

ISSN 2669-0195 ONLINE
<http://doi.org/10.70132/q9366946753>

INSIGHTS INTO REGIONAL DEVELOPMENT

**Volume 7 Number 4
December 2025**



INSIGHTS INTO REGIONAL DEVELOPMENT

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

2025 Volume 7 Number 4 (December)

<http://doi.org/10.70132/q9366946753>



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Sustainability for Regions

Volume 7 Number 4 December 2025

INSIGHTS INTO REGIONAL DEVELOPMENT*

** 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 CLUSDEV MED (2015-2019) Grant Agreement Number 645730730*



European Research Council
Established by the European Commission

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IMPACT OF SOCIAL MEDIA USE ON YOUTH***Sixolile Nyusani¹, Anathi Beauty Mabungela²**¹Walter Sisulu University, South Africa²University of Kwa-Zulu Natal, South AfricaE-mail: ¹ 218142986@mywsu.ac.za; ² anathiibeautey@gmail.com*Received 25 July 2025; accepted 15 September 2025; published 30 December 2025*

Abstract. This paper reviews the mental health impacts of social media on youth, defined by the World Youth Report as individuals aged 15 to 24 within the Eastern Cape, South Africa. Social media platforms such as Instagram, Facebook, X (Twitter), TikTok, and Snapchat have become extremely important to how youth interact; however, social media has been proven to have both positive and negative impacts on their mental wellbeing. This systematic review examined qualitative studies that sought to explore the relationship between the usage of social media and its mental health repercussions, particularly anxiety, depression, and self-esteem. The review combines findings from previous qualitative research, identifies key themes, and provides recommendations for mental health interventions for youth who use social media. Data collection involved meta-analysis of various qualitative approaches, such as interviews and focus groups, providing a deep understanding of the experiences and perspectives of youth and key informants, including parents and mental health professionals. This review paper aims to highlight areas of concern, formulate or enforce strategies that will result in healthier social media usage, offer valuable information for educators and mental health practitioners, and assist policymakers in establishing policies that seek to promote healthier social media usage.

Keywords: anxiety; depression; mental health; self-esteem

Reference to this paper should be made as follows: Nyusani, S., Mabungela, A. B. 2025. Impact of social media use on youth. *Insights into Regional Development*, 7(4), 10-20. <http://doi.org/10.70132/j9343375965>

JEL Classifications: M12, O15**Additional disciplines:** sociology, psychology, educology, information and communication**1. Introduction**

Increased social media usage has created a complex relationship between youth and mental wellbeing (Simth & Anderson, 2020; Ali et al., 2022). Among youth in Mthatha, social media platforms are frequently used to maintain social connections, spread information, and as a source of entertainment. While social media offers several benefits, such as enhancing social connectedness and spreading information, it also poses risks to youth mental health. The same authors state that qualitative research indicates that constant exposure to social media platforms can result in low self-esteem, anxiety, and depression among youth. Youths in Mthatha, like many others globally, may experience challenges related to negative social comparisons, cyberbullying, and the pressure to conform to digital norms (Beyens, Frison & Eggermont, 2016). "Youth" typically encompasses individuals aged 15 to 24 (World Youth Report, 2021). Significant physical, emotional, and social changes mark this developmental stage. It is a period characterised by identity formation, increased autonomy, and susceptibility to peer influence. The United Nations defines youth as the transition phase between adolescence and adulthood,

* *The study was supported by Walter Sisulu University and University of Kwa-Zulu Natal, South Africa.*

emphasising the unique challenges and opportunities faced by individuals in this age group (United Nations, 2021). In recent years, technological advancements have brought about significant global developments (Yachna et al., 2022). These innovations have effectively diminished the distance barrier, enabling new channels for connecting people across the world (Yachna et al., 2022). Social networking platforms such as Facebook, Myspace, LinkedIn, and others are accessed daily or even hourly by more than 66.66% of internet users, serving as key tools for communication and social interaction (Yachna et al., 2022). While the term "media" refers to tools or channels of communication (such as the internet), "social" pertains to interactions and engagement among individuals. However, the effects of social media on youth may vary depending on what they are exposed to online, their strengths or vulnerabilities, and the social environments in which they are raised (Prinstein, Nesi & Telzer, 2020). Researchers have found that, similar to the internet at large, social media platforms often reflect the racial biases of those who design them. For instance, algorithms and mathematical formulas that shape users' online experiences can inadvertently encode systemic racism rooted in historical discrimination (Noble, 2018). Consequently, social media may act as a breeding ground for harmful ideologies, fostering communities that promote racist hate (Relia et al., 2019). This influence can extend beyond digital spaces, contributing to real-world violence and negatively impacting individuals' wellbeing (Tynes et al., 2019).

Mental health involves emotional, psychological, and social wellbeing. In the youth context, mental health influences how they manage stress, interact with peers, and make life decisions. In South Africa, particularly in the Eastern Cape, mental health issues among youth are worsened by socioeconomic pressures, family dynamics, cyberbullying, and digital influences. The role of social media in shaping these outcomes permits close examination, particularly as youth in areas such as Mthatha may face unique challenges compared to developed regions in the country. The interplay between social media and youth mental health is a growing area of concern. Social media platforms, integral to the daily lives of young people, can have both beneficial and detrimental effects on mental health. For instance, while social media can offer social support and a sense of community, excessive use and exposure to idealised content can lead to increased anxiety, depression, and negative body image (Primack et al., 2022). This research aims to explore these dynamics, providing a nuanced understanding of how social media influences mental health among youth.

2. Problem statement

Recent research has emphasised the positive and negative consequences of social media usage. Nevertheless, the correlation between the use of social media and the mental health outcomes of young people is still ambiguous and intricate. Primack et al. (2022) proposed a substantial correlation between adolescents' increases in anxiety and depression symptoms and their high social media usage. However, Best, Manktelow and Taylor (2020) identified positive aspects, including improved social support and community development, that may mitigate some of the negative effects. The evaluation of the effects of social media platforms is further complicated by their rapid evolution. There has been a recent surge in the number of parents, advocates, and policymakers who have voiced their apprehensions regarding the potential adverse effects of social media usage. According to Orben and Przybylski (2020), several studies have suggested that social media use may be associated with detrimental mental health outcomes, such as loneliness, suicidality, and diminished empathy. The impact of social media on mental health has been the subject of varied research results from individual studies. Even though a significant portion of the public narrative regarding the effects of social media implies that mere exposure is associated with mental health issues, the most reliable evidence indicates that the quality of use is more important than the quantity (Untari et al., 2020). For example, research suggests that depression is precipitated by the use of social media for negative social comparison, which, in conjunction with rumination, contributes to the condition (Nesi, 2020).

3. Literature review

3.1. Social media influence young people's mental health outcomes

Social media are digital platforms that enable the exchange and creation of user-generated content, facilitating communication and interaction within virtual communities. Social media has both positive and negative effects on the mental health of youth worldwide. Positive outcomes encompassed enhanced communication, reading, networking, and learning abilities. Negative consequences may encompass anxiety, melancholy, low self-esteem, and other conditions. Mental health benefits of adolescent social media usage. Some adolescents may benefit from social media by establishing a positive community and establishing connections with others who share their identities, abilities, and interests. It can provide access to critical information and establish a platform for self-expression (Uhls, Ellison, & Subrahmanyam, 2020; Gulevičiūtė et al., 2025).

Abi-Jaoude, Naylor and Pignatiello (2020) have identified among the advantages of social media use for adolescents the capacity to establish and sustain friendships online and establish social connections. These relationships can offer an opportunity for positive interactions with a wider range of peer groups than are available offline, as well as provide significant social support to youth (Orben & Przybylski, 2020). Youth who are frequently marginalised, such as racial, ethnic, sexual, and gender minorities, may find the stress-reducing benefits of online social support from peers particularly significant (Twenge et al., 2022). Social media has been demonstrated to facilitate peer connection, identity development and management, and social support, which may contribute to the mental health and wellbeing of youth who identify as lesbian, homosexual, bisexual, asexual, transgender, queer, intersex, or other (Orben & Przybylski, 2020). According to Uhls, Ellison, and Subrahmanyam, seven out of ten adolescent females reported encountering positive or identity-affirming content related to race across social media platforms. Most adolescents reported that social media has facilitated their sense of acceptance (58%), a sense of support during difficult times (67%), a platform to express their creativity (71%), and a greater sense of connection to the lives of their peers (80%).

3.2. Negative consequences of adolescent social media usage on their mental health

Research has shown that suicide- and self-harm-related content and risk-taking challenges on social media platforms are associated with childhood fatalities (Gelles-Watnick, 2022). For children and adolescents who are already grappling with mental health challenges, this content may pose an enhanced risk (Dyer, 2022). A systematic review of over two dozen studies found that certain social media platforms display live depictions of self-harm, including partial asphyxiation, seizures, and cutting, which result in significant haemorrhaging (Carville, 2022). Despite the fact that social media provides a sense of community for some, this has negative consequences (Carville, 2022). In addition, these studies discovered that the discussion or display of this content can normalise certain behaviours, such as the posting of self-harm models for others to follow and the formation of suicide pacts (Sumner et al., 2021).

Additionally, social media, particularly among adolescents, may perpetuate low self-esteem, disordered dietary behaviours, social comparisons, and body dissatisfaction. A synthesis of 20 studies by Thai et al. (2023) has shown a substantial correlation between social media use and body image concerns and eating disorders, with social comparison as a potential contributing factor. Social media-generated social comparison links disordered diet, body dissatisfaction, and depressive symptoms. Kleemans et al. (2018) discovered that nearly half (46%) of adolescents aged 13–17 reported that social media exacerbated their negative body image, 40% reported that it did not affect their feelings, and only 14% reported that it actually improved their mood. According to Bickham, Hunt, Bediou, and Rich (2022), approximately two-thirds (64%) of adolescents are “often” or “sometimes” exposed to hate-based content. One-third or more of adolescent females of colour reported exposure to racist content or language on social media platforms.

3.3. Anxiety and depression

Research has demonstrated a robust correlation between excessive social media use and an elevated risk of depression and anxiety, loneliness, self-harm, and suicidal ideation (Kleemans et al., 2018). Furthermore, the authors further stated that approximately 10% of university and college students have been subjected to cyberbullying on social media platforms, including offensive comments, unfounded rumours, and other forms of harassment. According to Bickham et al. (2022), negative remarks on social media platforms, including Twitter (X), frequently lead to mental distress among young people, including anxiety and depression.

3.4. Self-esteem

Dyer's (2022) research suggested that cyberbullying and negative social comparisons can result in decreased self-esteem as a result of social media use. It was discovered by Thai et al. (2023) that social media frequently encourages upward social comparison, in which individuals compare themselves to others whom they perceive to be more fortunate, resulting in feelings of inadequacy and reduced self-esteem. In addition, the emotional distress and feelings of worthlessness that cyberbullying on social media platforms can induce can have a negative impact on the self-esteem of young people (Gelles-Watnick, 2022).

