering students' or graduates' experiences in entrepreneurship education, as per the demand-side perspective. This makes the findings one-sided and limited, as they focus solely on the supply side. Second, the use of a self-reporting approach in data collection may be biased, as respondents are inclined to provide more positive feedback about the institution, thereby distorting the actual situation on the ground. Furthermore, the study did not compare various teaching approaches in terms of effectiveness and efficiency in entrepreneurship education.

Future research should focus on mixed-methods research, in which qualitative methods complement quantitative methods by incorporating perspectives from students and graduates. This approach can help in comprehensively analysing the impact of entrepreneurship education. In addition, longitudinal research could be considered, as it can track the evolution of the entrepreneurship skills learners acquire throughout their careers. Lastly, a comparative study would be helpful, as it can evaluate the effectiveness of innovative methods relative to conventional ones.

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Data Availability Statement: Data can be provided on request.

Author Contributions: Conceptualisation: *Ntokozo GWALA*; methodology: *Steven Kayambazinthu MSOSA*, *Ntokozo GWALA*; data analysis: *Bright MHLONGO*, *Steven Kayambazinthu MSOSA*, writing—original draft preparation: *Ntokozo GWALA*, *Steven Kayambazinthu MSOSA*, writing; review and editing: *Bright Mhlongo*, *Steven Kayambazinthu MSOSA*; visualisation: *Steven Kayambazinthu MSOSA*, *Ntokozo GWALA*. All authors have read and agreed to the published version of the manuscript.

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EDUCATIONAL LEADERSHIP FOR PROMOTING SUSTAINABLE DEVELOPMENT: CASE OF THE FACULTY OF EDUCATION AT EASTERN CAPE UNIVERSITY, SOUTH AFRICA**Ntando Elliot Mpahla***Walter Sisulu University, South Africa**E-mail: nmpahla@wsu.ac.za**Received 15 March 2026; accepted 10 June 2026; published 30 June 2026*

Abstract. This study explored leadership strategies that enhance sustainability competence among education students at a selected university in the Eastern Cape. The study used a qualitative research methodology. Using a purposive sampling strategy, data were collected through semi-structured interviews with 12 educational leaders. Document analysis from institutional policies and sustainability initiatives also formed part of the data collection. Thematic analysis was employed to identify key themes related to effective leadership practices, challenges, and opportunities for fostering sustainability competence. Findings revealed that academic leaders play a critical role in embedding sustainability into the curriculum and promoting a culture of sustainability among students. Participants emphasised the importance of collaborative leadership and highlighted the need for ongoing professional development in sustainability practices. Barriers identified included insufficient resources and varying levels of staff commitment. The study concludes that implementing inclusive and participatory leadership strategies is essential for developing sustainability competence in future educators. Recommendations included providing targeted professional development opportunities, enhancing collaboration between departments, and leveraging community partnerships to support sustainability initiatives. This research contributes to the knowledge base by offering insights into the role of educational leadership in advancing sustainability in higher education. It emphasises the need for educational leaders to adopt transformative leadership practices aligned with the Sustainable Development Goals. Transformative leadership shapes a more sustainable educational environment and prepares students to address future sustainability challenges effectively.

Keywords: education; leadership; sustainability; development; barriers

Reference to this paper should be made as follows: Mpahla, N.E. 2026. Educational leadership for promoting sustainable development: case of the faculty of education at Eastern Cape University, South Africa. *Insights into Regional Development*, 8(2), 204-213. <http://doi.org/10.70132/w9365722254>

JEL Classifications: A20

1. Introduction

Sustainable development has become a central objective for higher education, prompting universities to integrate sustainability principles into their missions, curricula, research, and community engagement (Aung & Hallinger, 2022). In this context, educational leadership within faculties of education is pivotal for shaping pre-service and in-service teacher education that can catalyse sustainable practices in schools and communities (Salajegheh et al., 2020; Aung & Hallinger, 2022). This study therefore focuses on how leadership structures, governance, and faculty development converge to embed education for sustainable development (ESD) and sustainable development goals (SDG)-aligned outcomes within teacher education programs in the Eastern Cape region (Hatmansyah et al., 2021; François, 2022; Razak & Sanusi, 2023; Alharthi, 2024).

The Eastern Cape offers a compelling setting to explore how faculties of education respond to sustainability mandates amid resource and context-specific constraints. Prior work highlights that effective sustainability leadership requires aligning institutional missions with sustainability goals, fostering shared vision, and enabling distributed leadership across academic and administrative domains Aung & Hallinger (2022). However, evidence on concrete leadership practices, capacity-building for sustainability, and the translation of SDG commitments into teacher education curricula at Eastern Cape institutions remains limited. This notion underscores the need for empirical inquiry that attends to local governance, professional development, and cultural factors (Hatmansyah et al., 2021).

Guided by a synthesis of leadership for sustainability in higher education and the particularities of teacher education, this study aims to map current leadership practices related to sustainability within the Faculty of Education at the Eastern Cape University. The study also sought to analyse how educational leadership supports or constrains the integration of sustainable development into pre-service and in-service teacher education. Lastly, the study identified opportunities to strengthen capacity for sustainable leadership and practice within the faculty. By integrating theoretical insights with local governance and practice, the research contributes to understanding how educational leadership can drive sustainable development in a regional African university context (Aung & Hallinger, 2022; Yue et al., 2021; Uygur et al., 2020; Razak & Sanusi, 2023).

2. Literature Review

Sustainability leadership in higher education emphasises embedding sustainable values into the governance, administration and teaching, with an explicit aim to influence broader societal resilience (Aung & Hallinger, 2022). A scoping review framework identifies the central proposition that leadership must reorient institutional practices toward SDGs and long-term stewardship rather than short-term gains (Aung & Hallinger, 2022). This body of work argues that sustainability leadership operates through reframing institutional purpose and mobilising stakeholders, with implications for performance indicators, governance, and culture (Aung & Hallinger, 2022).

From this perspective, related higher education scholarship reinforces that leaders must cultivate an organisational climate that supports sustainability integration across domains (policy, teaching, research, operations). This also notes that leadership development should be designed to deepen the density of sustainability leadership across the university (Aung & Hallinger, 2022; Awodiji et al., 2023). Variants of sustainability leadership theory emphasise distributed leadership and stakeholder collaboration as mechanisms to sustain change and embed education and sustainable development (ESD) in institutional routines (Aung & Hallinger, 2022).

One significant aspect is that principal and teacher leadership preparation are repeatedly identified as pivotal levers for implementing ESD within school systems. In higher education, this translates to preparing educational leaders who can model and institutionalise ESD across faculties and teacher education programs (Adams et al., 2020; Francois, 2022; Aung & Hallinger, 2022). Adams et al. (2020) examine ESD in Malaysia, where indicators suggest that principal leadership preparation programs can contribute to high-performing school leadership when designed with competency standards and diverse development modalities. This understanding has implications for university-based educational leadership faculties tasked with preparing principals who can lead ESD-inclined schools (Adams et al., 2020; Barong & Musico, 2024). While focused on Malaysia, the study underscores the transferability of design features, such as competency-based standards, field experiences, and opportunities for leadership practice. These are elements relevant to the Eastern Cape University's Faculty of Education, aiming to promote sustainable development through leadership preparation (Adams et al., 2020).

Within universities, leadership development for sustainability should emphasise both instructional leadership for ESD and transformational leadership to facilitate change in school-university partnerships and curriculum reform (Francois, 2022; Aung & Hallinger, 2022). In looking further, the Namibian ESD study highlights how ESD acts as a catalyst for transformational leadership among school principals, implying that university-led professional

development can empower principals to enact sustainability-oriented transformations at scale (Kanyimba et al., 2015). Taken together, the contexts of Malaysia and Namibia suggest that Faculty of Education leaders in the Eastern Cape should prioritise capacity-building programs that blend instructional leadership for ESD with transformational opportunities for emerging and practising leaders.

Out of this context, instructional leadership remains central to integrating sustainability into teaching and learning. The stated view holds that the principal perspectives on sustainability education underscore the essential role of principals' instructional leadership in implementing education for sustainability. The notion, therefore, aligns three classic instructional leadership dimensions, such as mission, program and climate, with ESD goals (Francois, 2022). Similarly, García-Martínez et al. (2020) posit that principal trajectories emphasise the need to balance pedagogical leadership with managerial demands, highlighting the contextual nature of instructional leadership and its impact on school improvement and sustainability outcomes.

Transformational Leadership

Transformational leadership has the potential to catalyse ESD by expanding shared responsibility, communication, and change management capabilities among principals (Kanyimba et al., 2015). This stance argues that transformational and distributed leadership facilitate the cultural and organisational shifts required for sustainable development in education (Aung & Hallinger, 2022). In sum, leadership within the Faculty of Education should cultivate instructional leadership competencies that specifically advance sustainability literacy, curriculum integration, and learning environments conducive to SDG-aligned teaching and assessment, while also fostering transformational and distributed leadership to support systemic, cross-campus, and cross-sector sustainability initiatives (García-Martínez et al., 2020; Francois, 2022; Aung & Hallinger, 2022).

Partnerships, Policy, and Governance: University–District/School Collaboration and SDG Realisation

Among the ESD aspects are partnership, policy and governance. In this context, effective leadership coordination at the university level is essential for cultivating sustainable, long-term partnerships that advance leadership development and sustainability outcomes (Coleman & Reames, 2018). Notably, the Eastern Cape political and governance landscape provides context for policy implementation challenges. Kota et al. (2018) describe governance dynamics in the Eastern Cape's education sector, illustrating how institutional instability, political interference, and financial governance issues have historically impeded performance and oversight of resources. For a Faculty of Education aiming to promote SD through leadership, these governance realities imply a need for resilient leadership preparation, governance literacy, and policy-alignment strategies that account for local political economy factors. Collectively, this argument underpins the view that strong leadership development, governance literacy, and policy alignment are essential to promoting sustainable development within Eastern Cape higher education.

Contextual Considerations: Eastern Cape, South Africa, and Related Implications

Provincial governance of education in the Eastern Cape is characterised by political and administrative complexities that influence resource distribution, accountability, and leadership stability. These realities necessitate leadership development programs within the Faculty of Education that explicitly address governance competencies, stakeholder engagement, and change management in resource-constrained, dynamic policy contexts (Kota et al., 2018). This notion emphasises that transformative leadership for sustainability in developing contexts requires adaptability to local conditions, culturally responsive leadership, and explicit attention to equity, access, and inclusion. This means that leadership models emphasising collaboration, shared vision, and professional learning communities are most effective when tailored to local contexts and policy environments (Kanyimba et al., 2015; García-Martínez et al., 2020; Huong, 2020; Karoli & Upadhyaya, 2024).

For the Eastern Cape setting, Adams et al. (2020), Francois (2022), Aung & Hallinger (2022) suggest that it is best to design and implement leadership preparation programs for the Faculty of Education that integrate

sustainability content with practical leadership experiences, including school partnerships and field-based projects aligned with SDGs. This should be followed by building capacity for distributed and transformational leadership within the faculty and in partner schools/districts to sustain ESD initiatives beyond individual champions (Aung & Hallinger, 2022). Lastly, the setting should develop governance- and policy-aware leadership training that addresses the Eastern Cape's governance context, resource constraints, and accountability structures to ensure feasible and durable sustainability programs (Kota et al., 2018).

The synthesis emphasises the convergence of instructional, transformational, and distributed leadership as vehicles for embedding sustainability within teacher education and university leadership in the Eastern Cape context. The literature suggests that leadership development in faculties of education should be designed to cultivate capabilities for curriculum integration of sustainability, partnerships with schools/districts, and governance-savvy change management, all within the local policy and governance environment of the Eastern Cape (Kota et al., 2018), (Kanyimba et al., 2015; Adams et al., 2020; García-Martínez et al., 2020; Francois, 2022; Aung & Hallinger, 2022). Where sources present competing emphases (e.g., instructional vs. transformational leadership), the review acknowledges context-dependent applicability and suggests integrated leadership development models that combine these modalities to achieve durable sustainability outcomes in higher education and partner schools (García-Martínez et al., 2020; Francois, 2022; Aung & Hallinger, 2022). The references also highlight the importance of partnerships, both for leadership development and for implementing ESD at scale, while recognising governance and policy constraints characteristic of the Eastern Cape context (Coleman & Reames, 2018; Kota et al., 2018).

However, the literature reveals recurring gaps in leadership development that fail to contextualise sustainability content with governance, policy, and local resource realities in the Eastern Cape. More than this situation, there is a need for integrated leadership models that operationalise ESD through instructional, transformational, and distributed leadership in university–district partnerships. There is also limited attention to integrating SDG curriculum and building capacity in teacher-education faculties within the Eastern Cape. All these gaps justify the study's aim to design leadership preparation and capacity-building programs that are governance-aware, integrative across instructional, transformational, and distributed leadership, and oriented toward integrating the SDGs into the curriculum in the Eastern Cape.

3. Research Methodology

The study explored how educational leadership within the Faculty of Education at an Eastern Cape university can promote sustainable development in alignment with the Sustainable Development Goals and local development needs. A rigorous qualitative methodology was employed to capture the meanings, processes, and contextual factors that shape leadership practices and SD outcomes. The approach draws on interpretivist epistemology and a case-study design to illuminate how leadership enactment, policy, and organisational culture influence sustainable development in a specific university context (Kagola & Khau, 2021; Ziduli & Buka, 2023; Nqabeni et al., 2024).

Research Paradigm

Interpretivism served as the philosophical lens for this qualitative study. The aim was to describe what interpretivism entails in the context of this study. Also, how it guides research design, data collection, analysis, and interpretation, and how it relates to the study's theoretical frame and context (Kamara, 2021; Lopes & Vieira, 2021; Mankayi & Cheteni, 2021; Aung & Hallinger, 2022; Olawale et al., 2022; Filho et al., 2023; Filho et al., 2022; Nqabeni et al., 2024).

The paradigm also allowed for reality to be constructed through social meanings as shaped by participants' perspectives and social contexts. In other words, the interpretivist stance posits multiple, contextual realities rather

than a single objective truth, with knowledge co-constructed through interaction between researcher and participants (Nqabeni et al., 2024; (Kamara, 2021; Aung & Hallinger, 2022).

In the Eastern Cape university setting, leadership practices and SD-promoting activities are understood through the meanings leaders, academics, students, and staff assign to those practices, rather than being measured as universal constants (Aung & Hallinger, 2022). This stance led to knowledge generation through understanding lived experiences, social interactions, and cultural norms.

Research Design

A single-site case study was adopted in this study. The essence of adopting a case study was to gain an in-depth understanding of leadership processes and SD outcomes within the Eastern Cape university setting (Nqabeni et al., 2024). The rationale for choosing an Eastern Cape university was to align it with regional scholarship on social transformation and SD in higher education institutions (HEIs), and to capture local governance practices, community engagement, and resource constraints that shape SD efforts (Ziduli & Buka, 2023; Nqabeni et al., 2024).

Population and Sampling Strategy

The population for this study comprised leaders from the faculty of education. A purposive sampling strategy was used to select participants who are knowledgeable about educational leadership and SD initiatives within the Faculty of Education. The participants included one (01) Executive Dean, one (01) Deputy Executive Dean, six (06) Heads of Departments and four (04) Senior Lecturers. The number of 12 selected leadership actors and participants was guided by data saturation. This sampling approach draws on prior qualitative designs that used purposive sampling to gain depth of insight into leadership and SD practices in similar contexts (Ziduli & Buka, 2023; Nqabeni et al., 2024).