3.5. Link between mental health and social media usage among young people

According to research, social media has become an indispensable component of the lives of students, substantially impacting their mental health (Bashir & Ahmad, 2017). In one respect, social media offers students the opportunity to establish connections with their peers, participate in social interactions, and access support networks, which can contribute to their emotional wellbeing and sense of belonging (Lenhart et al., 2022). Youth can utilise this virtual connectivity to express themselves and interact with communities that share their interests or experiences, thereby alleviating feelings of isolation and loneliness. Social media can be a valuable instrument for academic support, providing resources and forums that allow students to collaborate and seek assistance with their studies (Beyens, Frison & Eggermont, 2016). Nevertheless, there are potential negative consequences to the correlation between social media and the mental health of students. Consistent exposure to curated, idealised depictions of peers' lives can result in feelings of anxiety, low self-esteem, and inadequacy (Elha et al., 2019). The tension and depression that can result from the fear of missing out (FOMO) on social events or trends, and the pressure to maintain a perfect online image. Additionally, the mental health of students may be negatively impacted by the disruption of sleep patterns, the reduction of in-person interactions, and the increased likelihood of cyberbullying, all of which can be the result of excessive social media use (Swar & Hameed, 2020). It is imperative to promote a healthier online environment by balancing the positive and negative effects of social media (Elha et al., 2019).

3.6. Coping strategies to address the mental health consequences of social media

Based on the results of the study, it appears that there are few recommendations for the wellbeing of an individual (Bashir & Ahmad, 2017). The family is the most important and primary source of socialisation. Therefore, parents should establish a communication bridge between themselves and their offspring. Adolescence is a period of resistance, wrath, confusion, and emotions. Consequently, it is important to avoid the use of intimidation and instead employ the method of persuasion to provide children with guidance on internet usage (Swar & Hameed, 2020). There is an extensive increase in cybercrime. As a result, it is recommended that adolescents be informed of their legal rights through seminars and workshops conducted at the school level. In addition, it is recommended that children notify their parents of any threats or extortion they may encounter from an individual on the internet. To reduce the amount of time spent on irrelevant activities and conversing, it is also advised that adolescents receive frequent counselling at schools and colleges to improve their social media usage (Lenhart et al., 2022). Youth should be encouraged to engage with social media features that foster social support, online companionship, and emotional intimacy, all of which can contribute to healthy social development (Magis-Weinberg et al., 2021; Psihogios et al., 2022; Holtz & Kanthawala, 2022; Charmaraman et al., 2022). Research

indicates that this type of online interaction may support youths' psychological growth, especially during times of social isolation, heightened stress, or when seeking connections with peers who share similar developmental or health-related experiences. This is particularly valuable for adolescents who face adversity or experience social isolation in their offline lives (Charmaraman et al., 2022; Magis-Weinberg et al., 2021; Psihogios et al., 2022; Holtz & Kanthawala, 2022).

Youth with mental health challenges such as social anxiety, depression, or feelings of loneliness may benefit from social media interactions that offer greater control, opportunities to rehearse social exchanges, and the ability to reflect on them (Reid Chassiakos et al., 2016). However, these same individuals may also be more vulnerable to the negative aspects of social media use (Nesi, Mann & Robb, 2023). Social media presents a powerful avenue for the socialisation of specific attitudes and behaviors, often influencing adolescents to adopt their peers' opinions and prosocial behaviors (Armstrong-Carter & Telzer, 2021). Online discussions about healthy habits can encourage positive offline behavior and contribute to better overall wellbeing. Social media may be especially beneficial for those experiencing mental health crises or for members of marginalised communities who have often faced harm in digital spaces (Massing-Schaffer et al., 2022). For example, LGBTQIA+ and questioning adolescents can use social media to find peer support and exchange accurate health information, which promotes psychological development and offers protection against negative mental health outcomes during stressful periods (Craig et al., 2021). This support is vital when teens are unable or unwilling to discuss sensitive topics with parents or caregivers (Craig et al., 2021).

4. Theoretical framework

4.1. The Theory of Social Comparison

Initially proposed by social psychologist Leon Festinger in 1954 (McIntyre & Eisenstadt, 2011), Social Comparison Theory is based on the premise that individuals are motivated to obtain accurate self-evaluations. The theory elucidates how individuals assess their opinions and abilities by comparison to others in order to reduce uncertainty in these domains and learn how to define the self. Comparing oneself to others socially is a method of self-assessment and measurement that seeks to determine an individual's position in relation to their own set of standards and sentiments (Buunk, 2006). Social media's psychological implications can be comprehended through numerous psychological theories. Social comparison theory (Festinger, 1954) claims that individuals establish their own social and personal value by comparing themselves to others. Social media enhances this effect by offering a continuous stream of peers' curated life highlights.

4.2. A Theory of Self-Discrepancy

According to the self-discrepancy theory, individuals evaluate their "actual" selves in relation to internalised standards or the "ideal/ought self." Emotional discomforts (e.g., anxiety, threat, restlessness) are associated with inconsistencies between the "actual," "ideal," and "ought" versions of oneself, which are characterised by idealised versions of oneself that are derived from life experiences. The theory offers a framework for comprehending the way in which various categories of discrepancies between self-representations are associated with distinctive emotional vulnerabilities. The objective of Higgins was to demonstrate that emotional and psychological distress is the result of internal disagreement. Self-discrepancy is the phenomenon of negative emotions resulting from the discrepancy between two of these self-representations. Self-discrepancy theory (Higgins, 1987) posits that the gap between one's actual self and ideal self, which is frequently emphasised on social media, can lead to emotional distress and diminished self-esteem.

5. Research methodology

Qualitative research findings were employed in this review to investigate the influence of social media usage on the mental health of adolescents in the Eastern Cape. This systematic review used a multifaceted search strategy that encompassed peer-reviewed journals and reports from the previous decade. Utilising search terms such as "social media," "mental health," and "youth," relevant studies were identified through the utilisation of databases including Google Scholar, PubMed, Elsevier, Scopus, and Science Direct. Researchers limited the database searches to studies published in English, had abstract relevance, were free to access, were in the region, and were the most cited within the past four years. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses framework served as the basis for the study selection procedure (PRISMA, 2020). The qualitative studies that investigated the mental health consequences of social media use among young people aged 15-24 were included in the study. Studies that investigated the impact of societal norms on the mental health of adolescents and socioeconomic factors, or examined experiences in comparable rural settings, were also included. The selection of 57 studies for an in-depth analysis was made after they were screened for relevance and quality (see Figure 1 and Table 1).

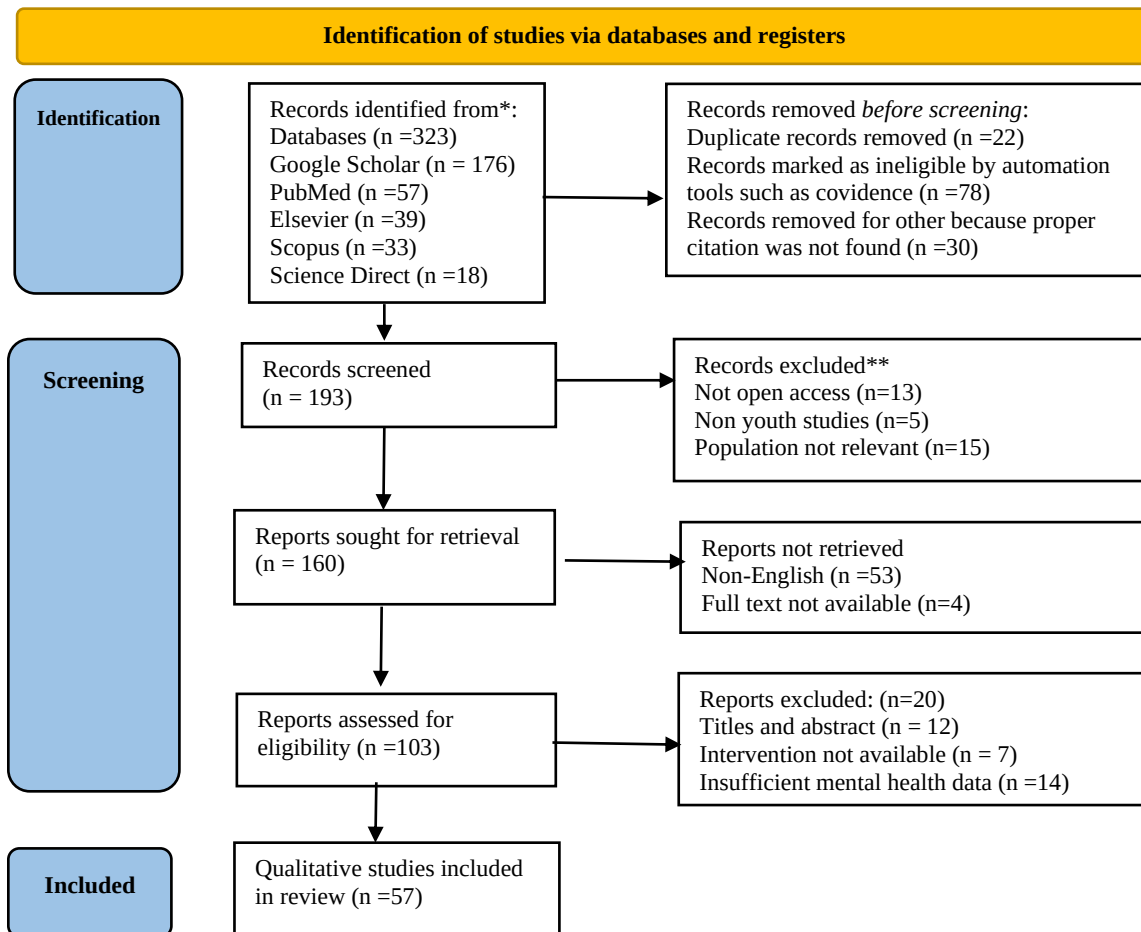


Figure 1. PRISMA flow diagram

Source: Prisma (2020)

Table 1. Databases and articles selection process

Database	Number of papers found	Number of papers selected
Google Scholar	176	25
PubMed	57	11
Elsevier	39	17
Scopus	33	2
ScienceDirect	18	2
Total	323	57

Source: authors

6. Findings and discussion

Anxiety, depression and social comparison

A recurring theme across studies is the role of social media in triggering anxiety through social comparison. Youth reported feeling inadequate after viewing idealised portrayals of success, beauty, and lifestyle on platforms like Instagram. This negative self-perception is often compounded by cyberbullying, which increases anxiety. In Mthatha, where socioeconomic disparities are pronounced, youth may experience heightened stress when comparing their lives to those of more affluent peers or influencers. Qualitative studies suggest that this comparison often leads to rumination, further deepening the feelings of worthlessness and anxiety. Youths described feelings of isolation despite being constantly connected online. The paradox of digital connection, yet emotional disconnection, has been a significant finding in several studies. As youth in Mthatha rely on social media for companionship, they often feel more disconnected from real-life relationships. Depression is also linked to excessive screen time, which leads to disrupted sleep patterns and diminished face-to-face interaction. Participants shared narratives about how their emotional wellbeing deteriorated due to pressure to keep up with online trends, leading to social withdrawal and loneliness. These findings are further supported by studies indicating a strong link between excessive social media use and increased risk of depression and anxiety, loneliness, self-harm, and suicidal ideation (Kleemans et al., 2018). The same authors further indicated that about 10% of university and college youth have been bullied on social media through offensive comments, untruthful rumours, and other forms of cyber-bullying. Bickham et al. (2022) indicated that youth often develop mental distress, such as depression and anxiety, resulting from negative comments on various social media platforms, such as X (Twitter).