Data Collection Techniques

Data was collected through semi-structured interviews and document analysis. The mere purpose was to elicit perceptions, experiences, and interpretations of leadership practices and SD promotion from educational leaders in the faculty of education. An interview guide was informed by the theoretical framework (transformative leadership and SD in HEIs) and prior studies on leadership and SD. Questions explore leadership actions, decision-making, stakeholder engagement, resource allocation, policy alignment with SDGs, measurement of SD progress, challenges, and opportunities. Interviews were conducted in person and via video conference. An audio recording with consent was arranged, and the conversation was transcribed verbatim. A special arrangement was made with the participants to conduct interviews. This arrangement was meant to avoid distraction from their daily work schedule.

The documents analysed comprised sources from Official strategy documents, SD action plans, annual reports, policy briefs, minutes from leadership meetings, curricula related to SD, and internal communications. These documents enabled the researcher to triangulate interview data with formal policies and actual practices; to trace alignment between stated SD goals and enacted leadership. This also helped to build a coherent understanding of leadership roles in SD promotion. In fact, documents are themselves social texts that reflect and shape meaning-making within the university context (Filho et al., 2022; Filho et al., 2023; Nqabeni et al., 2024).

Data Analysis

Data was analysed through thematic analysis. Thematic analysis is a flexible, theory-neutral method for identifying, organising, and interpreting patterns of meaning (themes) within qualitative data. In this study, thematic analysis provided a rigorous, transparent approach to foreground leaders' experiences, perceptions, and practices, while allowing the researcher to surface context-specific factors that shape SD work in the setting under study (Vaughter et al., 2022; Nqabeni et al., 2024; Matandela, Chisale & Matahela, 2025). Through thematic

analysis, the researcher began with open coding to capture salient ideas from the data, then incorporated codes derived from established leadership-for-sustainability literatures to situate findings within broader discourses, while preserving data-grounded meanings from the Eastern Cape context. Such a stance allowed to describe the leadership practices that exist and to interpret how these practices enable or constrain SD progression, including contextual drivers such as the policy environment, resource constraints, and organisational culture (Vaughter et al., 2022; Adhikari & Shrestha, 2023).

The researcher then began by immersing in the qualitative data to understand its breadth, depth, and context. This involved reading and rereading transcripts and documents to become deeply acquainted with the content, tone, and nuances before formal coding begins. Data was coded. Codes were clustered into themes and subthemes, including leadership and governance, resource mobilisation, stakeholder engagement, curriculum alignment with the SDGs, and indicators of SD progress. These themes were checked against data and data types, such as interviews and documents, to ensure coherence and distinctiveness.

4. Results of the Study

The study identified that educational leadership within the Faculty of Education plays a multifaceted role in promoting SD, encompassing strategic vision, governance, capacity building, and curricular alignment. Participants articulated SD as a strategic priority and worked to embed SD aims into program objectives, governance processes, and professional development activities. This pattern aligns with broader scholarship that stresses strategic leadership, governance, and capacity building as central to SD integration in higher education (Arshad, 2019; Adhikari & Shrestha, 2023).

Distributed and relational leadership emerge as salient leadership forms. Participants describe sharing leadership across units, fostering collaboration, and creating structures that enable faculty participation in SD initiatives. This resonates with the understanding that effective SD in HEIs often requires both top-down support and bottom-up, distributed leadership arrangements that empower staff and academics (Adhikari & Shrestha, 2023; Mahere, 2024).

Faculty development and capacity-building activities underpin sustainable SD progress. Participants describe professional development, communities of practice, and mentorship as mechanisms to build faculty capability to teach and research SD-related content. This aligns with literature emphasising capacity building as a critical lever for SD in HEIs (Arshad, 2019; Vaughter et al., 2022; Adhikari & Shrestha, 2023).

Tensions and negotiation between strategic intent and institutional realities are evident. While there is a clear push from leadership to advance SD, practitioners confront competing priorities, limited resources, and varying levels of readiness across departments. Such tensions are widely reported in the HE leadership literature as influential in SD uptake and as requiring adaptive leadership strategies (Adhikari & Shrestha, 2023).

With interviews serving as primary data sources, participants described how SD is positioned as a strategic priority, and how SD aims are embedded into program objectives, governance processes, and professional development activities, and how leadership actions translate into daily practice. This supports the claim that educational leadership in the Faculty of Education performs a multifaceted role in advancing SD. These narratives constitute primary data about leadership cognition, actions, and perceived barriers and opportunities. It is from this perspective that primary data underscore the importance of partnerships, policy alignment, and governance literacy in Eastern Cape contexts.

Documents also served as primary sources that corroborate or augment interview statements. The documents analysed revealed how SD is operationalised in governance, curriculum planning, and capacity-building.

5. Interpretation of results

The results depict educational leadership in the Faculty of Education as a multifaceted driver of sustainable development (SD) in higher education, operating through strategic vision, governance, capacity building, and curricular alignment. This interpretation aligns with a body of scholarship that identifies strategic leadership, governance, and capacity building as central mechanisms for integrating SD into HEIs. The results also highlight distributed and relational leadership as salient, spanning top-down support and bottom-up mobilisation, which is consistent with evidence that SD implementation in HEIs benefits from both centralised endorsement and distributed leadership arrangements. Notably, SD uptake is frequently constrained by resource limitations, departmental readiness, and competing priorities, necessitating adaptive leadership approaches.

6. Discussion

The study examined how faculty leadership, curricular decisions, and leadership practices influence the integration of sustainability principles into teacher education, research, and community engagement. The discussion situates the findings within broader debates on transformative leadership, institutional change for sustainability, and the role of higher education in advancing sustainable development goals (SDGs) in South Africa's Eastern Cape. The synthesis draws on parallels from related literature on leadership, sustainability in higher education, and regional transformation to interpret the implications for policy, practice, and future research (Matser et al., 2022; Nqabeni et al., 2024; Sims et al., 2025).

The discussion highlights that proactive educational leadership at the faculty level is essential to embed sustainable development concepts into curricula, pedagogy, and assessment. It notes that leadership commitment, strategic alignment with SDGs, and capacity-building for staff and students are crucial enablers. These observations align with evidence that leadership and governance structures significantly shape the adoption of sustainability in higher education curricula and practices (Matser et al., 2022). The narrative emphasises that without sustained leadership attention, sustainability initiatives risk fragmentation rather than institutionalisation (Matser et al., 2022).

The study also situates curriculum and pedagogy as vehicles for sustainability. This study argues that curricular reform within the faculty of education should foreground SDG-relevant competencies, including environmentally responsible teaching, community-based learning, and interdisciplinary problem-solving. The argument resonates with literature calling for the reintegration of liberal arts, practical engagement, and transformative learning to prepare teachers for sustainability challenges (Pevnaya et al., 2019; Matser et al., 2022). The discussion therefore notes that meaningful progress requires alignment among curriculum, teaching practice, and assessment methods to embed sustainability outcomes in pre-service educator education (Matser et al., 2022).

In the context of transformative leadership and social responsibility, the discussion frames leadership as a vehicle for social transformation, aligning with the literature on transformative learning and responsible management education. It argues that leadership within the faculty should foster inclusive practices, equity, and social accountability. The nuances acknowledge that achieving genuine transformation requires deliberate, evidence-based strategies rather than aspirational rhetoric, given the historical and socio-economic context of the Eastern Cape (Nqabeni et al., 2024).

As for policy, governance, and systemic conditions, the discussion notes that broader higher education policy reforms, funding arrangements, and institutional restructuring in South Africa influence how sustainable leadership is enacted locally. It references national and regional transformations as context for why leadership must actively navigate governance complexities to sustain SDG-aligned initiatives (Magadana, 2023). It also

acknowledges potential tensions between rapid policy shifts and the pace required to engrain sustainable leadership culture within the faculty (Wotshela, 2020; Magadana, 2023).

7. Conclusion

Educational leadership within the Faculty of Education at Eastern Cape University has the potential to catalyse durable, sustainable development by turning strategic commitments into everyday practice. This is possible through transformative governance, a strong academic core, and sustained university-community partnerships. The convergence of regional necessity and coherent leadership creates a virtuous cycle. Leaders design and fund sustainability-infused teacher education, teachers enact SD in classrooms and communities, and communities experience tangible development benefits. When leadership consistently champions this integration, the Eastern Cape can become a living laboratory where higher education advances sustainability as both a scholarly enterprise and a societal contract.

What is novel about the obtained results is that the study provides contextually grounded evidence from the Eastern Cape demonstrating how a Faculty of Education can operationalise SD through an integrated leadership model. This is underpinned by capacity-building, curricular alignment, and governance-policy alignment, all within a developing country university setting. The study extends and contextualises existing scholarship by offering a localised blueprint that synthesises instructional, transformational, and distributed leadership with explicit attention to governance literacy and school–university partnerships, addressing a gap in region-specific implementation guidance for SD in higher education.

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**YOUTH UNEMPLOYMENT CRISIS AND FOREIGN DIRECT INVESTMENT FLOWS IN SOUTH AFRICA****Emmanuel Aondongusha Asue^{1*}, Rafiu Adewale Aregbeshola²**^{1*,2} *Department of Business Management, University of South Africa (UNISA), Muckleneuk, Pretoria**E-mail: ^{1*}asueea@unisa.ac.za (Corresponding author)**Received 11 March 2026; accepted 15 June 2026; published 30 June 2026*

Abstract. South Africa faces an acute youth unemployment crisis, with nearly 3.8 million young people aged 15 to 24 neither employed nor in education or training. Despite some government interventions such as the Economic Reconstruction and Recovery Plan, the Presidential Youth Employment Initiative, and the National Youth Policy (2020–2030), the youth unemployment crisis persists and deepens. Thus, this study investigates the dynamic relationship between foreign direct investment (FDI) and youth unemployment in South Africa using annual time-series data spanning 1991 to 2024. Applying both the linear Autoregressive Distributed Lag (ARDL) bounds testing approach and the Nonlinear ARDL (NARDL) model, the study tests for symmetric and asymmetric effects of foreign direct investment flows on youth unemployment. Having confirmed the existence of long-run cointegration, the study estimates an ARDL model and finds that youth unemployment increases alongside increasing FDI in the long run in South Africa. This result suggests that capital-intensive FDI inflows do not generate sufficient youth employment opportunities. This study also finds that NARDL asymmetric analysis reveals that positive and negative FDI shocks have divergent effects. In the short run, FDI inflows are more closely associated with youth unemployment than FDI outflows, while dynamic multiplier analysis confirms that FDI withdrawals inflict greater long-run harm. Interestingly, GDP growth rate and inflation rate are robust factors that reduce youth unemployment in both models. These findings call for targeted, labour-intensive, investment-attracting strategies, economic growth-enhancing strategies, and stronger domestic capital formation policies to address structural youth unemployment in South Africa.

Keywords: youth unemployment; foreign direct investment; foreign portfolio investment; gross fixed capital formation; South Africa

Reference to this paper should be made as follows: Asue, E.A., Aregbeshola, R.A. 2026. Youth unemployment crisis and foreign direct investment flows in South Africa. *Insights into Regional Development*, 8(2), 214-233. <http://doi.org/10.70132/b5665547825>

JEL Classification: J21, F21, F32, O40, O55

1. Introduction

Youth unemployment is a socioeconomic crisis and has long been considered one of the biggest threats to the economies of emerging and developing countries. In Africa, one in every three youths aged 15 to 35 is either unemployed or discouraged from seeking employment, while another one in every three is vulnerably employed (AfDB, 2026). The same source identified the main culprit as low economic growth. In that, African countries have only been able to absorb 3.1 million new entrants to the labour market, out of nearly 12 million year-on-year job seekers.

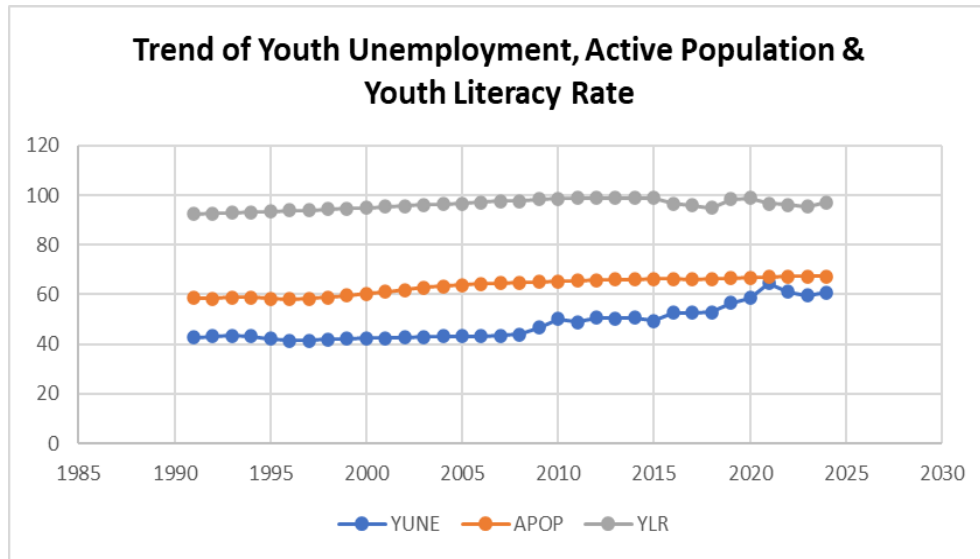
In more specific terms, the discussion of unemployment in South Africa is laden with various biases and inaccuracies. For instance, the official statistics suggest that of the 10.3 million South African youth aged 15 to 24, more than 62% are neither employed nor in education or training (Statistics South Africa - STATSSA, 2025A). The same source suggests that unemployment among those aged 25-34 stands at more than 40%. The Public Servant Association of South Africa (PSA) have difference statistics. According to the PSA (2025),

unemployment among graduates stands at about 33%. CrimePro (2025) puts the youth unemployment rates put the figure at almost 75%. Hence, the youth unemployment population of more than 66% (two in every three youths) can safely be regarded as a heated gunpowder about to explode. The South African evidence suggests that the trend has been consistent, with recent explosive reality (STATSSA, 2025B). Given the socioeconomic and communal maladies associated with youth unemployment, a strategic approach to transposing this strategic national asset into a productive force is unequivocally indispensable.

Truly, erosion of household consumption income, savings, and national investment trajectory is a troubling reality due to the loss of income among the youth; the most troubling are the exogenous and contagion effects of this anomaly. Specifically, rising crime rates, especially among the youth, have continued to raise the ugly head of systemic societal disintegration (Fagbadebo et al., 2024). For instance, more than 85% of murder cases were committed by youth between the ages of 15 and 25 in 2010 (Institute for Security Studies, 2013). The situation has worsened over time (STATSSA, 2025A). Another ugly byproduct of joblessness is the unyielding resentment and attacks on immigrants (xenophobia). This hostile incident has been attributed to anaemic growth, which has tamed the expansion of the national productive frontiers, rendering them incapable of absorbing a teeming workforce. Most xenophobic attitudes are attributable to a lack of job opportunities and perceived competition for available jobs from foreign nationals (Ogunnoiki & Adeyemi, 2019; Olofinbiyi, 2022). This is particularly disturbing, especially because a total of 1,295 incidents of xenophobic attacks, 128,758 displacements, 5648 looted shops, and 696 deaths have been reported between 2008 and 2019 (Xenowatch, 2019). Various sexual assaults were also recorded over the period. There are also cases of protests and xenophobic attacks across South Africa in 2026.

In recognition of the dire consequences of unemployment for the country's socio-economic stability, the government of South Africa has made some efforts to ameliorate youth unemployment. The government has implemented the Economic Reconstruction and Recovery Plan (ERRP, 2020), the Presidential Youth Employment Initiative (PYEI) (2020), and the Government's National Youth Policy (2020 to 2030). The main aim of these initiatives was to increase the proportion of youth employed in the public sector to 25% within the medium term (Zikhali & Matsiliza, 2024). Despite these efforts, the situation appears to be getting worse by the day. The Public Servants Association (PSA) of South Africa (2025) asserts that the youth population is suffering from various structural problems like poor and stagnant economic growth, an ailing educational structure, a mismatch of skills and academic curriculum, failed reform in the labour market, and apartheid spatial planning that led to communal disestablishment.

In realism, the unyielding youth unemployment is systematically underpinned by a poorly calibrated spatial educational system walled within the reckoning segregative anomaly of Whites rule that subsisted for almost half a century. The segregative rule entrenched a mismatch between educational curricula and required skills to power macroeconomic expansion. It is thus somewhat surprising that unemployment rises in tandem with a high youth literacy rate. The situation is compounded by the fact that the aggregate population growth continues to balloon (World Bank, 2025). The same source concludes that youth unemployment rates, youth literacy rates, and the active population (that is, people aged 15 to 64) as a percentage of the total population are progressively high in South Africa. The trends for these statistics are presented in Figure 1 and are measured in percentages.

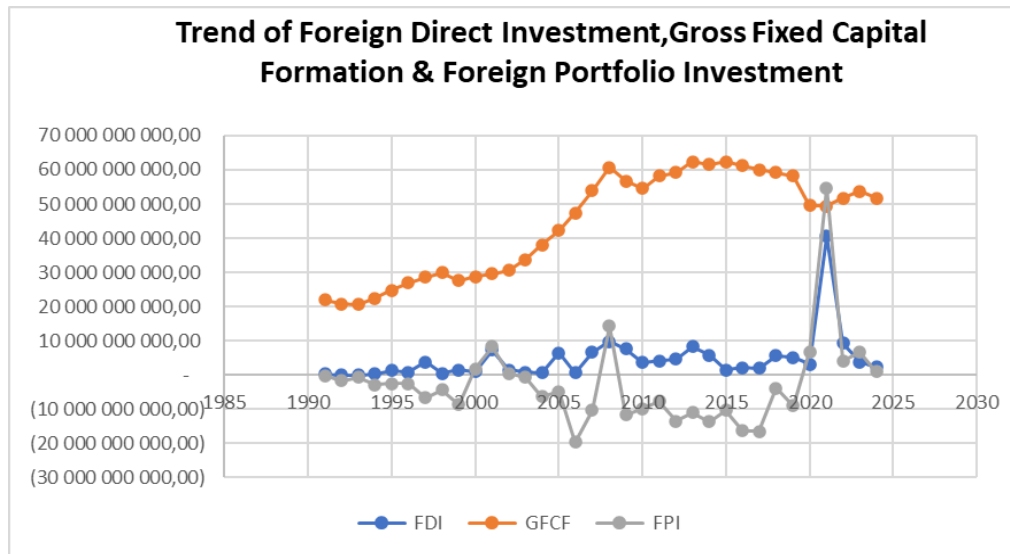
Figure 1. Trends of youth unemployment, active population, and youth literacy rate

Source: Authors' construct based on data from the World Bank (2025)

From Figure 1, the youth literacy rate has consistently remained high since the early 1990s, even before the political emancipation of 1994. The Figure suggests that almost all the youth population in South Africa has passed through formal education, with a notable downward spiral from 2015 to 2018. Though literacy rate picked up again in 2020, it has since been wobbling but still remains above 80%. On the other hand, the active population has consistently increased, possibly due to unrelenting growth in the aggregate population. Conversely, youth employment steadily pitched below 50%, save for 2021 when it broke the medium bracket.

To address unemployment, investments in gross fixed capital formation through huge financial injections are indispensable (Aregbeshola, 2018). The same source suggests that foreign direct investment inflows are a more reliable source of external funding to bridge domestic capital shortages. To this end, FDI can be utilized as a strategic tool to alleviate unemployment. Historical studies have also emphasized this possibility (Keynes, 1936), specifically through the Keynes General Equilibrium Model. For Keynes, unemployment can be solved by investing, including through FDI and domestic investment (Gross Fixed Capital Formation - GFCF).

There is a substantial scholarly attention (both theoretical and empirical) that interrogates the question of how truly foreign investment serves as an engine of job creation. Dunning (1977) and Borensztein et al. (1998) argue that foreign direct investment creates jobs through the establishment of new businesses, spillover effects from inflows, and structural integration between foreign companies and local firms/suppliers. On the contrary, critics argue that, because foreign direct investment is more capital-intensive in resource-rich countries, such as South Africa, it substitutes local labour and leads to structural unemployment among low-skilled and young people (Rodrik, 2016). Foreign portfolio investments, which are speculative in nature, can also be seen as another complicating factor, since their volatility can cause financial shocks to the real economy, leading to negative effects on the employment trajectory (Adegboye et al., 2020). The interaction of FDI, FPI and GFCF is depicted in Figure 2.

Figure 2. Trends Analysis of FDI, FPI and GFCF in South Africa (1990 to 2024)

Source: Authors' construct based on data from the World Bank (2025)

According to Figure 2, FDI inflows to South Africa have been disappointing since 1994. It must be said, however, that the country reached its peak attractiveness sometime in 2008 and somewhat in 2013. Aside from these outliers, the inflow of FDI to the country has largely been anaemic. Given its nature, foreign portfolio investments have been chaotic and conspicuously erratic. It reached its peak in 2006 and its lowest point in 2021 due to weak appetite for emerging-market equities during the COVID-19 period. Expectantly, the GFCF has remained steady and then receded since 2020.

The South African economic landscape offers a particularly instructive context for examining these dynamics. Despite significant liberalization efforts and integration into the global marketplace since the democratic transition in 1994, the country has failed to translate investment inflows into meaningful and sustained employment gains, especially for young people. It is on record that South Africa is the second-largest recipient of cumulative FDI stock in Africa, just trailing behind Nigeria (Joshua et al., 2022; Haudi & Yoyok, 2020; Udi et al., 2020). The disconnection between GFCF and the steady inflow of FDI as drivers of economic growth, and by extension, employment opportunities, invokes scientific investigation. This is the major motivation for this study.

Empirically, the literature on the investment-employment nexus in South Africa and other economies has employed linear estimation methods that assume that positive and negative investment shocks have symmetric effects on unemployment (Phiri, 2014; Alalawneh, 2020; Karimov et al., 2020; Pasara & Garidzirai, 2020). However, this assumption is theoretically implausible in light of empirical evidence of asymmetric labour-market responses, downward wage rigidities and non-linear responses of enterprises to investment shocks (Shin et al., 2014). Ignoring asymmetry could lead to incorrect inferences and policy conclusions.

Our study seeks to overcome this shortcoming and therefore apply the linear ARDL bounds testing technique advanced by Pesaran et al. (2001) and the Nonlinear ARDL (NARDL) model propounded by Shin et al. (2014). By decomposing FDI into positive and negative partial sums, the NARDL model allows us to test whether the

contractions and expansions in FDI and other macroeconomic variables have different effects on youth unemployment in the short and long runs. This two-pronged approach provides a more policy-relevant description of the investment-unemployment relationship in South Africa.

Thus, the remainder of this paper is organized as follows: Section 2 describes the materials and methods, including the background theory and the data and econometric models used. Section 3 clearly presents and discusses the results, and Section 4 presents the policy implications and a conclusion.

2. Materials and Methods

2.1 Theoretical Framework

This research builds on a combination of economic theories that link up the variables that are relevant for this study. First, the classical investment-employment relationship, based on the neoclassical production function model, assumes that investment (local and foreign) increases an economy's productive capacity, raises labour demand, and ultimately lowers unemployment (Mankiw et al., 1992). In this approach, FDI and gross fixed capital formation (GFCF), a proxy for domestic investment, directly expand the capital stock, raise national output and generate jobs. The Ownership, Location, and Internalization (OLI) framework proposed by Dunning (1977) provides further detail on the rationale for multinational enterprises' foreign investment and the potential employment effects. Second, Okun (1962) and Phillips (1958) provide two distinct theoretical foundations for inverse relationships between unemployment and the economic growth rate, and between inflation and the economic growth rate, respectively. In addition, inflation is supported by the monetary transmission literature, which holds that inflation reduces real income levels, leads to mispriced investment prices, and, when combined with monetary policy, lowers aggregate output and employment.

Again, Keynes (1936) argued that aggregate demand components are key to economic growth, which in turn accelerates job creation. In South Africa, public investment in infrastructure, education and other social welfare schemes is important in the context of historical exclusion and spatial disparities (Burger & Calitz, 2021). However, since aggregate demand components such as household consumption, government expenditure, and external trade contribute significantly to the economic growth rate, this study uses the GDP growth rate (GGR) in line with both Okun's law and Keynesian postulates. Third, the portfolio balance theory and financial integration literature guide the modelling of foreign portfolio investment. FPI is distinct from FDI in that it is liquid, reversible and responsive to global risk factors (Adegboye et al., 2020). The flightiness of FPI flows can serve as a channel from financial to real activity and potentially increase uncertainty for firms, stunting investment and job creation.

Finally, Human Capital Theory, proposed by Becker (1964), presents a strong theoretical framework that connects the youth literacy rate (YLR) **and the** active population (APOP) as a proxy for labour participation **with** unemployment. These are key factors relating to human capital development that constitute the supply side of labour in an economy. Mdoe et al (2023) and Habiyaemye et al. (2022) empirically demonstrated the relevance of YLR and APOP to unemployment. These variables are suitable for explaining the unemployment-foreign direct investment nexus in a dynamic framework.

The rationale for employing NARDL asymmetries from a theoretical perspective is that it addresses issues concerning positive and negative shifts in foreign direct investment. The inflexibilities in wages, due to minimum wage regulations, collective wage bargaining agreements, and the costly processes of hiring and laying off workers in South Africa, imply that firms respond differently to positive and negative shocks (Phiri, 2014). Positive capital flows (FDI) are likely to generate slow employment growth as companies gear up for higher productivity, while negative capital flows (reversals or disinvestment) can trigger permanent unemployment.

2.2 Data Sources and Description

The current study is based on time-series data covering South Africa from 1991 through 2024, comprising 34 data points. Data on the youth unemployment rate commenced in 1991, and by 1994, South Africa's economic and investment environment changed with the arrival of its democratic dispensation. The series ends with the most recent period for which data is available. The variables used in the analysis, along with their sources, are explained in Table 1.

Table 1. Variable descriptions, measurements and motivation for inclusion

Variable/Code	Definition	Motivating study
Youth Unemployment Rate (YUNE)	Unemployment rate among persons aged 15-24 as a percentage of the total labour force.	Keynes (1936); Choga (2018).
Foreign Direct Investment (FDI)	Net foreign acquisition and control of investment in South Africa measured in billions of USD	Aregbeshola (2014); Lakemann et al. (2025)
Foreign Portfolio Investment (FPI)	Net purchases of foreign financial assets (stocks and bonds). It is measured in billions of USD	Keynes (1936); Bibi (2025).
Gross fixed capital formation (GFCF)	Gross fixed capital formation	Keynes (1936); Solow (1956)
GDP Growth Rate (GGR)	Annual percentage change in economic growth.	Okun (1962),
Inflation (INF)	Annual change in prices is measured as the consumer price index (CPI)	Phillips (1958); Buthelezi (2023).
Active Population (APOP)	Percentage of people ages 15-64 out of the total population.	Becker, (1964); Mdoe et al. 2023).
Youth Literacy Rate (YLR)	Percentage of people ages 15 -24 who could read and write with an understanding of their daily life	Becker, (1964); Mdoe et al. 2023).

Source: Compiled by the author

All variables in this study were sourced from the World Bank database to ensure data credibility, quality, transparency, and authority. Data for YLR were extrapolated for a few missing observations using a 5-year moving average since the observations did not vary widely.

2.3 Model Specification

2.3.1 The ARDL Bounds Testing Approach

Pesaran et al. (2001) proposed that the ARDL bounds testing approach to cointegration is preferred to Johansen (1991) and Engle and Granger (1987), which are conventional cointegration methods. First, it is applicable regardless of whether the regressors are $I(0)$, $I(1)$, but not $I(2)$ or mutually cointegrated. Second, it performs well in small samples. Third, it provides simultaneous estimates of short-run and long-run parameters within a single equation framework through the Error Correction Model (ECM). Fourth, it is robust to the presence of structural breaks in the data (Narayan, 2005). Thus, we specify three interrelated modelling frameworks. The ARDL model for long-run bounds testing, the ECM for short-run dynamics and speed of adjustment and the NARDL) with asymmetric decomposition of FDI to capture the differential effects of FDI inflows and withdrawals on youth unemployment. The NARDL extension (Shin et al, 2014) allows the long-run and short-run effects of FDI to differ in sign and magnitude depending on whether FDI is increasing or decreasing. Thus, we specify the unrestricted ARDL error correction model for the youth unemployment rate in South Africa. The baseline model takes the form:

$$YUNE_t = f(FDI_t, FPI_t, GFCF_t, GGR_t, INFR_t, APOP_t, YLR_t) \quad (1)$$

Where t = time-specific observations, and the variables have clearly been defined in the preceding sections of the paper.

Further restating the model in its stochastic form, we obtain

$$YUNE_t = \alpha_0 + \alpha_1 FDI_t + \alpha_2 FPI_t + \alpha_3 GFCF_t + \alpha_4 GGR_t + \alpha_5 INFR_t + \alpha_6 APOP_t + \alpha_7 YLR_t + \varepsilon_t \quad (2)$$

Where α_0 = Constant, α_1 - α_7 are coefficient estimates, and ε_t = the error term.

By taking a semi-log-linear form, we obtain the long-run static equation (3). We use the semi-log because, apart from FDI, FPI, and GFCF, which are in billions of United States dollars, the remaining variables are expressed as rates (%) and do not need to be logged. Note that, for FDI and FPI, which are measured as net and have some negative overall outcomes, we adopt the inverse hyperbolic sine (asinh) approach (Mullahy & Norton, 2024) to preserve their original signs, and we use “L” as the symbol for the natural log. This prevents the situation where traditional logging adds a constant and converts negative values to positive values, which likely affects the estimates' outcomes by both sign and magnitude.

$$YUNE_t = \alpha_0 + \alpha_1 LFDI_t + \alpha_2 LFPI_t + \alpha_3 LGFCF_t + \alpha_4 GGR_t + \alpha_5 INFR_t + \alpha_6 APOP_t + \alpha_7 YLR_t + \varepsilon_t \quad (3)$$

For the error correction model, we followed the Pesaran et al. (2001) approach, and the ARDL ($P, q_1, q_2, q_3, q_4, q_5, q_6, q_7$). The model is estimated in the following unrestricted error correction form, which simultaneously permits the testing of the long-run bounds relationship and the short-run dynamics:

$$ECT_{t-1} = \Delta YUNE_{t-1} - \hat{\alpha}_0 - \hat{\alpha}_1 \Delta LFDI_{t-1} - \hat{\alpha}_2 \Delta LFPI_{t-1} - \hat{\alpha}_3 \Delta LGFCF_{t-1} - \hat{\alpha}_4 \Delta GGR_{t-1} - \hat{\alpha}_5 \Delta INFR_{t-1} - \hat{\alpha}_6 \Delta APOP_{t-1} - \hat{\alpha}_7 \Delta YLR_{t-1} + \varepsilon_t \quad (4)$$

Where $\Delta YUNE_t$ is the first difference of youth unemployment, α_0 is the constant, $\hat{\alpha}_1 \dots \hat{\alpha}_7$ represent short-run dynamic coefficients, $\hat{\alpha}_1 \dots \hat{\alpha}_7$ are level coefficients used in the bounds F-test for cointegration, and ε_t is a white noise error term.