Self-Esteem and Identity

Self-esteem, particularly among female youth, was found to be negatively affected by idealised images of beauty promoted on platforms such as Tik-Tok. Youths in Mthatha expressed concerns over body image, often feeling pressured to conform to unrealistic beauty standards. On the other hand, some studies have highlighted the positive role of social media in offering space for identity exploration. For LGBTQ+ youth, for example, social media provides an avenue to connect with supportive communities and express their identities freely. These findings concur with research by Dyer (2022), which indicates that social media usage can lead to lower self-esteem due to negative social comparisons and cyberbullying. Thai et al. (2023) found that social media often facilitates upward social comparison, where individuals compare themselves to others who they perceive to be better off, leading to feelings of inadequacy and lower self-esteem. Additionally, cyberbullying on social media platforms can have a detrimental effect on youth self-esteem, causing emotional distress and feelings of worthlessness (Gelles-Watnick, 2022).

The Role of Parents and Mental Health Professionals

The parents and mental health professionals identified in the studies noted the challenges in addressing social media-related mental health issues. Many parents felt disconnected from their children's online worlds, while therapists pointed to the need for more digital literacy among both the youth and adults. Interviews with parents in Mthatha revealed concerns about the addictive nature of social media, which often leaves youths vulnerable to mental health issues. These findings concur with the existing literature from various studies that have indicated a

strong link between excessive social media use and an increased risk for depression and anxiety, loneliness, self-harm, and suicidal ideation (Kleemans et al., 2018). The same authors further indicated that about 10% of university and college youth have been bullied on social media through offensive comments, untruthful rumours, and other forms of cyber-bullying. Bickham et al. (2022) indicated that youth often develop mental distress, such as depression and anxiety, resulting from negative comments on various social media platforms, such as X (Twitter).

Conclusions

The impact of social media on youth mental health varies with both risks and benefits. Anxiety, depression, and self-esteem issues are common among youth exposed to social comparison and cyberbullying, and social media can also provide an approach for community building and identity exploration. Mental health interventions should consider the specific socioeconomic context of Mthatha, providing youths with digital literacy skills and promoting responsible social media use. This review paper highlights the importance of enforcing open dialogue between youth, parents, and mental health professionals to overcome the negative mental health impacts of social media.

Recommendations.

Mental health practitioners should work closely with parents to offer information that will help promote healthy social media usage;

Parents should talk more to their children to better comprehend the pressure that the youth feel as a result of the social media lifestyle;

Qualitative studies comparing the long-term effects of social media on youth in both rural and urban areas should be conducted;

Reinforcement of cyberbullying legislation to protect youth who use social media is recommended.

The study's *limitations* were the lack of articles written in English that investigated the mental health impacts of social media for review; furthermore, the study found articles that were not qualitative and not open to review. The last limitation is that studies that involved subject key informants, such as teachers and parents, who are presumed to know the youth better, were not easily found on the databases used by the authors.

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Funding: The study was supported by Walter Sisulu University and University of Kwa-Zulu Natal, South Africa.

Data Availability Statement: Data is available upon request from the authors.

Ethical Compliance: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Conflict of Interest declaration: The authors declare that they have no affiliations with or involvement in any organisation or entity with any financial interest in the subject matter or materials discussed in this manuscript.

Author Contributions: Sixolile Nyusani and Anathi Beauty Mabungela contributed to the design and implementation of the research, Sixolile Nyusani to the analysis of the results and to the writing of the manuscript. Dr Nkanyuza conceived the original and supervised the project.

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

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COLLABORATIVE PRACTICES WITHIN SUPPLY CHAIN MANAGEMENT ACTIVITIES AMONG SMALL AND MEDIUM ENTERPRISES (SMEs): A CASE STUDY OF SOUTH AFRICA**Hluli Ndlovu¹, Livhuwani G. Nkondo², Ntise H. Manchidi^{3*}**^{1,2} *Department of Business Management, Faculty of Management, Commerce and Law
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Abstract. As global business environments get more challenging, supply chain management (SCM) has embraced cooperation to increase effectiveness, cut costs, and improve customer experiences. The study assesses the current practice and status of collaboration, evaluates the factors that influence collaborative practices among small and medium enterprises (SMEs). The study applied a qualitative research method through the interpretivism paradigm and employed semi-structured interviews to acquire substantive data from the SMEs operating in the local environment. Results were concluded as they were examined through thematic analysis. It is evident that collaboration enhances supply chain performance and fosters innovation, trust, and operational efficiency. Key drivers include market development, competitive edge, better product quality, and innovation. The study adds value to the extant SCM literature by providing useful suggestions to enhance inter-SME partnerships that may enhance sustainable supply chain practices. The findings accruing from the research studies are beneficial to business managers, who wish to enhance SCM effectiveness and competitive advantage in similar geographical environments.

Keywords: collaboration; drivers; innovators; small and medium enterprise (SME); supply chain management (SCM)

Reference to this paper should be made as follows: Ndlovu, H., Nkondo, L.G., Manchidi, N.H. 2025. Collaborative practices within supply chain management activities among small and medium enterprises (SMEs): a case study of South Africa. *Insights into Regional Development*, 7(4), 21-33. <http://doi.org/10.70132/y6869699299>

JEL Classifications: D22, D23

1. Introduction

Supply Chain Management (SCM) is a network of activities that plan, control, and execute the flow of goods and services from raw materials to end consumers (Ivanov, 2021). It may be described as the management of the flow of things from the point of origin to the consumption point, including materials, information, and services. SCM includes coordination with the business' suppliers, manufacturers, distributors, and customers (Alsheyadi, Baawain, & Shaukat, 2024). Thus, SCM is becoming a critical success factor for organizations in the modern world where the business environment changes rapidly. As businesses go global, and customers' requirements constantly evolve, conventional supply chain management models are inadequate to satisfy market needs fully (Gaiardelli et al., 2021). Collaboration is also a progressive and transformative model that has changed how SCM is managed. Cooperation, both internally and with other organizations has been a turning point since it makes

companies and organizations operate efficiently and innovate (Alshurideh et al., 2022). Supply chain relations are also critical and cannot be overemphasized as a key component in supply management. These relations can help to bridge the gap between entities, build trust, and establish positive relations with different players in the supply chain (Yavaprabhas, Pournader & Seuring, 2023).

SCM fosters more creativity and expands the horizons of suppliers, manufacturers, distributors, retailers, and even customers because the most benefits are achieved through collaboration (Mubarik & Khan, 2024). The gains that come with collaboration are increased visibility, a decrease in lead time, greater forecast accuracy, better stock management, and overall customer satisfaction (Baah et al., 2021). This invariably means that common purposeful collaboration enables organizations to counter any obstructions and exploit opportunities, which would in any other case be unfeasible (Yuan et al., 2022). Communication, trust, and commitment are key strategies for the successes of collaborative work (Huda, 2024). It demands a transition from an often-tactful approach with creditor constituents to more comprehensive, forward-thinking (Faregh, & Jourabchi Amirkhizi, 2023). SCM demands that various stakeholders work closely together and be ready to make investments in relationship-building communication and technology. Collaboration, however, is not without challenges. Organizations' challenges include cultural barriers, self-interest, and data privacy (Swart, Bond-Barnard & Chugh, 2022). However, these challenges could be attenuated if the current mindset and processes envision interpersonal collaboration and engagement aiming at producing revolutionary change (Govender & Adegbite, 2022).

Although prior studies highlight the importance of integration for the effective functioning of supply chains, the lack of cooperation in SCM remains a mystery for many organizations on how to continuously and sustainably achieve high levels of integration and the tools that need to be used (Aldabous, 2024). Nonetheless, to enhance the understanding of collaboration on how it reduces challenges and promotes superior performance, concerns have been raised on the barriers, limitations, and factors that prevent collaboration success in the SCM area (Kim & Nguyen, 2022).

In globalized markets where there are increasingly complex supply chains, SMEs face numerous challenges, particularly in resource-constrained environments. However, these SMEs are often found to adopt collaborative SCM practices to navigate these challenges and improve competitiveness. Ultimately, these cooperative efforts allow SMEs to leverage shared resources, streamline operations, and enhance their market positions. This study expands on preliminary findings to explore critical collaborative supply chain practices and the key drivers of collaboration in SCM.

2. Theoretical foundations

2.1 Existing collaborative practices in SCM among SMEs

SCM cooperation among SMEs effectively tackles single-company limitations and improves competitiveness through partnership. Such practices cover a broad range of integrated programs, including procurement collaboration, logistics collaboration, and information collaboration (Ghazal, & Alzoubi, 2021; Badraoui, Krimi, & Saikouk, 2024). This introduces the SME 'strategic' partner so that the need for economies of scale, operational efficiency, and market coverage can be accomplished. SMEs have better bargaining power when it comes to purchasing from and selling to suppliers, achieving efficient elements of the supply chain, and offering low prices that may help cut numerous costs, such as those related to the movement of goods. It demonstrates that such a relationship is not only helpful in increasing supply chain responsiveness and robustness but also for improving supply chain innovativeness and reactivity to changing market environments. Collaborative practices in SCM among SMEs are described in the next sub-sections.

2.1.1 Joint Procurement

Joint procurement pools the purchasing needs of different SMEs, thereby harnessing increased collective buying power and enabling more favorable terms from suppliers. By aggregating orders, SMEs can access the benefits of economies of scale, generating discounts and improved payment terms that generally only larger firms would have been able to access. The strategy reduces unit costs and makes SMEs more potent to stand against suppliers with strong bargaining positions (Seiso, Ogunbayo, & Aigbavboa, 2023). In this regard, pooling resources are specifically necessary since high-quality inputs come at a higher price, and suppliers are likely to sell reliable products and offer priority service to customers who purchase in bulk; thus, SMEs can pool resources as a cost-effective means to ensure quality standards of procurement and supply chain management.

Savings from joint procurement can be significant and enable more outstanding capital toward other vital areas such as research & development, marketing, or process improvements. By participating in joint procurement, SMEs share the cost of high-quality materials and services among group members rather than only facing the financial burden themselves, making them more affordable (Ramjaun, Rodrigues & Kumar, 2024; Chirico et al., 2024). As a result of joint procurement, SMEs can diversify their suppliers, so they are not stuck with one supplier that poses a risk. For example, access to a wider variety of suppliers helps SMEs buffer from price variations and supply chain shocks, thus leading to higher operational resilience. This also creates synergies about associated orders in cutting down the expansion costs for SMEs, boosting their growth potential by finding ways to offer new product lines or move into new markets. SMEs can benefit from bulk purchasing discounts and transfer these cost savings to their customers, which improves their competitiveness in the marketplace and helps them compete against larger competitors (Soysal, Belbağ & Erişkan, 2022). As (Nguyen et al., 2020) write, this strategic benefit is universal across industries, with a proven record of both cost reduction and enhanced access to critical goods. To summarize, joint procurement acts as a tool that leads to a more sustainable and watermark operational model by further prepping SMEs at the edge of competing on the competitive level in the contemporary market (Niu, Mu & Chen, 2023).

2.1.2 Collaborative Logistics Services

By utilizing shared logistics operations, SMEs can combine to share resources required for warehousing, transportation, and distribution – generating efficiencies that reduce logistical costs while enhancing delivery performance. Logistics infrastructure sharing enables SMEs to maximize the efficiency of critical activities such as route planning, storage, and fuel consumption, leading to cost savings and better operations (Pan et al., 2021). SMEs in shared logistics arrangements share the costs of personnel, fuel, and space goods, thus reducing their expenses compared to the equivalent amounts allocated to separate logistics facilities. This model seems more suited for firms with high logistics costs because of the diminished overhead and increased operational efficiency (Diao, Kong & Zhao, 2021).