As such, this study applies the critical value bounds proposed by Pesaran et al. (2001) for the test of long run relationship (or cointegration) among the variables under investigation. In an event where the calculated F-value is larger than the critical value of the upper-bound $I(1)$, the presence of cointegration is established. We use the Akaike Information Criterion (AIC) to determine the optimal lags. Upon confirmation of cointegration, long-run relationships are established, and the short-term dynamics along with the rate of adjustment are captured through the estimation of the Error Correction Model (ECM). This is because the ϕ coefficient in the ECM is negative and statistically significant.

2.3.2 The Non-Linear ARDL Approach

Shin et al. (2014) extend the linear ARDL approach by decomposing the explanatory variables into positive and negative partial components, thereby enabling the analysis of asymmetric impacts in both the short- and long-run. This is done by constructing positive and negative partial sums of the explanatory variable, FDI, in this study. Following the specification in equation (3), we modify it as appropriate and obtain

$$YUNE_t = \alpha_0 + \bar{I} \pm \bar{a}, LFDI\bar{a},^+ + \alpha_2 LFDI_t^- + \alpha_3 LFPI_t + \alpha_4 LGFCF_t + \alpha_5 GGR_t + \alpha_6 INFR_t + \alpha_7 APOP_t + \alpha_8 YLR_t + \varepsilon_t \quad (5)$$

In the same manner, the decomposed partial sums are constructed for FDI in the ECM model for asymmetry. These partial sums replace the original variables in the ARDL framework, yielding the NARDL specification:

$$ECT_{t-1} = \Delta YUNE_{t-1} - \alpha_0 - \alpha_1 \Delta LFDI_{t-1}^+ - \alpha_2 \Delta LFDI_{t-1}^- - \alpha_3 \Delta LFPI_{t-1} - \alpha_4 \Delta LGFCF_{t-1} - \alpha_5 \Delta GGR_{t-1} - \alpha_6 \Delta INFR_{t-1} - \alpha_7 \Delta APOP_{t-1} - \alpha_8 \Delta YLR_{t-1} \quad (6)$$

The test of asymmetry uses the Wald test of equal long-run ($H_0: L^+ = L^-$) and short-run ($H_0: \Sigma\alpha^+ = \Sigma\alpha^-$) coefficients, where a rejection of these null hypotheses provides confirmation of asymmetric effects.

Finally, to further assess the model's fitness and performance, we conducted diagnostics for serial correlation (Breusch-Godfrey LM test), heteroscedasticity (ARCH test), model specification (Ramsey RESET test), and normality (Jarque-Bera test). To also test for parameter stability, we apply the tests of both Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares (CUSUMS) recursive residuals in line with the suggestion of Brown et al. (1975). All estimates are obtained using EViews 12.

3. Results and Discussion

3.1 Descriptive Statistics

The study performs a thorough preliminary analysis before estimating the model. The moments (mean, standard deviation, minimum, maximum, skewness and kurtosis) of all variables are calculated.

Table 2. Descriptive Statistics

Variable	YUNE (%)	FDI (USD)	FPI (USD)	GFCF (USD)	GGR (%)	INFR (%)	APOP (%)	YLR (%)
Mean	48.103	4.51bn	-2.85bn	44.10bn	2.05	6.34	63.43	96.21
Median	43.656	2.74bn	-4.05bn	49.50bn	2.44	5.76	64.72	96.35
Maximum	64.652	40.70bn	54.7bn	42.40bn	5.60	15.33	67.43	98.96
Minimum	41.427	3.34mn	-19.60bn	20.70bn	-1.17	-0.69	58.13	92.32
Std. Dev.	6.844	7.00	-12.70bn	15.10bn	2.40	3.06	3.38	2.06
Skewness	0.917	4.19	2.75	-0.27	-1.20	0.82	-0.46	-0.24
Kurtosis	2.620	22.22	13.47	1.44	5.38	4.73	-2.9392	1.92
Jarque-Bera	4.980	622.61	198.37	3.84	16.17	8.07	-2.1905	1.98
Probability	0.083	0.000	0.000	0.15	0.00	0.017	0.000	0.37
Obs.	34	34	34	34	34	34	34	34

Source: Extract from E-Views 12

The descriptive statistics provide estimates for 34 observations per variable and show a balanced time structure. The distributions, central tendencies, and variations of the variables examined in this study. Regarding the normality of the variables, only YUNE ($P = 0.083$), GFCF ($P = 0.15$), and YLR ($P = 0.37$) are normally distributed, while the rest are not, as their p-values are less than 0.05. However, both FDI and FPI are logged to remove the excessive influence of non-normal distribution.

The average youth unemployment rate (YUNE) is 48.10%, the median of 43.66% is a bit lower than the mean, and the skewness is 0.917. The average spread around the mean is 6.84, indicating moderate spread or deviation in youth unemployment across the sample period. Regarding foreign direct investment (FDI) flows, they are highly volatile, averaging USD 4.51 billion and reaching a high of USD 40.70 billion. An extreme inflow episode is evident from the high difference between the mean and median flow. The skewness (4.19) and kurtosis (22.22) are very high, indicating a highly skewed right distribution and leptokurtosis, hence the presence of extreme observations. The negative mean and median FPI values indicate an average net outflow of USD 2.85 billion. But there were also significant jumps and drops in the variable, ranging from USD 19.60 billion in minimum outflows

to USD 54.7 billion in maximum inflows. High positive skewness (2.75) and kurtosis (13.47) indicate extreme positive shocks and volatility in the distribution.

The mean of gross fixed capital formation (GFCF) is USD 44.10 billion, which shows that investment in fixed assets has been relatively high in recent years. The volatility, as indicated by the standard deviation of USD 15.10 billion, suggests significant variations in domestic investment activity. The distribution is relatively symmetrical with a skewness coefficient of -0.27. In addition, the GDP growth rate (GGR) averaged 2.05%, ranging from -1.17% to 5.60%, and alternated between economic contraction and expansion. The negative skewness coefficient (-1.20) indicates a negatively skewed distribution, meaning that growth results are more likely to be lower. The kurtosis is 5.38, indicating a leptokurtic distribution with heavier tails than the normal distribution. The average inflation rate (INFR) is 6.34%, with moderate inflation during the period under consideration. There is some variability in INFR, as evidenced by the 3.06 standard deviation. The positive skewness (0.82) indicates that there were episodes of higher inflation growth. The active population (APOP) had an average percentage of 63.43%, indicating that a significant number of people in South Africa are in the economically active age bracket. The negative skewness (-0.46) is due to slight left skewness, and the relatively low standard deviation (3.38) indicates stability over time. The reported kurtosis value of -2.9392 appears unusual, as most statistical software reports positive kurtosis; this may be due to excess kurtosis reporting or a possible data entry error. The mean Youth literacy rate (YLR) is 96.21% with a relatively small standard deviation of 2.06, and the highest stability among the variables. This means that youth literacy has been high throughout the study.

3.2 Unit Root Tests

The study employs several unit root tests, including the Augmented Dickey-Fuller (ADF) test (Dickey & Fuller, 1979), the Phillips-Perron (PP) test (1988), and the Zivot-Andrews (ZA) (1992). The ZA test is important in the South African context as evidence of structural breaks has been documented in response to the 2008-2009 global financial crisis, the 2020 COVID-19 pandemic, and in the post-apartheid policy environment. The addition of structural break unit root tests helps avoid spurious inference by accounting for unknown breaks in the data-generating process. The bounds testing approach of ARDL is theoretically based on the absence of I(2) variables. ARDL testing allows for a combination of I(0) and I(1) variables, making it a suitable approach with the limited sample size used in this study (Pesaran et al., 2001). The FDI and FPI are log-transformed to remove heteroscedasticity and allow for interpretation of the coefficients as elasticities. Since they are net values, the transformation is performed using a signed logarithm, which serves the same purpose as the inverse hyperbolic sine (asinh) proposed by Mullahy and Norton (2024). The unit root test results are provided in Table 3.

Table 3. Unit Root Test Results

Variable	ADF Level	ADF First Diff.	PP Level	PP First Diff.	ZA Break	Order
YUNE	-1.843	-4.217***	-1.762	-5.103***	-4.891** (2009)	I(1)
LFDI	-2.104	-5.631***	-2.009	-6.014***	-5.234** (2008)	I(1)
LFPI	-1.556	-4.893***	-1.623	-5.441***	-4.678** (2020)	I(1)
LGFCF	-1.987	-4.762***	-1.844	-5.219***	-5.012** (2009)	I(1)
INF	-2.678*	-5.891***	-2.567*	-6.123***	-5.102** (2002)	I(0)/I(1)
APOP	-4.635***	-1.953	-2.319	-2.0879	-4.9535** (1998)	I(0)
GGR	-4.282***	-1.286	-4.282***	-6.2175***	-2.9392 (2009)	I(0)
YLR	-2.737*	2.208	-2.037	-4.8960***	-2.1905 (2001)	I(1)

Source: Extract from E-Views 12

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Critical values follow MacKinnon (1996). ZA test reports the year of the endogenous structural break.

The results in Table 3 confirm that all variables are either I(0) or I(1), and none exhibits I(2) properties, and hence satisfy the prerequisite for ARDL bounds testing. The structural breaks identified by the ZA test around 2008-2009 (during the global financial crisis) and 2020-2021 (during the COVID-19 pandemic) are consistent with known episodes of macroeconomic disruption in South Africa and globally.

3.3 ARDL Bounds Test for Cointegration

The results of the ARDL bounds F-test on cointegration are presented in Table 4. The ARDL (2, 0, 2, 2, 2, 2, 2, 1) model lag order is optimal according to the AIC, and accounts for up to 2 lags, due to the relatively small number of observations in the dataset.

Table 4. Bounds Cointegration Results

Statistic	Level of Significance	Lower Bounds 1(0)	Upper Bounds 1(1)
Computed F-Statistic	-	4.065	4.065
Critical Values bounds	10%	1.7	2.83
Critical Values bounds	5%	1.97	3.18
Critical Values bounds	2.5%	2.22	3.49
Critical Values bounds	1%	2.54	3.91

Source: Extract from E-Views 12

It is evident that the ARDL model bounds test F-statistic value of 4.065 significantly exceeds the Pesaran et al. (2001) upper critical value of 3.91 at the 1% significance level, thereby supporting cointegration of the YUNE, FDI, FPI, GFCF, GGR, INF, APOP and YLR series in the long run. This result aligns with the estimates of Liu et al (2024), who show that there exists long-run cointegration between FDI and unemployment in sub-Saharan African countries.

3.4 ARDL Long-Run and Short-Run Estimates

Table 5. ARDL Long-Run and Short-Run Estimates (Dependent Variable: YUNE)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PANEL A: LONG-RUN ESTIMATES				
LFDI	1.3603	0.4020	3.3841	0.0054
LFPI	0.0852	0.0271	3.1488	0.0084
LGFCF	-0.3258	1.8051	-0.1805	0.8598
GGR	-4.6118	0.7841	-5.8818	0.0001
INFR	-1.0547	0.2727	-3.8672	0.0022
APOP	0.6690	0.2798	2.3907	0.0341
YLR	0.0311	0.4318	0.0720	0.9438
PANEL B: SHORT-RUN ESTIMATES				
$\Delta YUNE(-1)$	-0.5365	0.1458	-3.6792	0.0032
$\Delta LFPI$	0.0105	0.0097	1.0829	0.3001
$\Delta LFPI(-1)$	-0.0479	0.0136	-3.5089	0.0043
$\Delta LGFCF$	10.1317	4.0956	2.4738	0.0293
$\Delta LGFCF(-1)$	12.1266	4.1925	2.8925	0.0135
ΔGGR	-0.5879	0.1301	-4.5180	0.0007
$\Delta GGR(-1)$	0.8009	0.2027	3.9513	0.0019
$\Delta INFR$	-0.0394	0.0778	-0.5056	0.6223
$\Delta INFR(-1)$	0.5407	0.1259	4.2935	0.0010
$\Delta APOP$	0.1294	0.7735	0.1673	0.8699
$\Delta APOP(-1)$	-2.0342	0.9244	-2.2006	0.0481
ΔYLR	0.5400	0.1583	3.4118	0.0052
ECT(-1)*	-0.6012	0.0838	-7.1758	0.0000

Source: Extracts from E-Views

Table 5 presents the long- and short-run ARDL estimates, which show a statistically significant, positive impact of FDI (1.3603, P=0.0054) on youth unemployment in the long run. This implies that a 1%-point rise in FDI leads

to approximately 1.36 % rise in youth unemployment. Such findings do not correspond to what was anticipated a priori but given the pattern of large inflows of foreign direct investment into South Africa and subsequent outflows, it is possible to observe them because foreign direct investment may not lead to job creation after it leaves the country. This clearly shows that increases in FDI do not create sufficient jobs to reduce youth unemployment in South Africa. The finding differs from Khobai et al. (2017), who found that increases in FDI significantly generate employment in South Africa's manufacturing and services sectors. The findings of this study seem to suggest that a larger share of FDI flows into capital-intensive industries, such as South African mining, financial, and telecommunications, which generate little employment for unskilled youth. It is equally evident from the result that FPI also rises alongside rising youth unemployment. This is expected because we examined these variables as net flows and accounted for their inflows and outflows. The data show large outflows that may have neutralised the positive impact of these capital sources on job creation in South Africa.

It is also evident from the table that, while the unemployment-reducing impact of GFCF (-0.3258, $P = 0.8598$) is insignificant in the long run. This seems counterintuitive, but it is common in time-series applications where GFCF can be collinear with other regressors or crowd out more employment-generating investment. This finding is at variance with the theoretical expectation that GFCF, particularly in labour-intensive sectors such as construction, retail, and light manufacturing, generates more direct employment for young workers than foreign capital (Bhorat et al., 2020). On the other hand, GGR (-4.6118, $P = 0.0001$) and INFR (-1.0547, $P = 0.0022$) have negative and statistically significant impacts on youth unemployment in South Africa. This shows that the rates of economic growth and inflation have the long-run potential to substantially reduce youth unemployment in South Africa, which is consistent with Okun (1962) and Phillips (1958), respectively. Buthelezi (2023) equally finds inflation useful in taming the unemployment menace in South Africa. As expected, APOP (0.6690, $P=0.0341$) has a positive, statistically significant impact on youth unemployment, indicating that as the active population in South Africa rises, so does youth unemployment. This is consistent with the law of supply, especially when labour supply exceeds demand. It is equally evident that YLR (0.0311, $P=0.9438$) has an increasing impact on youth unemployment; although the relationship is not significant, it suggests that basic education may not necessarily lead to job opportunities for South African youths.

In the short run (Panel B), $\Delta YUNE$ exhibits mean reversion, with the current period's level of youth unemployment negatively correlated with the previous period's level, as shown by the lagged coefficient of -0.5365 ($P=0.0032$). This is plausible in models of unemployment or cyclical output. Both $\Delta LGFCF$ and $\Delta LGFCF(-1)$ are large and significant (10.13 and 12.13), indicating that capital formation does have a significant short-run effect on reducing youth unemployment in the study area. Contemporaneously, ΔGGR is negative (-0.59), while the lag is positive (0.80), suggesting that, even in the short run, economic growth rate is a significant factor in reducing the youth unemployment rate. Also, in the short run, the relationships between lagged inflation and inflation rates are $\Delta INFR$ (-0.0394, $P=0.6223$) and $\Delta INFR(-1)$ (0.5407, $P=0.0010$), suggesting that, contrary to the long-run results, inflation does not have the capacity to drive down youth unemployment in South Africa. Again, in the short run, YLR is significant but is not so in the long run, indicating cyclical, not structural, youth labour effects ($\Delta YLR = 0.5400$, $P=0.0052$). The error correction factor is negative and statistically highly significant, $ECT(-1)$ [-0.6012, $P = 0.0000$]. This confirms the existence of a long-run cointegrating relationship and shows rapid convergence to equilibrium in the event of any temporary disequilibrium among the model's variables at 60% per period.

3.5 Model Diagnostics (ARDL)

To ensure the results are not spurious, we estimate post-diagnostic tests to verify whether our model meets the necessary goodness-of-fit criteria.

Table 6. Summary of ARDL Model Diagnostic Tests

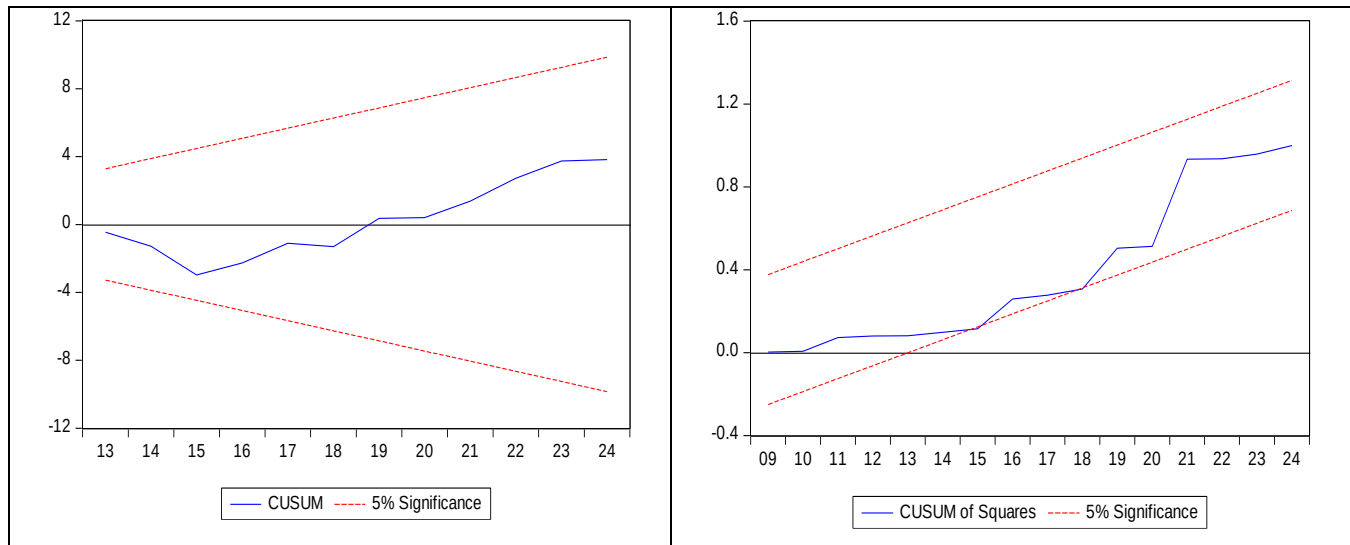
Diagnostic Test	Value/ P-values	Decision
R-squared	0.8957	R-square of 89.57% indicate the model's high predictive power.
Adj. R-squared	0.8298	
Durbin-Watson stat	2.2285	
Breusch-Godfrey LM (χ^2)	0.9749 (0.4104)	Based on the P-value (0.4140 > 0.05), there is no serial correlation
Breusch-Pagan-Godfrey	0.2361 (0.9975)	Based on the P-value (0.9975 > 0.05), there is no heteroscedasticity
Ramsey RESET (F)	4.6756 (0.0535)	Given the P-value (0.9975 > 0.05), the correct specification

Source: Extracts from E-Views Output

Note: P-values are in parentheses for diagnostic tests, and the P-values greater than the 0.05 threshold level are preferred for all diagnostic tests.

Furthermore, to ensure that the model is structurally stable, we conducted the tests of cumulative sums (CUSUMS) and cumulative sums of squares (CUSUM Squares).

Figure 3. CUSUM and CUSUM of Squares



Source: Extract from E-views Output

Figure 3 is a combination of two measures of the stability of residuals. The left-hand side of Figure 3 represents the cumulative sum (CUSUM) of recursive residuals, and on the right is the CUSUM of Squares. While the former measures the structural stability of the models, the latter tests the stability of the variance of residuals, both at 5% level of significance. The middle non-straight lines on either side run the sum of residuals over time, and they are the CUSUM and CUSUM of squares line. This shows that all the lines remain inside the CUSUM and CUSUM of squares limits for the entire sample time. Thus, the model's coefficients are stable, and error variance remains consistent over time. This is significant because it provides validation of the accuracy and reliability of long-run and short-run coefficient estimates from the ARDL and Bounds testing framework.

3.6 NARDL Asymmetric Estimate

Table 7 presents the NARDL estimates, which account for asymmetric effects of FDI on youth unemployment in South Africa. The NARDL estimates were derived from the ARDL results, so they follow the same variable choice and order, as well as the optimal lag length.

Table 7. NARDL Long-Run Asymmetric Estimates (Dependent Variable: YUNE)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PANEL A: LONG-RUN ESTIMATES				
LFDI_POS	1.0869	0.7260	1.4971	0.1727
LFDI_NEG	-1.2148	1.3824	-0.8788	0.4052
LFPI	0.1193	0.0371	3.2152	0.0123
LGFCF	8.7216	3.1205	2.7949	0.0234
GGR	-5.1231	0.8147	-6.2886	0.0002
INFR	-1.5284	0.4654	-3.2838	0.0111
APOP	-3.2612	1.4751	-2.2109	0.0580
YLR	0.3957	0.7557	0.5236	0.6147
PANEL B: SHORT-RUN ESTIMATES				
$\Delta YUNE(-1)$	-0.5354	0.1283	-4.1739	0.0031
$\Delta LFDI_POS$	0.9525	0.2193	4.3431	0.0025
$\Delta LFDI_NEG$	0.6689	0.1950	3.4310	0.0089
$\Delta LFDI_NEG(-1)$	1.0642	0.2449	4.3451	0.0025
$\Delta LFPI$	-0.0180	0.0087	-2.0613	0.0732
$\Delta LFPI(-1)$	-0.0718	0.0150	-4.7797	0.0014
$\Delta LGFCF$	17.5046	4.0972	4.2724	0.0027
$\Delta LGFCF(-1)$	11.9600	3.7827	3.1617	0.0134
ΔGGR	-0.5703	0.1190	-4.7932	0.0014
$\Delta GGR(-1)$	0.8742	0.1804	4.8467	0.0013
$\Delta INFR$	-0.0470	0.0729	-0.6448	0.5371
$\Delta INFR(-1)$	0.7112	0.1341	5.3102	0.0007
ΔYLR	0.5978	0.1400	4.2685	0.0027
$\Delta YLR(-1)$	0.5012	0.1760	2.8477	0.0216
ECT(-1)*	-0.5558	0.0636	-8.7328	0.0000

Source: Extract from E-views Output

Note: *** p < 0.01, ** p < 0.05, * p < 0.10. FDI⁺ and FDI⁻ denote positive and negative partial sum decompositions, respectively.

From Table 7, LFDI_POS (1.0869, P=0.1727), in the long run, positive FDI shocks have no significant impact. This is a radical change from linear. The negative FDI shock (LFDI_NEG, -1.2148, P=0.4052) is also long-run insignificant. This implies that increases or decreases in FDI have no statistically discernible long-term impact with asymmetry. This means the apparent linear impact was concealing the partial impacts on both sides of the equation. Equally, LFPI (0.1193, P = 0.0123) is slightly stronger than the linear model estimate (0.085) and positive and significant.

In the NARDL, however, GFCF (8.7216, P=0.0234) is large and significantly positive in the long run, but not in the linear model. This indicates that the relationship between FDI and GFCF was likely linear and should be separated from the ARDL to observe the long-run impact of domestic capital formation. Both economic growth rate and inflation rate remain negative and statistically significant [GGR (-5.1231, P=0.0002) and INFR (-1.5284, P=0.0111)]. This shows that the two variables are significant instruments necessary for tackling youth unemployment in South Africa. For APOP (-3.2612, P=0.0580), the sign reverses relative to the linear model (was

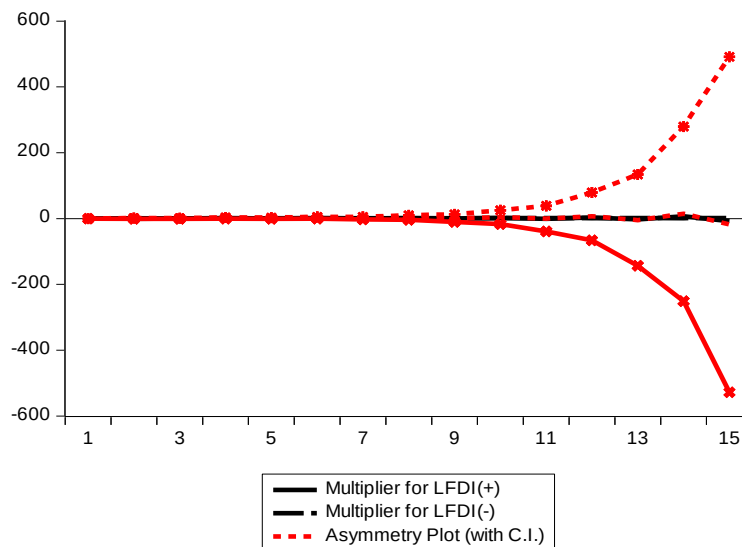
+0.669, but in NARDL it is -3.261). This is a minor sign reversal, as the positive effect of the demographic component of the linear model might be artefactual, due to the symmetric treatment of FDI associated with population dynamics.

In the short run, $\Delta\text{LFDI_POS}$ (0.9525, $P=0.0025$) and $\Delta\text{LFDI_NEG}$ (0.6689, $P=0.0089$) are significant, but their magnitudes differ (0.95 against 0.67). This is the main asymmetry result. Positive FDI shocks have a larger effect in the short run than negative shocks, which can be explained by irreversibility and sunk-cost theory (Dixit & Pindyck, 1994), implying that investors entering have a larger effect than those leaving. The lagged effect of a negative FDI shock is also strong (1.06, $P = 0.0025$), indicating that the impact of FDI outflows is magnified over time, which can be explained by disrupted supply chains, knowledge loss, and contagion effects. However, the model's convergence speed is slightly slower than the linear model's (55.6% against 60.1%), indicating that, for correct modelling of asymmetries, the time required to restore equilibrium is slightly longer.

In summary, the ARDL's significant positive FDI effect (1.36) disappears when the NARDL separates positive and negative partial sums. This is not contradictory; it is the theoretical motivation for NARDL (Shin, Yu & Greenwood-Nimmo, 2014). The symmetric estimator relaxes the assumption that the pass-through of capital inflows and outflows is structurally equal. From an economic perspective, FDI entry is associated with technology transfer, job creation, and backward linkages, while FDI exit is associated with sudden capital outflows, supply chain disruptions, and confidence shocks. These are mechanically different processes and will be averaged out.

3.7 Dynamic Multiplier Analysis

Figure 4. Dynamic Asymmetric Multiplier Graph



Source: Extract from E-views Output

Figure 4 is a Nonlinear ARDL (NARDL) asymmetry plot, showing the cumulative dynamic multipliers of positive and negative changes in an FDI variable (LFDI) on youth unemployment in South Africa. The solid black line LFDI(+) represents the cumulative effect of FDI increases on youth unemployment, and the dashed black line (LFDI(-) represents the cumulative effect of FDI decreases on youth unemployment. The dashed red line represents the asymmetry plot, which shows the difference between the two multipliers (with confidence interval)

The Short run (periods 1-11) has produced near-zero effects. It can be observed that both multipliers hover close to zero in early periods, suggesting that FDI changes (whether positive or negative) have little immediate impact on youth unemployment in the short run. However, in the long run (periods 12-15), divergence and strong asymmetry emerge. LFDI(+) trends downward, indicating that FDI inflows *reduce* youth unemployment over time, consistent with expectations of job creation. Also, LFDI(-) trends sharply upward, indicating that FDI outflows/declines increase youth unemployment by a larger magnitude. The gap between the two lines is also large, thereby confirming the presence of significant asymmetry. The asymmetry plot (red dashed) diverges sharply, and the confidence interval widens dramatically after period 11, and the asymmetry line moves strongly negative. This implies that the negative shock is statistically and economically larger than the positive shock. This is the visual confirmation of asymmetry.

In a strict economic sense, FDI withdrawals significantly hurt youth unemployment in South Africa, whereas FDI inflows help it. This is consistent with the postulation of Dixit and Pindyck (1994) who find that investors entering carry larger structural effects (job creation, infrastructure, training, supply chains) that take time to unwind. On their exit from the country, the breakage of such linkages results in increased levels of youth unemployment, because it will take time for the new entrants to be in a position to offer employment opportunities due to their lack of the same level of skills as those who held them before. This aligns with South Africa's vulnerability structure of South Africa, which includes labour market inflexibility and limited absorptive capacity.

4. Conclusion and Policy Recommendations

4.1 Conclusion

The present study analyzed the relationship between foreign investment flows and youth unemployment in South Africa for the time horizon 1991 to 2024 using both the linear ARDL and nonlinear ARDL (NARDL) estimation approaches. The main goal was to go beyond traditional symmetric modelling assumptions and to fully account for the different effects of inflows and outflows of FDI on the South African youth labour market. The results of the bounds cointegration test showed that there is a long-run equilibrium relationship among youth unemployment, FDI, FPI, GDP growth rate, inflation, active population and youth literacy rate, with the error correction speed of adjustment in the linear model at 60% per period and in the NARDL model at 55.6%. The linear ARDL results showed a counterintuitive positive and statistically significant long-run relationship between FDI and youth unemployment, indicating that FDI inflows have not generated significant youth employment. This is also reflective of the structural composition of South Africa's investment portfolio, which has a relatively small share of investments in sectors that are less capital-intensive and which tend to employ unskilled youth. The youth unemployment rate is positively and significantly associated with FPI, indicating that speculative capital flows and net outflows affect real economic activity and employment opportunities. The long-run results of the linear model yielded no statistically significant results for domestic investment (GFCF), whereas the NARDL model produced a large, statistically significant result, suggesting that collinearity between FDI and domestic investment might obscure its significance in the symmetric model. Results from the negative, statistically significant relationships between the GDP growth rate and youth unemployment, and between the inflation rate and youth unemployment, in both the ARDL and NARDL, confirm Okun's Law and the Phillips curve in the South African context.