Advanced technologies are another benefit of shared logistics. SME capability can also be pooled to afford broader systems. Automated warehouse management, real-time track and trace, and route optimization tools have been financially unattractive for single SMEs. They increase logistical correctness, enable quicker deliveries, and provide better customer service benefits directly related to customer satisfaction and loyalty (Deng, & Lin, 2022). Such tools are changing the game for SMEs as they help them compete in an open market that demands swift and dependable service (Lewandowska, Berniak-Woźny & Ahmad, 2023). Furthermore, optimizing routes means less fuel consumption and emissions being released into the atmosphere, which ultimately reduces environmental impact by aligning the operations of SMEs with the sustainable business environment.

Better, faster, and more reliable delivery directly boosts customer satisfaction, which is critical for SMEs that want to create loyal customers among their regulars while building a good reputation as a brand. Shared logistics arrangements enable SMEs to provide service levels like those of a large company at affordable costs. This allows SMEs to meet customer demands more effectively, build trust in the quality and timing of their products, and

position themselves as dependable players within whatever market they are operating. Such a strategy allows SMEs to utilize resources more efficiently in business activities, delivering value to the customers, such as service quality, product delivery, and variety (Rane, Achari & Choudhary, 2023).

2.1.3 Information Sharing Platforms

Supply chain information-sharing platforms are a vital solution for small to SMEs that can foster greater coordination, transparency, and real-time communication in the supply chain. Thanks to these digital platforms, SMEs can seamlessly and swiftly share information and insights, which means they adapt quickly to changing market conditions or customer demands. The increasing gap in information can be avoided through the implication of real-time data sharing that reduces lead time and enables SMEs greater flexibility to respond to production volumes towards an external environment or changes in demand Ngcobo et al. (2024).

SMEs that must stay agile and responsive in a fast-moving market need as much transparency across the supply chain as possible. Giving them a glimpse of the whole supply chain, information-sharing platforms allow SMEs to keep track of inventory levels, forecast shifts in demand, and manage production schedules accordingly. Having a sight of stock lowers the risks of stock out or overproduction, causing undesirable resource wastage due to a supply-demand mismatched effect (Jauhar et al., 2024). Moreover, shared information also improves decision-making as SMEs develop insights that help forecast, which is necessary for efficient functioning and avoidance of unnecessary costs Abrokwhah-Larbi & Awuku-Larbi (2024).

Information-sharing platforms promote coordination and innovation in the supply chain by enabling joint product and service development among partners. These platforms foster collaborative environments where joint problem-solving and exploratory creativity are encouraged, allowing SMEs to bring innovative solutions to the market more effectively. Having a shared data ecosystem will also enable SMEs to discover and monitor new trends or changes in consumer preferences, allowing them to create/react to developing a product that better matches current needs. Strengthening an SME's operational role within the supply chain further promotes a culture of continuous improvement to adapt and innovate.

2.2 Factor driving SMEs to engage in collaborative supply chain practice

Intrinsic and extrinsic factors motivate SMEs to engage in collaborative supply chain practices. Firstly, collaboration is strategic through the combination of resources that constitute the competence of the SMEs in acquiring complementary resources that are critical in the expansion of operations and enhancement of products (Oyedijo et al., 2022). If two or more firms collaborate, they can benefit from professional advice, tools, and insights about a particular market, which one or several SMEs might lack. Secondly, collaborative arrangements support market orientation and probe into market trends, enabling SMEs to respond rapidly to the changing clients and market needs. This flexibility is essential, especially in industries that are fast growing; in the current world, obtaining a competitive edge is very important (Matalamäki, & Joensuu-Salo, 2022). Besides, SMEs benefit from collaborative practices by reducing the effect of supply chain risks, including sourcing and distributing disruptions resulting from disasters or epidemics (Daghar, Alinaghian & Turner, 2021). The following factors drive SMEs to engage in collaborative supply chain practices.

2.2.1 Access to Resources and Capabilities

SMEs are driven to collaborate primarily to gain access to resources and capabilities that might be financially or logistically out of reach on their own. Collaborating with other firms allows SMEs to utilize specialized expertise, technologies, market insights, and production assets, significantly boosting their operational capacities and competitive advantage (Ricci, Battaglia, & Neirotti, 2021). In a market that values rapid innovation and competition, staying relevant often means quick access to advanced tools and skill sets. Through partnerships, SMEs can share resources, taking advantage of cutting-edge technologies and processes without the need to shoulder the entire cost. For example, SMEs in manufacturing alliances can share the use of expensive high-end

machinery that would be unaffordable for them individually. By dividing these costs among partners, they can harness advanced production technology to scale operations, improve product quality, and meet market demand more effectively (Martinez & Chen, 2021).

Moreover, collaborations allow SMEs to combine knowledge and expertise, building a cumulative advantage that supports innovation and problem-solving. Access to shared logistics, R&D facilities, and specialized skillsets helps SMEs broaden their product range, enhance customer service, and explore new market opportunities more efficiently (Nayak & Choudhary, 2022). Such partnerships strengthen SMEs, making them more adaptable and resilient against competitive pressures. By exchanging market insights, technological developments, and brand leverage, SMEs can collectively improve their market presence, reach broader audiences, and create products that align with new market trends (Benhayoun, Ayala & Le Dain, 2021). Thus, collaboration equips SMEs with vital resources and capabilities that foster growth and sustainability, which would be significantly more challenging to achieve independently.

2.2.2 Risk Mitigation

Collaborative supply chain practices are a powerful strategy for SMEs to mitigate risks, particularly those tied to supply chain disruptions. By diversifying their sourcing and distribution channels, SMEs can build more robust supply chains and be better prepared to handle unexpected events like economic recessions, natural disasters, or global crises. A diversified supply chain provides SMEs with alternative options for sourcing materials and distributing products, lowering their dependence on any single supplier or route, which is especially important during disruptions. For instance, during the COVID-19 pandemic, many SMEs struggled due to heavy reliance on specific suppliers or geographic areas. Collaboration enables SMEs to foster relationships with multiple suppliers and logistics partners, enhancing flexibility and minimizing exposure to localized disruptions. Resource sharing through collaboration provides SMEs access to backup suppliers and alternate distribution channels, which is critical for maintaining operations during a crisis. Risk becomes a shared burden, allowing SMEs to spread the impact of potential disruptions across a network rather than absorbing it alone. For example, SMEs that partner within the same industry or region can collectively source materials, transport products, and share warehouse space, reducing downtime if a single source fails (Scholten, Stevenson & vanDonk, 2020). Such collaborative efforts reduce risks from supply chain issues and help SMEs maintain confidence, knowing contingency plans are in place. Collaboration supports risk management strategies that enhance SME stability and resilience, enabling them to face challenges better and continue operations during tough times.

2.2.3 Increased Market Responsiveness

Collaborative arrangements also offer the flexibility SMEs need to shift. Collaboration among SMEs enhances their agility and responsiveness to shifting market conditions, customer preferences, and industry developments. In competitive markets, quick adaptation is essential for sustaining relevance. Through collaborative practices, SMEs gain the agility to seize new opportunities, whether expanding into new regions, launching innovative products, or responding to changing customer needs (Loska et al., 2024). Partnerships enable SMEs to share and evaluate market data, customer feedback, and competitive insights, empowering them to create strategies that align with market trends. This pooled intelligence boosts strategic planning and ensures proactive rather than reactive responses to market dynamics.

Resources adjust production timelines and adapt marketing strategies based on real-time feedback. Sharing resources and insights helps SMEs quickly tweak their offerings to better align with customer expectations, improving their reputation for being responsive and customer-focused (Loska et al., 2024). For instance, SMEs collaborating on product development can efficiently conduct market trials, gather user feedback, and refine their products to suit customer needs. This level of responsiveness helps SMEs stay competitive, allowing them to address new trends and innovations faster than they could alone. Joint responsiveness positions SMEs to capture new customers, boost loyalty, and secure their market stance. Therefore, collaboration is a strategic edge,

allowing SMEs to thrive in dynamic markets by staying closely attuned to customer preferences and industry shifts.

Research gap and aim of the study

Although prior research highlights the importance of integration for the effective functioning of supply chains, the lack of cooperation in supply chain management remains a mystery for many organizations on how to continuously and sustainably achieve high levels of integration and the tools that need to be used (Liu et al., 2021; Ahmadi-Gh & Bello-Pintado, 2024). The tools and processes associated with open and successful integration are not yet fully known and put into practice. This study is therefore aimed at exploring the role of collaboration in supply chain management among small and medium-sized enterprises (SMEs) in Thulamela Local Municipality.

3. Methodology and scope

3.1 Data Collection and Analysis Strategies

For this research, the interpretivism paradigm was followed to analyze the complex interactions and relationships that define the successful supply chain collaborations. This was in support to exploring how various entities perceive and engage in collaborative efforts that are crucial for identifying best practices and potential challenges. As exploratory research involves exploring and familiarizing oneself with an existing phenomenon and obtaining new insights; this research was conducted in the spirit of transparency and integrity to a high degree of validity and originality to study collaboration in SCM through new ways of analysis. In this regard, the target population for this study was small business owners in the Thulamela Local Municipality and purposive sampling was employed to make it possible to choose participants who had firsthand experience and insights regarding supply chain collaboration. The sample size was based on data saturation, defined as the point at which no new themes were identified in the data. This guaranteed an adequate sample size for thorough coverage of the researched topic.

Face-to-face interviews were conducted to enable participants to use their own words in narratives so that they could share experiences and their own views. Semi-structured interviews enabled the researcher to ask several questions and get an opportunity for a real-time conversation, hence the richness of the data collected. A voice recorder was used to record data. The data was collected from May until the end of June in the year 2024. The process of data collection was done until the point of data saturation was attained after eleven participants were interviewed, thus covering a wide scope of the research topic. Thematic data analysis of transcripts to look for themes or meaning of patterns made the analysis more insightful and possible to develop action items from the analysis of results.

4. Results

Data was collected from 11 small business owners in Thulamela Local Municipality. Below is a summary of the participants' demographic details as shown in Table 1.

Table 1. Participants' demographics

Participants	Gender	Type of business
1	Female	Retail Clothing
2	Female	bakery
3	Male	Food production
4	Female	Agriculture
5	Male	IT services
6	Male	Construction
7	Female	Restaurant

8	Male	Printing and design services
9	Female	Beauty saloon
10	Female	Local grocery store
11	Male	Tailoring services

4.1 Frequency of Collaboration

The frequency of collaboration significantly differed among participants based on their business nature and operational needs (see Table 2).

Table 2. The current state of collaboration for SMEs in Thulamela Local Municipality

Major theme	Sub-Theme
Collaboration	High-Frequency collaboration Low-frequency collaboration Regular collaboration

4.1.1 High-frequency collaboration

Participants reported frequent collaboration, often on a weekly or monthly basis. These businesses rely on local supply chains and partnerships to keep their products fresh and optimize their operations. For example, Participant 2 collaborates weekly with local farmers to source fresh ingredients, while Participant 3 works monthly with retailers and other food producers.

“We collaborate regularly, almost monthly, particularly with larger retailers and other food producers in the region.”

“I collaborate with local farmers and grocery stores weekly.”

Conversely, clothing retailers and construction material suppliers collaborated less frequently, usually around specific projects or key business periods, such as product launches or large.

4.1.2 Low-frequency collaboration

Clothing retailers, tailoring businesses, and construction material suppliers collaborate less frequently, typically once or twice a year, or during major projects. The clothing retailer collaborates twice a year, mainly when developing new clothing lines, while the construction materials supplier collaborates during large projects requiring pooled resources. This low frequency reflects the project-based nature of their work.

“We collaborate about twice a year, mainly during the development of new clothing lines and during major sales events.”

“Collaboration happens every few months, especially when working on large projects” “I collaborate with fabric suppliers and other tailors monthly.”

4.1.3 Analysis of Drivers of Sustainable Supply Chain Practices

Participants from knowledge-intensive sectors collaborate regularly. The IT service provider collaborates almost monthly with software developers and larger IT firms, while the printing and design services owner collaborates a few times a month with local designers and suppliers. In these sectors, collaboration is critical for maintaining competitiveness and offering innovative solutions.

“Collaboration occurs a few times a month with local designers and printing suppliers.”

“We collaborate regularly, almost every month, particularly with software developers and larger IT firms.”

4.2 Drivers of Collaboration

Motivations for collaboration varied but generally focused on market expansion, cost savings, and access to resources (see Table 3).

Table 3. Factors that drive SMEs to engage in supply chain collaboration practices

Major Theme	Sub-Theme
Drivers of Collaboration	Market Expansion and Competitive Advantage Product and Service Quality Access to Expertise and Innovation

4.2.1 Market Expansion and Competitive Advantage

Participants were mainly driven by the need to expand their market reach and secure larger contracts. Collaboration often opens new customer bases and distribution channels. For example, an agricultural producer collaborated with local farmers and wholesalers to improve bargaining power and gain access to larger markets.

“The potential for higher profits and market expansion are key drivers for our collaboration.”

4.2.2 Product and Service Quality

In customer-facing industries, collaboration helps maintain high-quality products and services. For instance, a restaurant owner collaborated with local suppliers to source fresher produce, ensuring high-quality ingredients and enhancing customer satisfaction. Similarly, beauty salon owners collaborated with product suppliers to stay updated on the latest beauty trends and offer premium services.

“The need to stay updated with beauty trends and provide high-quality services motivates me to collaborate with product suppliers.”

4.2.3 Access to Expertise and Innovation

Participants in knowledge-driven industries emphasized collaboration to access specialized expertise and technologies. For example, IT service providers partnered with software developers and larger firms to offer advanced tools and skills. Clothing retailers collaborated with designers to create unique, high-quality products, helping them stay competitive and attract a broader customer base.

“The aim is to keep up with technological advancements and to offer comprehensive solutions to our clients.”

“The desire to offer unique, high-quality products that stand out in the market drives our collaboration with both designers and manufacturers.”

5. Discussions and theoretical contribution

High-frequency collaborations are prevalent in industries focused on food production and agriculture. Companies in these sectors collaborate with suppliers on a weekly or monthly basis to maintain supply chains for fresh produce and optimize inventory levels. For instance, bakery and food production businesses emphasized the need for regular engagement with local farmers and suppliers to sustain the raw material supply chain. This finding aligns with (Tehseen, Yee, Haider, Hossain, & Sohail, 2024), who argue that consistent collaboration ensures food industries operate efficiently and deliver high-quality products. Conversely, industries like retail clothing, tailoring, and construction engage in less frequent collaboration, usually limited to major projects or new product launches. This supports (Syarif, 2024), who found that project-driven industries collaborate less frequently due to the cyclical nature of their projects. Collaboration in these sectors typically occurs when pooling resources or accessing specialized expertise is necessary.

In sectors where innovation is ongoing, such as IT services and design, collaboration is more continuous. For example, IT service providers and design firms frequently collaborate with partners to access cutting-edge technologies and specialized skills. This finding is consistent with (do Prado, de Souza, & Piekarski, 2025), who emphasized that open innovation and collaboration are critical for sustaining competitiveness in rapidly evolving industries. Market expansion and achieving a competitive edge were the primary motivations for collaboration among participants. For instance, agricultural suppliers improved bargaining power and pricing by collaborating with local farmers. This is in line with (Köhler, Sönnichsen, & Beske-Jansen, 2022), who argue that collaboration

allows firms to access resources that are difficult to acquire independently, thereby gaining a competitive advantage.

Another key driver for collaboration was the focus on maintaining high-quality products and services. For example, a restaurant owner collaborated with local farmers to obtain fresh, high-quality seeds and produce, ensuring superior dish quality to meet customer expectations. This finding aligns with Madhani (2021), who highlights that customer-focused collaboration can enhance product and service delivery. Access to external expertise is crucial for sustaining innovation, especially in fast-paced industries like IT services. This supports Chesbrough's (2023) open innovation model, which advocates for firms to collaborate with external partners to leverage the latest technologies and remain competitive.

The findings contribute to the growing knowledge on SME supply chain collaboration by detailing inter-industry variations in collaboration frequency and drivers. It emphasizes industry-specific collaboration patterns and drivers. In addition, this work helps researchers better understand collaboration in supply chains as it highlights opportunities to replicate the study in other regions or industries, exploring variations in collaboration behaviors and challenges. Furthermore, quantitative methods could be used to generalize the impact of collaboration on supply chain performance.

The novelty value of this study in the literature concerning the supply chain management is that the approach is based in the context of SMEs within the Thulamela Local Municipality, which was a setting that was not well explored in existing literature. Compared to previous studies that mostly highlight big organizations or urban economic hubs as centers of economic activities, the study considers the phenomenon of collaboration within the rural and semi-urban economies in the province of Limpopo, in South Africa. Qualitative research methods was utilized in this research, which provides a detailed, contextual understanding of how collaboration has influenced supply chain effectiveness, trust, innovation, and resilience between SMEs that must operate in resource-constrained regions.

Limitations

This study included the geographic limitation as it only collected data about SMEs located within the area of Thulamela Local Municipality, and thus, this possible limitation does not fit to be randomized because the results cannot reflect the rest of the areas and provinces of South Africa with diverse economic organization and modes of collaboration. The interpreted research approach was qualitative in nature; hence, it may hardly be able to provide quantification of the size of the effects of collaboration in other sectors. The method of self-reporting data through interviews and focus groups leads to response bias, as participants might be tempted to give socially desirable outcomes or exaggerate the degree to which they collaborate.

Conclusion and recommendations

Monthly collaboration between suppliers and manufacturers seemed fine in the study, but many variables came into play, translating to those low-frequency numbers whether products are tangible or intangible, the nature of an industry due to time-sensitive inventory challenges, and even market type. Industries with frequent supply chain needs, like food production and agriculture, exemplify this need as suppliers interact frequently to ensure fresh inventory. Other industries function on a project basis, collaborating only when there is a specific need for skills or shared resources. For knowledge-intensive sectors, ongoing interaction enhances competitiveness. The findings suggest that the kind and frequency of collaborations are guided by industry needs while highlighting SMEs' flexibility to remain relevant in competitive environments.

The study identified key motivators, including market development, competitive edge, better product quality, and innovation. SMEs tend toward partnerships for market extension and competitive advantage, as these alliances

provide greater bargaining power for better prices. Quality of products and services is also a key driver, with SMEs in hospitality closely collaborating with local suppliers to maintain quality and customer satisfaction. Collaboration is further driven as firms access external expertise for innovation, especially in knowledge-intensive sectors where adapting to rapidly evolving technologies is essential. These drivers validate that collaboration is necessary for SMEs to leverage resources, stay competitive, and provide high-quality products and services.

SMEs should adopt collaborative strategies aligned with industry-specific needs. Fast-moving sectors like IT should seek partnerships with technology providers to access innovative resources. In agriculture, where frequent collaboration is critical, managers should maintain communication channels with suppliers. Equipping SMEs with negotiation, scheduling, and conflict-resolution skills will facilitate smoother operations and sustained partnerships.

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Author Contributions: The authors contributed equally. All authors have read and agreed to the published version of the manuscript.

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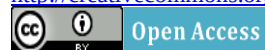
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DRIVERS OF CHOOSING ENTREPRENEURSHIP PATH OF FINAL YEAR STUDENTS: A CASE STUDY OF A UNIVERSITY IN THE WESTERN CAPE, SOUTH AFRICA**Nteboheng Patricia Mefi¹, Samson Nambei Asoba^{2*}**^{1,2*} *Department of Administration and Information Management, Walter Sisulu University, South Africa**E-mails:*¹ nmefi@wsu.ac.za; ^{2*} sasoba@wsu.ac.za (Corresponding author)*Received 18 June 2025; accepted 15 October; published 30 December 2025*

Abstract. This study aimed to address the need to strengthen entrepreneurship by identifying the drivers of entrepreneurship as a choice of self-employment. The study was conducted among final year students at a University in the Western Cape. These students were suitable for this analysis, as they were preparing for entry into the job market upon completing their university studies, making their choice of job a worthy subject for exploration. The study employed a qualitative research design, collecting data through focus group discussions. A focus group discussion was conducted with eight final-year students of entrepreneurship at a University in the Western Cape. The data provided indicated that cognitive and environmental factors influenced their choice. The cognitive factor involved inherent drives and inborn psychological orientations to engage in entrepreneurship, while the environmental drivers related to the nature of the environment, where factors such as unemployment, poverty, and social expectations drove the need to engage in entrepreneurship. The study recommends that universities strengthen their entrepreneurial role to promote entrepreneurial behaviour among students of entrepreneurship.

Keywords: entrepreneurship; employment; students; self-employment; higher education

Reference to this paper should be made as follows: Mefi, N. P., Asoba, S. N. 2025. Drivers of choosing entrepreneurship path of final year students: a case study of a university in the Western Cape, South Africa. *Insights into Regional Development*, 7(4), 34-42. <http://doi.org/10.70132/e7735278735>

JEL Classifications: L26

1. Introduction

The worldwide acceptance that entrepreneurship is essential for economic growth and societal development creates a need for inquiry into the enablers and drivers of positive entrepreneurial behaviour (International Labour Organisation (ILO), 2024; Ncube & Lekhanya, 2025). Entrepreneurship research as a separate field gained strength from the early 1990s and has continued to rise in importance due to the need to support entrepreneurial policies and cultivate entrepreneurial behaviour (Kaki et al., 2023; Jia et al., 2023; Mirvis, 2024; Xiong & Sun, 2025; Nguyen & Uong, 2025).

Entrepreneurship research is expected to grow in countries such as South Africa and many other developing nations due to the various socio-economic challenges that they face and the need to accelerate economic development (Anal & Singh, 2023; Ncube & Lekhanya, 2025). In their efforts to promote entrepreneurial behaviour, countries will require specific information on dimensions of entrepreneurship research, such as the drivers of entrepreneurship. This is exacerbated by the ever-changing macro and micro environment (Liguori et al., 2024; Ncube & Lekhanya, 2025). The results of earlier studies may become less relevant due to environmental turbulence. In view of this situation, the purpose of this study was to explore the drivers of entrepreneurship behaviour in the present socio-economic environment in South Africa. This is vital to support policymakers, the

government, the education sector, as well as society in their various attempts to increase the rate of entrepreneurship in South Africa (Stam & Van de Ven, 2021; Ncube & Lekhanya, 2025).