The NARDL asymmetric estimates offered more comprehensive and detailed information. In the short term, both positive and negative FDI shocks had an important impact, but the positive shock had a larger impact (0.95) than the negative (0.67). But in the long run, neither the positive nor the negative impact of FDI was statistically significant, and thus the overall linear impact of FDI was a statistical artefact arising from the addition of asymmetric partial impacts. The results were corroborated by the dynamic multiplier analysis, which revealed that FDI withdrawals have a significantly larger negative impact on youth unemployment in the long run than FDI

inflows have a positive impact. This is a further indication of the structural vulnerability of the South African youth labour market to FDI withdrawals. To confirm the fitness of the ARDL model, certain diagnostic tests were used to show that the model did not suffer serial correlation, heteroscedasticity, or misspecification, while the CUSUM and CUSUM of Squares tests confirmed the structural stability of the ARDL model's parameters over the sample period.

To sum up, the results show that the current sectoral mix of FDI is insufficient to address youth unemployment in South Africa. These are all explained by the asymmetric nature of its effects, the destabilising effect of speculative portfolio flows, the dominance of capital-intensive investment, and the structural mismatches in the youth labour market. The evidence is overwhelming that it is essential to create a new policy paradigm that focuses on investing in labour to reduce youth unemployment, deepening domestic capital, achieving strong economic growth, and structural reform of education and skills provision to match demand.

4.2 Policy Recommendations

South Africa should shift its FDI approach from high-capital-expenditure sectors such as mining and oil, to labour-intensive sectors such as manufacturing, agro-processing, construction and the green economy, which can be boosted through transparent, well-designed incentive packages from investment promotion bodies such as InvestSA to combat youth unemployment.

There is a need to increase domestic capital formation (GFCF). Public-private investment in infrastructure, such as roads, electricity, and broadband, would boost demand and create direct employment opportunities for young people. Broad GDP growth is the most effective tool in the fight against youth unemployment and must be a main policy priority.

The Reserve Bank must increase the effectiveness of its macro-prudential policies to reduce the volatility of foreign portfolio investments, including maintaining adequate foreign exchange reserves, building local capital markets, and implementing countercyclical fiscal policies to protect jobs from the effects of foreign portfolio investments.

There is a need for drastic changes in the education system. The enduring gap between the reading and writing proficiency of youth and the skills profile required in the labour market requires changes to the curriculum, additional workplace programmes, and an increased number of learnerships and apprenticeships in growth sectors. Labour market reforms must also be flexible while maintaining strong protections for workers, such as increased youth wage subsidies and eased entry barriers for young job seekers via phased employment contracts.

Maintaining the inflation rate within the Reserve Bank's 3%–6% target range is necessary to ensure investor confidence, safeguard the capacity to generate jobs, and protect real wages. Lastly, with the increase in the youth population and the creation of more jobs being created than required, it is imperative that active employment programmes, such as the Presidential Youth Employment Initiative, be scaled up to effectively absorb the youth population.

Limitations of the Study

This study suffers from a few limitations; for instance, not all factors affecting unemployment, such as institutional quality and sectoral FDI inflows, were considered, and the study period was relatively short. This was due to data availability; nevertheless, major variables intended to influence unemployment were used, and the methodology adopted is appropriate for short time-series data.

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This is peer-reviewed scientific journal <https://jssidoi.org/ird/page/peer-review-policy>

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ROLE OF CREATIVITY AND INNOVATION IN MATHEMATICS LEARNING: A CASE OF SPECIAL EDUCATION**Sharon Mnena Abaver***Department of Mathematics Education, University of South Africa, Pretoria, South Africa**E-mail: sharonjude85@gmail.com**Received 25 March 2026; accepted 15 June 2026; published 30 June 2026*

Abstract. Education is seen as central in fostering creative and innovative skills. Creativity and innovation are very important aspects of learning mathematics in education. This study explores the impact of creativity and innovation on mathematics learning in special education. Despite challenges in mathematics education, integrating creativity and innovation can enhance students with special needs' problem-solving skills. Creativity and innovation can be applied in special education through student motivation approaches, such as creativity-integrated mathematics instruction. The study used a mixed-method research design to investigate the effects of creativity and innovation on mathematics problem-solving skills and teachers' perceptions. Data were collected from 92 grade 8 special needs students and 10 grade 8 mathematics teachers in special schools in Gauteng, South Africa, to determine the impact of creativity-integrated mathematics instruction on students' skill levels, classroom practices, and teachers' perceptions of creativity and innovation in mathematics education. Findings indicate a significant difference between students in high-impact and low-impact classrooms, with those in the former demonstrating higher creativity and innovation skills. Findings further indicate that teachers' perceptions of creativity-integrated mathematics instruction have a significant positive effect on their creative classroom practices. Recommendations included teacher training, resource development, and policy support for creativity in special education. Findings contribute to the global discussion on the need for creativity, innovation, and inclusion in special education by providing empirical insights into how creative-integrated mathematics instruction can mediate creative thinking, creative problem-solving, engagement, and influence teachers' classroom practices for students with special needs.

Keywords: creativity; innovation; inclusion; mathematics; special education; creative-integrated instruction; problem-solving

Reference to this paper should be made as follows: Abaver, Sh.M 2026. Role of creativity and innovation in mathematics learning: a case of special education. *Insights into Regional Development*, 8(2), 234-250. <http://doi.org/10.70132/f9337497458>

JEL Classifications:

Additional disciplines: educology

1. Introduction

Creativity and innovation in special education include the use of flexible learning and technology to enable students with diverse needs to develop skills and collaborate during learning (Ovibiagbonhia et al., 2019). Though creativity is often associated with art subjects, the current school system is shifting towards productivity, harnessing creativity and innovation (Basic et al., 2021). Mathematics education is a critical foundation for such impact; however, most teachers avoid ideas outside the planned curriculum, such as creativity. Despite some teachers' avoidance of creativity, education fosters creative and innovative skills, which can be rated as high, moderate, or low. Creativity and innovation are important for the development of a knowledge-based society, which can improve the quality of life of individuals and social and educational needs (Norfarahi et al., 2020). Zaremohzzabieh et al. (2025) reported that a technology intervention focused on creativity in education had a

significant effect on students' learning. Golinkoff and Hirsh-Pasek (2016) argue that, to redefine success in the 21st century, collaboration and creativity must be included. They explained that creativity and innovation help transform knowledge by generating new knowledge in new areas. Within this context, creativity is understood as rearranging the old to create the new, while innovation is the value added to products or processes when incorporated into learning.

Mathematics education in South Africa faces challenges, including low levels of critical thinking, low achievement rates due to teaching approaches, and low student engagement. Creativity can inform ideas, thinking, and learning styles, thereby creating something new in the learning process (Norfarahi et al., 2020). Creativity and innovation can enhance mathematics learning, foster students' motivation, and problem-solving skills if used (Narayanan, 2017). Creativity and innovation in education, if recognised as key skills, can enable talented and other children to adapt adequately to the demands of modern society. With the realisation that creativity can be learned, the key to supporting creativity is shifting toward inclusive learning, including special education.

According to Govindasamy et al. (2023), students with special needs in special schools are those certified by medical doctors as visually impaired, speech impaired, having physical disabilities, or having learning difficulties. All students can learn to be creative and adventurous, to develop working theories about their world, and to make decisions about themselves as learners (Ari, 2017). Students with special needs can be encouraged to participate in creative activities to ensure they do not miss out on the education system, and to collaborate with peers and students without special needs. A high level of creativity is essential for acquiring the skills required in today's world.

According to Beresford-Dey et al. (2022), creativity enhances collaboration (including trust, knowledge flow, and groupthink), problem-solving, disrupting the status quo, risk-taking (including failure and experimentation), and openness (including flexibility and adaptability). For creativity and innovation to flourish, encouragement is needed to enhance experimentation alongside reducing limitations. Similarly, there has been emphasis on the need for confidence, which, on the teachers' side, could stem from experience and knowledge, including that gained through continuous professional development. Teachers can foster new ideas in learning only through creativity and student-motivational teaching and learning strategies. Norfarahi et al. (2020) found that the art of creating or producing a new thing is initiated by students' knowledge, motivation, and the way they think and behave.

Motivated students set clear goals and have a sense of personalised learning, which enables them in creative problem-solving of real-world problems. Therefore, teachers need to develop these highly creative skills by guiding students to learn using student motivation approaches in mathematics, such as creativity-integrated instructions that use learning materials and objects for illustration, technology, interactive learning, class discussions, and the ability to relate mathematical ideas to real-world problem-solving. Khalid (2017) posits that problem-solving is one solution to many issues in learning mathematics and in enhancing creativity. Hence, there is a need for creative problem-solving in fostering creativity and innovation. For teachers to use creative motivational approaches to guide students toward knowledge, they need to improve their creative skills and beliefs about creativity and expand their understanding of creativity in teaching.

Though the significance of creative thinking is globally acknowledged in the learning of mathematics for all students, its implementation is challenged by a lack of an appropriate framework for teaching and learning. In mathematics education, one notable area of creative thinking is the proof of theorems, proof construction, and hypothesis formation (Demetriou et al., 2022). Creativity is often evident here as students think critically and produce knowledge while interacting with one another. Creativity and innovation are ways students collaborate, interact, and learn from each other, which aligns with constructivist theory. This study explores the impact of creativity and innovation in mathematics education for students with special needs.

2. Theoretical Framework

Vygotsky's (1978) social constructivist theory underscores this study, emphasising the critical role of social interaction and mediated learning in cognitive development. This theory posits that students construct knowledge through active engagement and interaction. Creativity and innovation are key aspects in knowledge construction and discovery, enabling students to develop mathematical ideas, concepts, and problem-solving skills. Central to this theory are several concepts, such as the Zone of Proximal Development (ZPD), which refers to the gap between what students can achieve independently and what they can achieve with the teacher's guidance.

This framework is relevant to the present study because it highlights how instructional support and collaborative engagement can enhance students with diverse needs' understanding of mathematics concepts in an inclusive classroom setting. This theory also emphasises scaffolding, the need for students with moderate and low creative skills to be supported by the teachers and others who have acquired high problem-solving skills. High-level skills can be enhanced through resilience in continuous trial-and-error, eventually leading to knowledge constructed, discovered, created, or invented. Also, students can be assisted in discovering mathematical knowledge for problem-solving.

3. Literature Review

Studies provide evidence that creativity and innovation play a crucial role in students with special needs' learning of mathematics. That support involves diverse approaches, including fostering creativity and the ability to invent new mathematical ideas (Maoqqa & Buka, 2025).

Creativity

Creativity in education aims to empower students to learn what is not original in their domain and to do better in situations they encounter through education. Creativity is conceptualised as a skill that can be developed but can also be inhibited. Šemberger and Konrad (2022) opine that creativity is a general human characteristic. Therefore, the stakeholders in education have the power to unlock children's creative potential, addressing creative learning and innovative teaching. Thus, creativity is a product and a process that expresses the balance between originality and value. In other words, it is the ability to make unexpected and original connections and generate new and relevant ideas. However, many students do not experience the excitement of creativity in learning due to teachers' insistent use of pedagogies that do not encourage creativity and see it as time-consuming (Elliott, 2018). Creative activities involve awareness, logic, and critical thinking and improve students' thinking skills. Hence, Beresford-Dey et al. (2022) assert that creativity is a carefully orchestrated effort to generate novel ideas, processes, and products that are of value to the school or system, leading to enhanced pupils' outcomes and life chances. Though creativity is closely connected to knowledge and learning, most students lack prior knowledge or practical experience relevant to becoming more creative.

Innovation

To innovate is to look beyond what we are currently doing and develop a novel idea that helps us to do our job in a new way (Zhou, 2018). Innovation in STEM education is a multidimensional concept that generates new ideas; however, this is not the case in most special schools, where students with special needs are seen as having lower cognitive capacity (Maoqqa & Buka, 2025). Innovation connotes a device, program, method, process, or production that can be used to achieve improved conditions that bring about improvements. In education, particularly in special education, some innovations have emerged to boost motivation, improve the quality of thinking, and the educational process, thereby introducing novelty into the curriculum. Much of the curriculum content, objectives, learning experiences, methodology, and instructional materials have become obsolete, losing relevance due to the absence of inventions. These curriculum contents no longer address students' diverse physical and learning needs, nor social issues; hence, the need to revise them and integrate creativity in the

teaching approaches. Educational innovation concerns all stakeholders: the learner, parents, teachers, educational administrators, researchers, and policy makers, and requires their active involvement and support.

Creativity-integrated instruction

Saied (2016) emphasises that mathematics is a subject whose abstract nature makes it boring and difficult to understand, and that it requires a motivational approach in its teaching for learning to take place, especially for students with special needs. It's difficult to teach mathematics to students with special needs; therefore, teachers need to use motivational strategies such as Creativity-Integrated Instruction (CII). Khalid et al. (2020) argue that motivational approaches can foster creative ability through discussions and hands-on problem-solving. The inclusion of technology creates a motivating environment for learning, seeking information, and acquiring knowledge (Beghetto, 2017). This can foster a creative environment for students with special needs as they use technology, discuss among themselves, and figure out ways to solve mathematical problems, with all students actively participating in the mathematics classroom. Technology contributes to more constructivist, creative learning and to greater student activity and responsibility in the classroom (Chanda & Sain, 2024). The use of technology influences students' motivation to learn, and CII reinforces this. Naidoo and Kapofu's (2020) research shows that when innovative learning is introduced in the classroom, using objects for illustration, fostering interactions and discussions, and having learners actively participate make learning mathematics more interesting, hence, enhancing creativity. This highlights new ideas aimed at solving problems, a feature of mathematics. The teacher can integrate creativity using questions, objects, and illustrations that encourage students to think creatively and innovatively to proffer solutions. Kosasih et al. (2022) note that the knowledge taught and the material learned facilitate students' understanding of mathematical concepts. For example, learning geometry cannot be separated from the use of shapes and objects. This ensures that the geometry concept is taught in the context of real-life problems, boosting students' interest and engagement. According to Arthur et al. (2018), relating mathematics to real-life problems is a teaching quality that fosters learners' interest in mathematics concepts. When teachers can connect different types of mathematical knowledge to real-world problems and experiences, they can make mathematics lessons more engaging, creative, and innovative.

Creative Problem-solving

Creativity is an important component of problem-solving and cuts across all forms of problems; it's an unusual ability to offer solutions to math-related problems (Kaplan, 2019). Though creativity is regular in teaching arts subjects, its significance lies in how it is being integrated into learning mathematics. The fostering of creativity in the learning of mathematics through problem-solving is a major way to show creativity (Khalid et al., 2020). Teachers can guide students to create hands-on activities for learning mathematics that can be used to solve problems (Bicer et al., 2024). Students can be presented with open questions, which enable them to think creatively, as creativity in mathematics is evident in the discovery of original ways to solve unusual mathematical problems (Saied, 2016). Problem-solving can promote creativity in mathematics and eliminate mathematics phobia and rote learning, which can make mathematics lessons abstract to students, especially those with special needs (Khalid et al., 2020). Khalid's (2017) study, which measured through a collaborative problem-solving strategy in Malaysia, suggested that creative problem-solving enhances students' creativity. Also, Hu et al.'s (2017) study on the application of creative problem-solving to statistics instruction found that students' mathematics learning has a strong foundation through problem-solving as they collaborate and interact, learning from one another.