Additionally, post-apartheid South Africa continues facing the enduring challenge of addressing poverty, inequalities and unemployment (Ncube & Lekhanya, 2025). These challenges make it difficult for successful entrepreneurship activities, necessitating the development of entrepreneurship ecosystems that support one another for successful entrepreneurship behaviour (Zin & Ibrahim, 2020; ILO, 2024). The ILO (2024) notes that such entrepreneurship would involve human capital initiatives that include entrepreneurial education, appropriate policies, suitable finance, a supportive culture, and access to markets. These arguments are also made in Zin and Ibrahim (2020), who argue that there is a need for supportive measures to ensure successful entrepreneurship. This study focuses on education as a key component of this ecosystem. Research results from other scientists indicate that entrepreneurial education is crucial for enhancing entrepreneurial intention, as well as increasing creativity and self-efficacy or confidence in entrepreneurship (Ebewo & Rugimbana, 2017; Rakib et al., 2020). Despite observations that some progress has been made in addressing these challenges, more needs to be done (Bezerra et al., 2023). The ever-dynamic environment has complicated necessary interventions, as what has worked over the past years may suddenly become irrelevant. This situation calls for continuous studies of the environment in the search for possible solutions.

2. Literature review

Studies of entrepreneurship have been a focus within entrepreneurship theory; however, more research remains necessary due to the turbulence within the business environment (Ahmad et al., 2024). Scientists have found such drivers as personality (achievement motivation, risk propensity, innovativeness, stress tolerance, autonomy, consciousness and openness to experience), human and social capital, strategy (strategic planning abilities, business planning, entrepreneurial orientation and innovation (Ndovela & Chinyamurindi, 2021).

This study argues that within a turbulent environment, nothing is permanent, and further research is necessary on previously identified phenomena, such as the drivers of entrepreneurship. While entrepreneurship is based on personal and cognitive drivers, community and societal, as well as family, drivers have also been evident (Molina, 2020). In many communities, it has been observed that there are families known to have a history of grooming entrepreneurship, which is not reliant on education, and arguments have been raised that it is a hereditary trait (Molina, 2020; Adeel, Daniel, & Batelho, 2023). This may be indicative of genetics. Several cases also exist where a person became an entrepreneur after acquiring higher education, while observations have also been made that some individuals left education to initiate entrepreneurship ventures (Ncube & Lekhanya, 2025). This leaves the question: What is the nature of entrepreneurship? In this controversy, it is clear that genetics is rooted in family lines. At the same time, nurture refers to the environment in which people and institutions, such as those in higher education, develop, cultivate, and groom students. The final remark on the role of higher educational institutions in this controversy is the nurturing of students.

In the study by Jardim and Sousa (2023), it was found that drivers of entrepreneurship emanate from both the cognitive characteristics of individuals and the nurturing environment. Entrepreneurship nurturing is the act of creating an environment that stimulate entrepreneurship through relevant cognitive, emotional, physical and psychosocial strategies that inspire and ignite the entrepreneurial potential of individuals (Ojogbo, Idemobi & Ngige, 2016; Farrukh et al., 2018) Whereas entrepreneurially oriented genetics can be part of an individual, unlocking it to actual activity may be a function of the university (Adeel, Daniel & Batelho, 2023). While many institutions of higher education could have established a Department of Entrepreneurship and created entrepreneurship modules, this is not enough to enhance the complex compositions required for real entrepreneurial activity (Jardim & Sousa, 2023). Enriching learners with entrepreneurial education without the emotional drive, physical strength, desire, and belief in entrepreneurship will yield minor achievement (Ncube &

Lekhanya, 2025). The nurturing environment of the university requires a holistic composition and complex network of actions that is truly inspiring to engage in real entrepreneurship activity (Lans et al., 2013). This is the missing link; while attempts have been made to promote entrepreneurship, the need remains for more targeted actions that truly unleash an individual's entrepreneurial potential. The inability to unleash entrepreneurial motives remains a weakness in institutions of higher education. Another level remains to be reached, where real and successful entrepreneurship is realised (Ojogbo, 2016; Phiri & Chasaya, 2023; Qwabe, Ngibe, & Bingwa, 2025). The current situation in universities has done quite well in fostering an entrepreneurial appreciation and sensitivity to the need for entrepreneurship. Facilitating real actions that are sustained and that translate to thriving entities remains an unlocked potential. This requires new approaches and new knowledge positions for educators and their universities. While entrepreneurship education is a driver of entrepreneurial intention, more still needs to be done to improve entrepreneurial activities in South Africa (Jardim & Sousa, 2023; Ncube & Lekhanya, 2025; Mothibi, Malebana, & Rankhumise, 2025).

The present inadequacies in higher education for entrepreneurship, as demonstrated by continued high youth unemployment and small business failure, underscore the need to elevate entrepreneurial education to a new level (Ncube & Lekhanya, 2025; Qwabe et al., 2025). This enriched level of higher entrepreneurship education has been conceived within the concept of entrepreneurial education in recent years. The entrepreneurial level emanates from the university's realisation within an ecosystem comprising industry, the community, the government, and the student community (Feder & Nițu-Antonie, 2017; ILO, 2024). Such an ecosystem creates a network of relationships that fosters the creation and sharing of critical ideas and intelligence for promoting entrepreneurship (Najera-Sanchez, Perez-Perez, & Gonzalez-Torres, 2023; Ncube & Lekhanya, 2025). The creation of interaction platforms, as well as the inclusion of small business incubators and engagement with related government institutions, have been key strategies for taking entrepreneurship to the next level. While this is critical, it can be argued that, to some extent, the emotional component of such systems remains underdeveloped. The emotional component is that sense of attachment and earnest desire that can drive a person to action. There may be a need to ensure that universities incorporate an emotional component that encourages and accelerates entrepreneurial behaviour among learners (Ncanywa & Dyantyi, 2022; Nițu-Antonie, Feder, & Stamenovic, 2022). In this view, some universities, such as Nelson Mandela, have established key institutions, including the Centre for Rapid Entrepreneurship Incubation, as well as entrepreneurship hubs designed to inspire potential entrepreneurs. These are necessary actions, but it is clear that more creativity and innovativeness are still essential to strengthen entrepreneurship. There is also more to be done.

The present technological revolution has created new frontiers, new business opportunities, and new ways (Liguori et al., 2024; Gazi et al., 2024). The failure to fully harness technological imperatives may be the cause of the imbalance between the desired state of entrepreneurial education and the current state of entrepreneurship in our country. The exploitation of technological developments and societal needs can be used to create new ventures, as well as assist potential entrepreneurs in realising their potential (Barba-Sánchez et al., 2023; Liguori et al., 2024). The explosion of information, new ways of processing it, and access to it are potential areas of benefit for potential and rising entrepreneurs (Gazi et al., 2024). There are unimaginable opportunities arising from the use of artificial intelligence technologies, as well as social media use, for potential entrepreneurs

3. Methodology

This study adhered to the subjective philosophy, which views reality as multidimensional and varying among individuals depending on their situations and circumstances (Pretorius, 2024). Consequently, it employed a qualitative research approach to collect in-depth information from participants and identify possible interrelationships in their perceptions. This study of drivers for entrepreneurship was conducted through focus groups with eight final-year students of entrepreneurship, who were asked to respond to possible reasons why they would choose to become entrepreneurs soon after completing their entrepreneurial courses at a selected

university. The research question for the focus group discussions was: Why would you want to be an entrepreneur as a form of employment soon after completing your studies? Participants in the focus group were final-year students of entrepreneurship at the university, selected based on their performance in the subject over the years. Top performers in the Entrepreneurship course among final-year students were identified from examination records at the university, which was chosen for its ease of accessibility and prominence as a university with a history of excellence in unlocking entrepreneurial talents among students over the past year. The Head of Department (HOD) for the entrepreneurial program at the university was approached, and the study was explained to them. The HOD showed interest in the research and provided support in the data collection process. An email was sent to all fifteen top students of entrepreneurship, and eight of them expressed interest in participating in the study.

The lecturers were also asked to help identify students who could participate in the data collection process. Ultimately, eight students participated in the data collection process. Scholars have noted that successful focus groups require a structured approach, involving a moderator or facilitator, as well as a record keeper, during the focus group discussion session. Additionally, group rules are essential in focus groups to maintain order, leading to reliable and viable data for the study. The group of respondents were then asked to have a preliminary meeting with the HOD and the researcher. They were informed of the study, and a date, time and venue for the focus group were set. The participants were informed of their rights to anonymity and the voluntary nature of their participation in the study. All participants appointed one student to moderate and lead the discussion. Group rules were established, and participants were required to adhere to them to ensure the debate's success. The biographical details of the eight participants are provided in Table 1.

Table 1. Demographic variables of respondents

	Gender	Racial group	Age range
1	Male	African	25-30
2	Female	African	25-30
3	Female	African	20-25
4	Female	Asian	30-35
5	Male	Coloured	25-30
6	Male	Coloured	25-30
7	Male	White	25-30
8	Male	African	20-25

Table 1 shows that the respondents were from all racial groups, but Africans were more represented than other groups. There were also more females than males, and the majority were within the 25-30 age group.

4. Results and discussion

The method of data analysis that was used emerged from the work of Glaser and Strauss (1967) on grounded theory. Following this method, data collected through written notes were first subjected to open coding, whereby important information was coded before axial coding, where codes were categorised, and then to final coding, whereby categories of themes were grouped into themes. Table 2 provides the coding process followed.

Table 2. Main responses for the focus group question: Why would you want to be an entrepreneur as a form of employment soon after completing your studies?

	Data units relevant to the study	Non-verbal cues	Open coding	Axial coding	Theme
R1	The premise for my studying entrepreneurship arises from the inspiration that I got from my own parents. My family owns multiple enterprises in the Eastern Cape, which they established and have been managing to date. These parents drive my desire to be an entrepreneur. I want to be an entrepreneur and follow in my parents' footsteps.	Head nodding and hand gestures were displayed.	Family and societal drivers	Families and society	Environmental Drivers

R2	I think everyone now knows that South Africa is presently troubled by high unemployment, and the prospects of being employed are now low. This is why I aspire to become an entrepreneur. There are no jobs out there. I expect entrepreneurship or self-employment to be a career of choice for me in this context.	A rise in voice and emphasis, along with hands and body gestures, was evident. Clapping of hands from other participants	Financial status Unemployment	Economic conditions	Environmental
R3	I have learnt a lot in this course of entrepreneurship, and I am eager to put these things into practice. The course has talked out the basics of enterprise formation and management. I feel that I need to try it out, and I have the self-belief that I can be a successful entrepreneur in South Africa. What is the purpose of learning if we put what we have learnt on the shelves? I am an individual who believes in oneself and trusts that I can make it.	Hand gestures from the participant.	Personal beliefs, attitude and knowledge	Psychological	Cognitive disposition
R4	Well, the present technological environment is full of opportunities for entrepreneurship and requires someone who is simply creative to engage profitably. With technology, there is a lot to do. I believe I can be a successful entrepreneur through some form of technological combinations. This environment differs from that of previous years, where large entities could profitably engage in certain activities. Now everyone can successfully exploit opportunities using technology	Body movements of agreement from all participants are shown	Technological opportunities	technology	Environment
R5	I would like to be an entrepreneur to widen my income base. I will always do something aside from formal employment so that I am adequately financed. The economic environment has become challenging, and it is essential to have diverse income streams to ensure that one meets all essential needs. This makes entrepreneurship activities important.	Participants indicated being unsettled.	Financial Economic Income	Economic	Environment
R6	I would prefer to be employed, but getting a job in South Africa or completing university can take time. Many graduates suffer soon after university and may take years to get a proper job. I would not like to do that; I expect to quickly find employment just after university, while looking for an appropriate job. When I get a job, depending on whether it is possible to continue entrepreneurial activities while in another employment, I may do both.	Applause from all participants was heard, with clapping of hands and side conversations increasing. There was evidence of high support.	Unemployment	Economic	Environment
R7	Among the many reasons that I would need to be an entrepreneur, I believe that our society now provides more status to entrepreneurs. There is social recognition and prospects for becoming a role model through entrepreneurship. I am excited by the prospects of being a role model in my society.	Applause from all participants was heard, with clapping of hands and side conversations increasing.	Social status Role model	Social recognition	Environment
R8	My own character favours entrepreneurship because I like independence and flexibility. Doing my own things. Being employed means doing what someone requires, and you must follow the directions and supervision of others. That does not suit me. I want to enjoy my own freedom and flexibility to do what I want. Entrepreneurship offers me the freedom that I need. I will employ myself and others.	Nodding of heads by participants	Personal independence Flexible Personal satisfaction	Psychological	Cognitive disposition