Creative Thinking

Zhao and Abdullah (2025) emphasise that fostering creative thinking in students is an essential skill for developing innovative mathematical problem-solving. Creative thinking involves students developing novel approaches to solving problems (Khalid et al., 2020). The teacher's role is to guide students as they learn the mathematical content appropriate to their current stage of learning, using creativity as a well-planned learning adventure in mathematics, constructed to enable students with special needs to relate mathematical ideas to

solving real-world problems. Eya and Eya (2022) explain that, apart from digital education, some educational systems are not good, downplaying character, values, skills, and creativity; hence, they emphasise that education should be the training of the human mind to think creatively. However, the opportunity for creativity in the classroom is limited. Beghetto (2017) asserted that students' creative thinking can be enhanced by teachers' confidence in guiding students towards creative thinking and idea construction, as well as by environmental factors that foster creativity. Such an environment can be a creative classroom where students interact and share knowledge as they think creatively and actively engage in learning.

Teachers' Perception of Creative Learning

One of the three Robinson's (2017) myths emphasises that creativity is 'reserved' for specific areas of individual activity, such as the arts. Fostering creativity in students is the top priority in teaching and learning. This highlights questions such as: what kind of classrooms must we create to complete this great task? Do we still believe that creativity is a trait you are born with and carry into the classroom? Can teachers teach their students to be creative? However, despite recommendations to incorporate creativity in schools, many teachers still do not believe in the relevance of nurturing creativity in their students, nor do they know how best to foster it in their classrooms (Lasky & Yoon, 2020). Over the last several years, researchers have concluded that teachers need to revise their expectations for the kind of creativity they can expect from their students.

Teachers who believe in their students' creative ability see it more as a personal trait inherent in some students, rather than something that can be taught in the classroom, believing that creativity may have no place in today's classrooms, as they feel too strapped for time trying to meet curricular standards to worry about creativity (Elliott, 2018). According to Lasky and Yoon (2020), teachers find it challenging to implement a creativity pedagogy because they often lack a lens for understanding creativity in their classrooms. However, creativity is not a mystical process for a select few or a trait inherent in specific learners; it is part of an inclusive learning process for all students in the mathematics classroom. According to Lasky and Yoon (2020), a creativity-integrated instruction class is one in which the teacher accepts students' divergent thinking, promotes collaboration in small groups, and increases learning and self-confidence. Teachers' creative teaching and classroom practices can foster students' creativity and highly innovative skills. Teachers can foster creativity through teaching strategies and approaches that, in turn, can enhance students' creativity across low, moderate, and high skill levels. As teachers generate new ideas, students are motivated to realise their potential in creativity and innovation (Adibah & Hafiza, 2021).

4. Statement of the Problem

Mathematics education in African countries like South Africa faces challenges, and creativity and innovation are essential for improving learning experiences. Most studies have focused on general pedagogy in mathematics learning rather than on integrating creativity to enable its application in real-world problem-solving and innovation. Mathematics education in South Africa is challenged by limited access to resources, large class sizes, and inadequate teacher training, which can hinder creativity in the classroom. To foster creativity and innovation, teachers need to improve their creative skills and beliefs about creativity, and to use creative-integrated instruction to guide students in generating ideas and improving their mathematics learning. Limited research exists on effective creative-integrated mathematics instruction, with the mythical perception that creativity and innovation should be reserved for the arts subjects. This makes it difficult to introduce creativity and innovation in the mathematics classroom, especially for students with special needs. Against this background, the present study investigates the impact of creativity and innovation in mathematics education for students with special needs. It addresses the need to explore creativity and innovation in mathematics education by integrating them into instruction to foster them, creating a clear, inclusive learning environment for students with special needs to express their creative thinking and learning skills as they solve real-world problems.

Purpose of the Study

The purpose of this study is to examine the impact of creativity and innovation in mathematics education for students with special needs education, grounded in Vygotsky's social constructivist theory. The study seeks to determine how creativity and innovation can be effectively integrated to support mathematics education for students with special needs. Specifically, the study aims to achieve the following objectives:

1. To examine the impact of creativity-integrated mathematics instruction on students' mathematics problem-solving across skill levels.
2. To explore teachers' perceptions of the role of creativity and innovation in mathematics education and how these perceptions influence their teaching practices.

Research Questions

The study is guided by these research questions:

1. What is the difference in creativity and innovation skills among students in high, moderate, and low creativity-integrated mathematics classrooms?
2. What is the level of teachers' perceptions of creativity-integrated mathematics instruction for students with special needs?

Hypotheses

The following hypotheses were formulated based on these research questions and tested at the .05 level of significance.

1. There is no significant difference in creativity and innovation skills among students in high-, moderate-, and low-creativity-integrated mathematics classrooms.
2. Teachers' perceptions of creativity-integrated mathematics instruction do not significantly influence their creative classroom practices.

5. Materials and Methods*Research Paradigm*

This study aims to examine the impact of creativity and innovation on mathematics learning in special education. The study is grounded in the philosophical assumption of pragmatism, which emphasises the practical application of ideas and the use of multiple creative methods to address real-world problems. Pragmatism supports integrating both quantitative and qualitative approaches, focusing on outcomes with meaningful implications for teaching and learning. In line with this orientation, this study focuses on the practical outcomes of creativity-integrated mathematics instruction across high, moderate, and low skill levels for students with special education needs. The study employed a mixed-methods design to provide a comprehensive understanding of the impact on student motivation, creative thinking, and problem-solving in mathematics among students with special needs. It also measures teachers' perceptions, experiences with creativity-integrated instruction, and practices. Quantitative data provide measurable evidence of improvement in creative skills in mathematics. In contrast, qualitative data offer insights into teachers' perceptions, influencing their classroom practices through creativity-integrated instruction in mathematics for special education.

Research Design

The study used a mixed-methods design to investigate the impact of creativity-integrated mathematics instruction on grade 8 students' creative problem-solving skills and learning outcomes in mathematics. It aims to measure the impact of creativity-integrated mathematics instruction on students' creativity and innovation across skill levels of high, moderate, and low. It also aims to explore teachers' perceptions of creativity-integrated instruction in special schools in the Gauteng Province of South Africa. This design was chosen because it enables the collection of data on participants' perceptions and experiences from which generalisations can be made to the larger population (Drushlyak et al., 2023). It fosters both quantitative measurement and qualitative evidence on participants'

experiences, ensuring practical impact and a theoretical contribution to understanding how creativity-integrated mathematics instruction can enable creative problem-solving skills and influence teachers' practices.

Population and Sample

The target population comprises 92 grade 8 students and 10 mathematics teachers from 5 special schools in Gauteng, South Africa. Purposive sampling was used to select special education classes and their teachers who use creativity-integrated instruction. The selected teachers had at least 1 year of experience integrating creativity into their mathematics teaching. The Grade 8 students, aged 13 to 15, participated in this research. This age is slightly higher than the typical grade 8 age of 13-14 because some students with special needs do not start school at the typical school age. To ensure representativeness, stratified random sampling was used to group schools according to geographical location, followed by cluster sampling to select classes within each school. From these clusters, participants were chosen proportionally to school location diversity. This sampling strategy ensured that measurements were taken at all schools and across a range of learning contexts. For the observation sessions, 4 mathematics teachers were purposefully selected to be observed in class to note the creative practices they employ while teaching the students. Such methodological triangulation is recommended for quantitative studies examining instructional practices in inclusive environments.

Instruments

Data were collected using two instruments designed by the researcher: the Creativity and Innovation Mathematics Students' Questionnaire (CIMSQ) and the Creativity-Integrated Mathematics Instruction and Practices Questionnaire (CIMITPQ). CIMSQ contained 17 items designed to capture how integrating creativity and innovation into mathematics instruction affects students with special needs' creative problem-solving skills. CIMITPQ contained 30 items that captured teachers' perceptions of how creativity-integrated mathematics influences students' creativity and innovation, creative problem-solving skills in mathematics, and teachers' teaching practices. Each questionnaire made use of the four-point Likert-type scale (Strongly Agree = 4; Agree = 3; Disagree = 2; Strongly Disagree = 1).

The instruments covered creative thinking (1-9), creative problem-solving skills in mathematics (10-17), and items (1-8) on the students' questionnaire. For the teacher's questionnaire, (1-10) focused on developing creativity-integrated mathematics instruction for special needs, (11-18) on teachers' perceptions of creativity-integrated mathematics instruction, (19-23) on teachers' experiences with creativity-integrated instruction, and (24-30) on teachers' creative classroom practices. In addition, classroom observation with a focus on teaching approaches, student engagement, task design that involves creative thinking, and the expression of problem-solving skills in assessment and feedback, was also conducted. This was carried out by the researcher during learning sessions to capture the practical application of creativity-integrated mathematics instruction by mathematics teachers in the classroom. The researcher observed four mathematics teachers implementing creativity-integrated instruction and recorded students' responses to tasks that required creative thinking and problem-solving. During the classroom observation sessions, the researcher was able to group the classrooms into three categories based on their total observation scores (high, moderate, and low-impact classrooms).

The 'high-impact,' 'moderate-impact,' and 'low-impact' classrooms refer to the degree to which teachers implemented creativity-integrated instructional strategies during mathematics lessons. High-impact classrooms were characterised by frequent use of open-ended problem-solving tasks to ensure creative thinking. Also, student-centred inquiry, opportunities for multiple solutions and problem-solving, and encouragement of original thinking. Moderate-impact classrooms incorporated some of these elements, but with less consistency or depth. Here, teachers occasionally used open-ended questions to enable creative thinking, but lessons were still partly guided by traditional, structured instruction. In contrast, low-impact classrooms, also known as low creativity-integrated classrooms, predominantly used traditional teacher-directed approaches and focused on single-solution, procedural tasks. This class gave limited opportunities for student exploration, original thinking, and discussion.

Validity and Reliability

Specialists in mathematics education and educational technology evaluated the questionnaires for clarity, content relevance, and alignment with the study objectives. Based on the feedback, modifications were made to enhance construct validity. The scientific quality of this study was ensured by careful adherence to established quality criteria for quantitative and qualitative research. In terms of quantitative rigour, validity, and reliability were addressed using previously validated instruments, consistent administration procedures, and appropriate statistical analyses aligned with the research questions. Internal consistency was examined to ensure the stability of the measured constructions. Reliability was assessed using Cronbach's alpha, yielding coefficients of 0.90 for the CIMSQ and 0.93 for the CIMITPQ. The instruments were considered reliable for data collection, since their values exceeded the minimum acceptable threshold of 0.50, confirming satisfactory internal consistency.

Regarding the qualitative components, credibility was supported through classroom observations, teaching approaches, student engagement, task design that involves creative thinking, and the expression of problem-solving skills in assessment and feedback. The researcher's comments on the classroom observation were used to verify the questionnaire analysis results and to support or contradict them during discussion. Furthermore, the study's limitations, particularly those related to the teacher sample size, contextual specificity, and analytical scope, were explicitly acknowledged, thereby strengthening the trustworthiness and interpretive boundaries of the findings.

Data Collection Procedure

Prior to data collection, permissions were obtained from school authorities. Teachers and students administered questionnaires directly during class sessions according to the school schedule, and participation was voluntary. The classroom observation covers teaching approaches, student engagement, task design, creative thinking, problem-solving skills, and feedback. Creativity-integrated instruction was selected as a student motivation learning approach that can facilitate motivation, creative thinking, and creative problem-solving skills in mathematics for students, and as a teacher motivational teaching approach for teachers' perceptions, experiences, and creative classroom practices.

Creativity-integrated instruction is appropriate for fostering creativity in mathematics among grade 8 students by enabling motivation, creative thinking, and creative problem-solving. Data was collected for a period of three weeks for the study. Regarding quantitative measurement, CIMSQ and CIMITPQ were administered to teachers and students. This captured their perceptions of creativity-integrated instruction on students' engagement, creative thinking, creative problem-solving skills in mathematics, experiences, and teachers' creative classroom practices. The researcher recorded the classroom observation schedule in four schools during mathematics lessons.

Data Analysis

Quantitative data were analysed using descriptive and inferential statistics through the Statistical Package for Social Sciences (SPSS, version 26). Descriptive statistics, including mean scores, frequencies, and standard deviations, were used to answer the research question, thereby summarising demographic data and responses to individual items. Analysis of Variance (ANOVA) was used to assess differences in skill levels, and the post-hoc Tukey's HSD test was used to determine significant interactions within skill levels. At the same time, regression analysis examined predictors of the learning outputs. The significance level was set at 0.05. Data was analysed mathematically, impact/perception was categorised into three levels by dividing the 4-point Likert scale ($4 - 1 = 3$) into three equal intervals, yielding an interval width of 1.

Based on this classification, mean scores of 3.00–4.00 were interpreted as high impact or perception, 2.00–2.99 as moderate impact or perception, and 1.00–1.99 as low impact or perception. Classroom observation data were subjected to thematic analysis, which identified recurring themes that complemented and contextualised the quantitative results. Coding procedures were applied to categorise statements into themes such as teaching

approaches, student engagement, task design, creative thinking, problem-solving skills, and feedback. This mixed-analytic approach enhanced the credibility, dependability, and confirmability of the results by triangulating multiple data sources.

Ethical Considerations

Ethical standards were strictly observed throughout the study. Institutional approval was obtained from the Ethics Review Committee of the College of Education, University of South Africa (UNISA) under ref number 16/04/2026 to 16/04/2029 (Ref #:11588) for data collection. Informed consent was obtained from the school authorities on behalf of the participants, and confidentiality was maintained by anonymising the students' names and those of their mathematics teachers. Participants were assured that their responses would be used solely for academic purposes and would not affect their professional or academic standing.

6. Results

The results of the study are presented in order of the research questions and hypotheses as follows:

Research Question 1: What is the difference in creativity and innovation skills among students in high, moderate, and low creativity-integrated mathematics classrooms?

Table 1. Mean and Standard Deviation of the Impact of Creativity-Integrated Mathematics Instruction on Mathematics Creativity and Innovation Skills of Students

Creativity-Integrated Mathematics Instruction	N	$\bar{x}$	SD
High Impact	30	3.11	0.38
Moderate Impact	28	3.00	0.28
Low	34	2.51	0.55
Total	92	2.87	0.40

Table 1 shows that students in classrooms with a high level of creativity integration recorded the highest mean score ($\bar{x} = 3.11$, $SD = 0.38$), indicating that they demonstrate stronger creativity and innovation skills compared to their peers. The relatively low standard deviation suggests that these skills are consistent among students in this group. Those in moderately integrated classrooms showed a slightly lower mean score ($\bar{x} = 3.00$, $SD = 0.28$). While their performance is still relatively strong, it does not reach the level observed in highly integrated settings. However, the smaller standard deviation indicates that students' scores in this group are more tightly clustered, reflecting greater uniformity in their skill levels.