The results of the focus group discussions, as presented in Table 2, indicate that the drivers for entrepreneurship as a career choice among final-year students at a University in the Western Cape can be grouped primarily into two categories: cognitive orientation and the socio-economic environment in South Africa. These results seem to relate to arguments from the literature that the environmental is vital in influencing entrepreneurial behaviour (Ndofirepi, 2020; Jardim & Sousa, 2023). The socio-economic environment relates to the economic state with regards to unemployment; financial challenges related to poverty and rising cost of living which drives the final year students to opt to be financially active and entrepreneurship seem to offer these prospects. The study also shows that the technological environment characterised by technological growth has created various opportunities for entrepreneurship. The study indicated that technology presents multiple opportunities for creativity and innovation, which can be exploited to create entrepreneurial ventures. This is also supported in Liguori et al. (2024). Results demonstrate that technological advancements can be attractive to entrepreneurs. Secondly, the focus group discussions revealed that some cognitive orientations among the participants led them to favour entrepreneurship. These include their own personal values, attitudes, skills, and knowledge, which make them confident in starting entrepreneurial activities. These results are also supported by studies such as those of

Ncanywa & Dyantyi (2022) and Mothibi et al. (2025). Some of the respondents also provided that entrepreneurship provides status, self-achievement, and allows them to realise their potential. These results are presented in Figure 1.

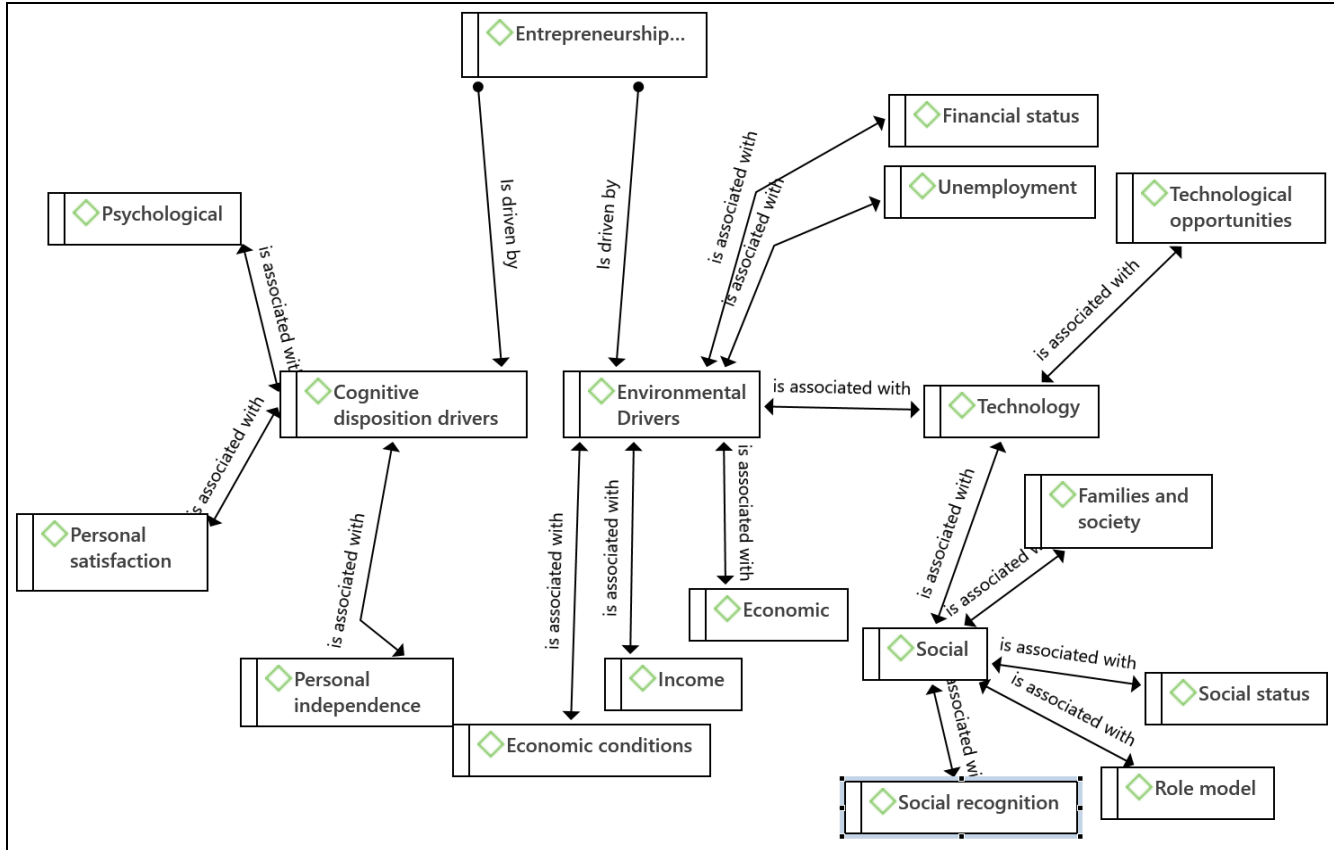


Figure 1. Summary of drivers towards entrepreneurship

Source: the authors

Figure 1 summarises the drivers in terms of environmental and cognitive drivers as found in this study. The cognitive drivers may be inborn attributes that are the skills needed for entrepreneurship. In contrast, the environmental skills relate to the nurturing role of various components in driving entrepreneurial intention and behaviour.

Conclusions

This study aimed to investigate the factors that influence entrepreneurship as a career choice among final-year students at a University in the Western Cape. This study found that environmental and cognitive factors influenced the drivers of the urge to become an entrepreneur. This supports previous studies on entrepreneurial intention and activities. Institutions of higher education should strengthen their nurturing role by inspiring the development of entrepreneurship to another level. In particular, the emotional component to encourage entrepreneurship is worth exploring. Technological tools and systems remain essential for opening new frontiers to advance entrepreneurship education. Students who tend to have cognitive abilities should be identified and nurtured to ensure a supportive environment for the realisation of real entrepreneurship activity.

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

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SOVEREIGN WEALTH FUNDS AND FISCAL GOVERNANCE IN AFRICA: INSIGHTS FROM BOTSWANA'S MODEL**Munashe Matambo***University of South Africa, Preller Street, Muckleneuk Ridge Pretoria, South Africa**E-mail: matamm@unisa.ac.za**Received 5 August 2025; accepted 18 October 2025; published 30 December 2025*

Abstract. This study investigates the institutional and governance frameworks necessary for operationalising effective sovereign wealth funds (SWFs) in resource-rich African economies, using Botswana's Pula Fund as a benchmark. Grounded in the Permanent Income Hypothesis and employing qualitative methods such as documentary analysis and elite interviews, the research highlights critical success factors for SWFs in the African context. Key findings reveal that Botswana's Pula Fund, integrated with the Sustainable Budget Index (SBI) and robust governance structures, has enabled fiscal discipline, transparency, and long-term wealth preservation, contrasting sharply with failed regional attempts in Angola and Zimbabwe marked by elite capture and mismanagement. The paper underscores the importance of phased SWF deployment (stabilisation→development→savings), legislative safeguards to ensure political independence, and ring-fenced fund objectives. It also emphasises the role of institutional coherence, meritocratic human capital management, and transparent decision-making processes in mitigating governance pitfalls. Challenges such as declining Pula Fund assets, ambiguous withdrawal protocols, and political pressures illustrate the fragility of even successful models, offering lessons for other African nations. This study contributes practical policy insights for African policymakers seeking to transform resource wealth into sustainable development. Recommendations include adopting gradual SWF establishment, enhancing parliamentary oversight, and professionalising fund management to avoid the "resource curse." The findings advocate for context-specific fiscal rules and governance innovations tailored to Africa's institutional realities, reinforcing the nexus between natural resource governance, fiscal sustainability, and inclusive growth.

Keywords: Sovereign wealth funds; natural resource governance; fiscal policy

Reference to this paper should be made as follows: Matambo, M. 2025. Sovereign Wealth Funds and Fiscal Governance in Africa: Insights from Botswana's model. *Insights into Regional Development*, 7(4), 43-59. <http://doi.org/10.70132/h7655468994>

JEL Classifications: Q3, Q32

Additional disciplines Public Administration

1. Introduction

The management of natural resource wealth remains one of Africa's most pressing governance challenges. While sovereign wealth funds (SWFs) have emerged as potential solutions to harness resource revenues for sustainable development, their effectiveness across the continent has been strikingly uneven. This study interrogates this disparity through a focused examination of Botswana's Pula Fund, a relatively successful model contrasted with failed experiments in Angola and Zimbabwe. The research emerges from an urgent policy dilemma: why do some African nations successfully convert mineral wealth into development while others succumb to the resource curse? Existing literature provides partial answers. The Permanent Income Hypothesis and Hartwick-Solow rule offer theoretical foundations, suggesting that resource revenues should be transformed into sustainable investments (Lange & Wright, 2004). Norway's Government Pension Fund Global exemplifies this approach, but its direct applicability to African contexts is limited by institutional capacity gaps (Ekeli & Sy, 2011).

Comparative studies reveal Botswana's success stems from its integrated fiscal framework, particularly the Sustainable Budget Index that links mineral revenues to disciplined expenditure (IMF, 2024). In stark contrast, Angola's FSDEA became a vehicle for elite enrichment (Byee, 2013), while Zimbabwe's legislated SWF never materialised amid systemic governance failures (Matambo, 2021).

This study makes three distinctive contributions to the governance and development discourse. First, it moves beyond theoretical prescriptions to analyse the operational realities of SWF management in Africa's unique institutional environments. Second, it identifies the specific governance mechanisms, including fiscal rules, parliamentary oversight, and meritocratic staffing, that differentiate successful from failed SWFs. Third, it develops policy recommendations grounded in Botswana's adaptable model rather than importing idealised frameworks from advanced economies. The research addresses three critical questions: What governance architecture explains Botswana's relative success with the Pula Fund? How does the integration of fiscal rules like the SBI prevent the mismanagement seen elsewhere? What practical lessons can other resource-rich African states derive to avoid elite capture and ensure intergenerational equity? By answering these questions, the study aims to strengthen the policy toolkit for managing resource wealth in ways that promote inclusive development and good governance, central concerns of the African governance and development agenda. The analysis proceeds through qualitative examination of Botswana's institutional framework compared to regional counterparts, drawing on documentary evidence and elite interviews. This approach allows for a nuanced understanding of how formal rules interact with political realities in African resource governance. The findings seek to inform both academic debates and policymaking processes across the continent. The paper proceeds with a literature review examining optimal fiscal frameworks for resource-rich economies, followed by methodology, findings, conclusion and policy recommendations.