In contrast, students exposed to a low level of creativity integration had the lowest mean score ($\bar{x} = 2.51$, $SD = 0.55$), suggesting weaker creativity and innovation skills. The higher standard deviation here indicates greater variability among students, suggesting that their skill levels are less consistent and more widely dispersed. This implies that integrating creativity into mathematics instruction is beneficial, and even moderate integration can make a meaningful difference, but low integration is clearly inadequate.

Research Question 2: What is the level of teachers' perceptions of creativity-integrated mathematics instruction for students with special needs?

Table 2. Mean and Standard Deviation of Teachers' Perceptions of Creativity-Integrated Mathematics Instruction for Students with Special Needs

S/N	Item Description	n	$\bar{x}$	SD	Remark
11	Creativity-integrated mathematics instruction improves students' understanding of mathematics ideas.	10	3.00	1.05	High
12	Mathematics should not be taught through creativity, as it is not an art subject.	10	3.20	1.23	High
13	Students encounter difficulties using creativity-integrated mathematics instruction to learn mathematics ideas	10	3.00	0.94	High
14	Creativity is an important component of learning mathematics	10	2.80	1.23	Moderate
15	Encouraging creativity using creativity-integrated mathematics instruction helps students become better problem solvers	10	3.10	0.99	High
16	The use of creativity in integrated mathematics instruction helps students think creatively as they solve problems.	10	2.70	0.82	Moderate
17	Creativity-integrated mathematics instruction is time-consuming in the mathematics classroom	10	2.40	1.17	Moderate
18	Creativity-integrated mathematics instruction helps students relate mathematics to real-world problem-solving	10	3.20	0.63	High
Cluster Mean and Standard Deviation			2.93	1.01	Moderate

Table 2 shows that the items recorded mean scores that fall within the moderate and high perception levels based on the classification (3.00–4.00 = high, 2.00–2.99 = moderate, 1.00–1.99 = low). Items with high mean scores include Item 11, which indicates that creativity-integrated mathematics instruction improves students' understanding of mathematics ideas ($\bar{x} = 3.00$, $SD = 1.05$); Item 12, which shows that mathematics should not be taught through creativity, as it is not an art subject ($\bar{x} = 3.20$, $SD = 1.23$); Item 13, which reflects that students encounter difficulties using creativity-integrated mathematics instruction to learn mathematics ideas ($\bar{x} = 3.00$, $SD = 0.94$); Item 15, which states that encouraging creativity using creativity-integrated mathematics instruction helps students become better problem solvers ($\bar{x} = 3.10$, $SD = 0.99$); and Item 18, which shows that creativity-integrated mathematics instruction helps students relate mathematics to real-world problem-solving ($\bar{x} = 3.20$, $SD = 0.63$). These high mean scores indicate that teachers strongly perceive both the benefits and some challenges associated with creativity-integrated mathematics instruction.

On the other hand, some items fall within the moderate perception range. These include Item 14, which shows that creativity is an important component of learning mathematics ($\bar{x} = 2.80$, $SD = 1.23$); Item 16, which indicates that the use of creativity in integrated mathematics instruction helps students think creatively as they solve problems ($\bar{x} = 2.70$, $SD = 0.82$); and Item 17, which reflects that creativity-integrated mathematics instruction is time-consuming in the mathematics classroom ($\bar{x} = 2.40$, $SD = 1.17$). These moderate mean scores suggest that teachers are somewhat convinced about these aspects but not strongly so.

The mean scores ranged from 2.40 to 3.20, indicating a mix of moderate and high perceptions among teachers, while the standard deviation values (0.63 to 1.23) show moderate variability in responses. The cluster mean of 2.93 falls within the moderate perception range, indicating that teachers generally perceive creativity-integrated mathematics instruction for students with special needs as moderate. The cluster standard deviation of 1.01 further suggests some variation in opinions. By implication, teachers' perceptions are moderately positive, with stronger agreement on certain benefits and concerns surrounding the implementation of creativity-integrated instruction.

Hypothesis 1. There is no significant difference in creativity and innovation skills among students in high-, moderate-, and low creativity-integrated mathematics classrooms.

Table 3. Summary ANOVA on Impact of Creativity-Integrated Mathematics Instruction on Mathematics Creativity and Innovation Skills of Students

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	6.751	2	3.375	18.263	.000
Within Groups	16.449	89	.185		
Total	23.200	91			

Table 3 shows that $F(2,89) = 18.263$; $p = 0.000 < 0.05$. Thus, the null hypothesis is rejected. This moderate and low-creativity-integration implies that there is a significant difference in students' creativity and innovation skills across high, moderate, and low-creativity-integration mathematics classrooms. Therefore, the level of creativity-integrated instruction significantly influences students' creativity and innovation skills, indicating that the groups do not perform equally. The effect size (partial eta squared) can be estimated as $6.751/23.200 \approx 0.291$, indicating that about 29.1 per cent of the variation in students' creativity and innovation skills is explained by the level of creativity-integrated mathematics instruction. This represents a large effect size, suggesting a substantial impact of instructional approach on students' creativity and innovation skills. This is supported by the classroom observation in terms of students' engagement and creative thinking.

Table 4. Post Hoc Test on Impact of Creativity-Integrated Mathematics Instruction on Mathematics Creativity and Innovation Skills of Students

(I) Creativity-Integrated Mathematics Instruction	(J) Creativity-Integrated Mathematics Instruction	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High Impact	Low Impact	.60681*	.10769	.000	.3501	.8635
	Moderate Impact	.10952	.11297	.598	-.1597	.3788
Moderate Impact	Low Impact	.49728*	.10971	.000	.2358	.7588

Table 4 shows the results of the post hoc analysis on the impact of creativity-integrated mathematics instruction on students' creativity and innovation skills. The findings indicate a significant difference between students in the high-impact and low-impact classrooms (Mean difference = 0.60681, $p = 0.000 < 0.05$), with students in the high-impact classrooms demonstrating higher creativity and innovation skills. However, there is no significant difference between students in the high-impact and moderate-impact classrooms (Mean difference = 0.10952, $p = 0.598 > 0.05$), indicating that their creativity and innovation skills are comparable.

Furthermore, a significant difference exists between students in the moderate-impact and low-impact classrooms (Mean difference = 0.49728, $p = 0.000 < 0.05$), with the moderate-impact group demonstrating higher creativity and innovation skills than the low-impact group. By implication, students exposed to high- and moderate-levels of creativity-integrated mathematics instruction developed creativity and innovation skills significantly better than those in low-impact classrooms. In contrast, the difference between high and moderate levels is not statistically significant.

Hypothesis 2. Teachers' perceptions of creativity-integrated mathematics instruction do not significantly influence their creative classroom practices.

Table 5. ANOVA of Regression Analysis of Teachers' Perceptions of Creativity-Integrated Mathematics Instruction and Creative Classroom Practices

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.146	1	2.146	36.619	.000 ^b
	Residual	.469	8	.059		
	Total	2.614	9			

The ANOVA results indicate that teachers' perceptions of creativity-integrated mathematics instruction have a significant positive effect on their creative classroom practices (see Table 5 above). The regression model is statistically significant, $F(1, 8) = 36.619$, $p < 0.001$, indicating that the likelihood of this relationship occurring by chance is extremely low. The model explains a substantial portion of the variance in creative classroom practices, with an R^2 of 0.821, indicating that approximately 82.1% of the variation in teachers' creative practices is accounted for by their perceptions of creativity in mathematics instruction. This demonstrates that teachers' perceptions are a strong and meaningful predictor of their creative teaching behaviours.

7. Discussion

The study results reveal the relationship between high, moderate, and low creativity and innovation skills. High, moderate, and low creativity-integrated classrooms demonstrated the extent to which teachers, in their lessons, emphasised open-ended problem-solving, encouraged creative thinking through mathematics tasks, and enhanced student participation, engagement, and collaboration with high-integration classrooms and moderate integration-classrooms showing these features most consistently. While low-integration classrooms mostly use the least, they use a traditional, structured, teacher-centred instructional approach.

The findings indicate a significant difference between students in high-impact and low-impact classrooms, with those in the former demonstrating higher creativity and innovation skills. Hence, the null hypothesis is rejected, as there is a significant difference between the students with high and low creativity and innovation skills. This implies that creativity-integrated instruction significantly influences students' creativity and innovation skills, indicating that the groups do not perform equally. Despite the result that there is no significant difference between students in the high-impact and moderate-impact classrooms, indicating that their creativity and innovation skills are comparable, the partial eta squared of 0.291 indicates that the level of creativity-integrated mathematics instruction explains 29.1% of the variation in students' creativity and innovation skills. This represents a large effect size, suggesting a substantial impact of instructional approach on students' creativity and innovation skills.

The findings indicate comparativeness between high-impact and moderate-impact creativity-integrated classrooms. This implies that, to keep creativity relevant, its implementation may take different forms, such as more structured inquiry, guided problem-solving, or strategically chosen open tasks rather than completely open-ended exploration, as in a high-impact creativity-integrated classroom. This means that, rather than creativity being less important, it is about balancing cognitive knowledge weight or load and time constraints while ensuring creativity; hence, the teacher's implementation of creativity may be presented in different ways, hence the high, moderate, and low creativity integrated instruction. This finding agrees with Adibah and Hafiza's (2021) position that as teachers generate new ideas, students are motivated to realise their potential in creativity and innovation. Hence, creativity and innovation are important in learning, both when the curriculum is simpler or more complex;

the teacher's approach to teaching enables conceptual understanding and enhances creativity. This shows that the teachers' creative approaches and knowledge presentation are also important for learning both complex and simple concepts.

This finding aligns with constructivist theory, which emphasises the role of social interaction and students' knowledge discovery, enabling them to develop mathematical ideas and skills as they collaborate with others. This supports learning and emphasises scaffolding, enabling students with moderate and low skills to learn and be supported by those with highly creative learning skills in mathematics, conceptual understanding, and problem-solving. This agrees with Golinkoff and Hirsh-Pasek (2016), who argued that creativity, innovation, and collaboration must be part of learning and can be enhanced by support from teachers, peers, and parents. This finding aligns with those of Norfarahi et al. (2020), Ovibiagbonhia et al. (2019), Uranta and Akpan (2019), Zaremohzzabieh et al. (2025), and Zhou (2018), all of whom found that creativity and innovation make learning more flexible, enable students with special needs to develop learning skills and ideas, and improve the quality of life for individuals. Hence, the need for teachers to inculcate creative, integrated, and innovative teaching and learning in the development of mathematical skills, and to encourage classroom interaction and collaboration during learning.

The study results further reveal that teachers' perceptions of creativity-integrated mathematics instruction have a significant positive effect on their creative classroom practices. The regression model is statistically significant, indicating that the likelihood of this relationship occurring by chance is extremely low. Hence, 82.1% of the variation in teachers' creative practices is accounted for by their perceptions of creativity in mathematics instruction. This finding contradicts Robinson's (2017) myth that creativity and innovation should be reserved for art subjects, also Elliott, (2018), and Lasky and Yoon (2020) who argued that incorporating creativity and innovation in teaching is time consuming and most teachers do not know how best to foster it in their classrooms, even though it can enable inclusive learning especially for students with special needs. This shows that teachers have a change in perspective, enabling them to incorporate creativity and introduce new ideas into mathematics and science subjects, enhancing the development of learning skills in mathematics towards real-world problem-solving, which is one of the major roles of creativity and innovation, as it aligns with (Adibah & Hafiza, 2021).

This finding aligns with Maqoqa and Buka (2025), who argue that students require teacher support to be creative, but that teachers can only support creativity and innovation if they have a positive perspective on them. This finding agrees with Chanda and Sain (2024), and Khalid et al. (2020), who posit that the use of motivational strategies and technology in teaching can foster creativity and innovation in students towards real-world problem-solving. The teacher's perspective is very important in creative learning, as teachers can use learning materials to foster students' creativity in mathematics, particularly in geometry. This agrees with Arthur et al. (2018), Kosasih et al. (2022), and Naidoo and Kapofu's (2020), who reveal that learning can be introduced creatively in the classroom using learning materials, the use of objects, or illustrations, which enable mathematics concepts to be taught in the context of real-life problems.

8. Recommendations

Based on the observations in this paper, the following recommendations are made:

1. Teachers should utilise creativity and innovation to provide effective education for students with special needs by actively engaging students in lessons to enhance learning outcomes.
2. Intensive in-service programs should be organised to enable special education teachers to become acquainted with and trained in effectively utilising creativity and innovation in teaching.
3. Teachers and principals should be encouraged to become more creative in their teaching.

Limitations

The following are limitations to the study: classroom size, teacher-student ratio, and resource availability influenced the effectiveness of seating arrangements and communication skills. Classroom observations were constrained by time and, therefore, limited to a few participants.

9. Conclusions

This study investigates the impact of creativity and innovation in mathematics education for students with special needs. It explores creativity and innovation in mathematics education by integrating them into instruction and creating a clear, inclusive learning environment for students with special needs to express their creative thinking and learning skills in solving real-world problems. The study is informed by social constructivist theory, which emphasises that knowledge is constructed and discovered through interaction, thereby facilitating inclusion and equity. The study provided empirical evidence to guide teachers and curriculum planners, and to inform educational policies, promoting creativity, innovation, and inclusiveness in mathematics education, particularly in special education.

Despite the myth that creativity and innovation have no place in mathematics education, the results affirm that the use of creative-integrated instruction can foster creative problem-solving skills for mathematically inclined real-world problems and improve students' creative skills. The study also shows that teachers' perceptions influence their incorporation of creativity-integrated instruction in teaching mathematics, and that special education teachers use it.

The study investigates creativity-integrated mathematics instruction across three levels of implementation: high, moderate, and low impact. The study's findings show that while both high and moderate levels of creativity integration significantly enhance students' creativity and innovation skills compared to low levels, there is no significant difference between high and moderate levels, suggesting a potential threshold effect. Also, the study provides empirical evidence of a strong link between teachers' perceptions and their creative classroom practices, highlighting the critical role of teacher beliefs and teachers' different presentations in shaping instructional approaches, as seen in the high and moderate-impact classrooms. By combining quantitative analysis with classroom-based observations, this study offers a more nuanced understanding of how varying degrees of creativity integration influence student outcomes.

Although the study participants were students with special needs, it fills an important gap in mathematics education by ensuring creativity and innovation in the classroom for all students. These findings, though specific to the study's participants with special needs, can be generalised to educational settings for students without special needs. These findings can be reasonably generalised to other students, as creativity-integrated instruction positively influences students' creativity and innovation skills, regardless of age, prior knowledge, knowledge context, or ability level.

Future studies should focus on technology-based creative modules for mathematics education in special schools. This should include a larger population of mathematics teachers in the sample.

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Author Contribution Declaration: The study was carried out and written by the author, and the author will also review and edit the manuscript.

Informed Consent Statement: Verbal informed consent was obtained from the authorities in the participants' school for the study.

Data Availability Statement: Supporting data are unavailable due to privacy and ethical restrictions on the subjects used in the investigation.

AI Technology: (Grammarly) has been used responsibly and with high editorial standards to safeguard intelligence and enable readers to understand clearly by checking the meaning of some words used by the author in the manuscript, for language polishing to correct grammar and spelling, and to suggest word choices, and to reduce word count while maintaining the meaning.

Acknowledgments: Dr. Felix Sesugh is acknowledged for his assistance in data analysis.

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