2. Theoretical framework and literature review

2.1 Fiscal framework suitable for resource-rich developing economies

The management of natural resource revenues presents both opportunities and challenges for developing economies. At the core of this discourse lies the fundamental question of how to transform finite natural capital into sustainable development outcomes (Qobo & Soko; Asiegbu et al., 2024; Botlhale, 2024). The Hartwick-Solow rule, derived from the Permanent Income Hypothesis, provides a theoretical foundation by advocating for the reinvestment of resource rents into other productive forms of capital (Lange & Wright 2004). This approach aims to maintain a nation's aggregate wealth across generations, suggesting that equivalent investments in physical infrastructure, human capital, and financial assets should offset the depletion of natural assets. However, the direct application of this theoretical framework encounters significant practical constraints in developing country contexts. As Affuso et al. (2022) demonstrate, many resource-rich developing nations face acute capital shortages and pressing development needs that necessitate immediate expenditure. These structural realities create an inherent tension between the ideal of intergenerational equity and the practical demands of poverty alleviation and infrastructure development. Baunsgaard et al. (2012) further complicate this picture by highlighting the absorptive capacity constraints that limit many developing economies' ability to effectively deploy large resource revenues. Literature offers nuanced modifications to address these implementation challenges. Collier, Van der Ploeg and Venables (2008) and Collier (2012) (both cited by the AfDB, 2016) propose a phased approach that balances immediate needs with long-term sustainability. Their framework suggests allocating a portion of early-stage resource revenues to critical consumption and human capital investments, while gradually increasing the savings rate as resource production matures. This perspective acknowledges the developmental imperatives of poorer nations while maintaining the principle of intergenerational equity. Ekeli and Sy (2011) introduce an important temporal dimension to this discussion by differentiating between economies with short-duration and long-duration resource revenues. For nations with temporary resource booms, such as Ghana's oil reserves, literature emphasises rapid domestic investment to facilitate economic transformation before resource depletion (Gylfason, 2011). In contrast, countries with longer resource horizons, such as Botswana's diamond wealth, can

adopt more balanced strategies combining domestic investment with sovereign wealth accumulation (Kojo, 2010; Kassouri & Altintas, 2021).

Academic consensus suggests that successful fiscal frameworks must account for three critical variables: the expected duration of resource revenues, the economy's absorptive capacity, and the quality of governance institutions. As Sharma and Strauss (2013) demonstrate, the optimal savings-investment-consumption mix varies significantly across contexts, requiring tailored policy solutions rather than rigid theoretical prescriptions. Literature establishes the foundation for examining how specific institutional arrangements, such as Botswana's SBI, attempt to reconcile these complex trade-offs in practice. This synthesis reveals several key insights for African policymakers. First, fiscal rules must be flexible enough to accommodate different stages of resource production and economic development. Second, the effectiveness of any framework depends fundamentally on the strength of governance institutions. Finally, literature underscores the importance of viewing SWFs not as standalone solutions, but as components of broader fiscal management systems that address both stabilisation and development objectives (Nguyen & Nguyen, 2021).

2.2. Special fiscal rules and institutions that ensure fiscal sustainability

Literature establishes that fiscal sustainability in resource-rich developing economies requires an integrated institutional framework combining three key elements: (1) clearly defined fiscal rules, (2) independent fiscal advisory councils, and (3) properly structured commodity-based SWFs (Dixon et al, 2022). Crucially, these components function interdependently. SWFs cannot achieve their objectives in isolation but rather depend on complementary fiscal rules to constrain expenditure volatility and/or fiscal councils to provide objective oversight. This tripartite framework creates the necessary checks and balances to prevent resource windfalls from undermining long-term fiscal stability.

2.2.1 Fiscal rules

Fiscal rules constitute institutional mechanisms designed to enforce long-term fiscal discipline across government administrations. As defined by Ray, Velasquez and Islam (2015), these rules represent formal or informal commitments that establish binding multi-year constraints on aggregate public expenditure to maintain fiscal sustainability. Literature broadly categorises fiscal rules into two distinct types: numerical rules that impose quantitative limits on fiscal aggregates, and procedural rules that govern the decision-making processes surrounding fiscal policy (Sharma & Strauss, 2013). Contemporary scholarship identifies four principal categories of fiscal rules applicable to resource-endowed developing economies: (1) budget balance rules, (2) debt rules, (3) expenditure rules, and (4) revenue rules (Bauer, 2014:4). The selection and implementation of these fiscal rules are necessarily context-dependent, requiring careful consideration of a nation's specific developmental requirements, institutional capabilities, and vulnerability to exogenous economic shocks (Sharma & Strauss 2013:9).

2.2.2 Fiscal advisory councils

Fiscal advisory councils (FACs), alternatively termed independent fiscal institutions or parliamentary budget offices, constitute critical governance mechanisms in resource-dependent economies. As formally defined by the IMF (2013), these publicly-funded autonomous entities serve to mitigate governmental revenue projection biases through rigorous evaluation of fiscal forecasts. Their mandate extends to monitoring compliance with established fiscal rules and assessing the sustainability of natural resource revenue management practices (Zigman & Jergovic, 2017). The institutionalisation of FACs in resource-rich developing nations such as Chile, Ghana, and East Timor reflects their dual function as both technical oversight bodies and mechanisms for enhancing democratic accountability (Sharma & Strauss, 2013). By subjecting fiscal policy to independent scrutiny and facilitating public debate through media engagement, these institutions raise the political costs of fiscal indiscipline while constraining excessive expenditure tendencies (IMF, 2013). However, the effectiveness of FACs remains contingent upon two critical factors: first, the existence of genuine political commitment to fiscal

discipline (Hagemann, 2011), and second, institutional safeguards against regulatory capture (Sharma & Strauss, 2013). When either condition is absent, FACs risk becoming either ignored by policymakers or co-opted to serve elite interests at the expense of broader societal welfare. This vulnerability highlights the fundamental paradox of fiscal governance institutions: while designed to constrain political discretion, their efficacy ultimately depends on the very political will they seek to regulate (Bortolotto et al., 2023).

2.2.3 Commodity-based SWFs

SWFs are state-owned investment vehicles that invest in the global financial markets for the benefit of the sovereign sponsor (Matambo, 2021). In the African context, there are primarily three types of SWFs, i.e. commodity-based SWFs (the focus of this study), strategic investment funds and vanity funds. Commodity-based SWFs are used to manage resource rents across the commodity cycle, strategic investment funds act as holding companies for state-owned enterprises and vanity funds invest in ongoing government (Trudelle, 2024). Table 1 below profiles SWFs in Africa.

Table 1. List of SWFs in Africa

SWF sponsor	Name of SWF	SWF Type	Year Est.	Value US\$ billion
Angola	Fundo Soberano de Angola	Commodity	2012	2.17
Botswana	Pula Fund	Commodity	1994	4.52
Democratic Republic of Congo	Fonds de stabilisation des Recettes Budgetaires	Commodity	2005	0.02
Egypt	Amlak	vanity.	2015	2
Ethiopia	Ethiopian Investment Holdings	Strategic Investment		46
Equatorial Guinea	Fund for future generations	Commodity	2002	0.165
Gabon	Fonds Gabonais d'Investissements Strategiques	Commodity	1998	1.89
Ghana	i. Ghana Heritage Fund ii. Ghana Stabilisation Fund	commodity	2011	1.236
Libya	Libya Investment Authority	Commodity	2006	68
Mauritius	Mauritius Investment Corporation	Strategic Investment	2023	1.18
Morocco	Fonds Marocain de Développement Touristique	Commodity	2011	1.84
Mozambique	Fundo Soberano de Moçambique	Commodity	2023	0.1588
Namibia	Welwitschia Fund	Commodity	2022	0.026
Nigeria	Nigeria Sovereign Investment Authority	Commodity	2011	2.1
Rwanda	Agarico Development Fund	Vanity	2012	0.25
São Tomé and Príncipe	Permanent Fund for future generations	Commodity	2004	Not known.
Senegal	Fonds Souverain d'Investissements Stratégiques	Vanity	2012	0.051
South Sudan	Oil revenue stabilisation fund	Commodity	2008	Not known
Uganda	Public Investment Fund	Commodity	2015	0.067
Zimbabwe	Mutapa Investment Fund	Strategic Investment	2023	16

Source: Researcher's compilation from SWF websites

Commodity-based SWFs are the most common type of SWF on the African continent. These funds serve a tripartite macroeconomic purpose: first, as intertemporal stabilisers that smooth fiscal revenues across commodity price cycles (booms and busts), second, as financiers of domestic development and third, as instruments for intergenerational wealth preservation (Dixon & Monk, 2011a). Dixon and Monk (2011a) propose a sequential SWF deployment framework, termed the "SWF cascade," which advocates for a phased implementation approach tailored to the developmental stage of resource-rich economies. Their model posits that developing nations, particularly in Africa, should establish three distinct but complementary funds in progressive stages: (1) stabilisation funds, (2) development funds, and (3) intergenerational savings funds. The framework emphasises initial prioritisation of stabilisation funds to mitigate the macroeconomic volatility inherent in commodity-dependent economies (Dixon & Monk, 2011a). These funds serve as fiscal buffers against commodity price

fluctuations, enabling more predictable budget planning during periods of revenue instability. Following the achievement of sufficient stabilisation reserves, the model recommends transitioning to development-focused funds that channel resources into critical infrastructure and human capital investments. Only after addressing immediate stabilisation concerns and achieving key developmental milestones does the framework contemplate establishing intergenerational savings vehicles. This sequential approach reflects fundamental differences in economic priorities between developed and developing contexts. While mature economies like Norway possess the institutional capacity and economic surplus to justify long-term savings instruments, most African nations face more pressing developmental imperatives. The model explicitly cautions against premature adoption of savings-oriented funds in capital-constrained environments where unmet social needs remain acute. Figure 2 systematically illustrates this phased deployment logic, demonstrating how fund objectives should evolve in tandem with a nation's economic development trajectory (Dixon & Monk, 2011a:8).

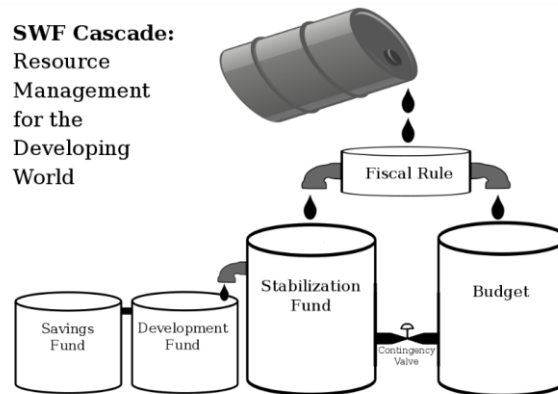


Figure 1. SWFs in Africa: A policy framework
Source: Dixon and Monk (2011a:8).

The framework's theoretical contribution lies in its recognition that SWF structures must be contingent upon a country's specific institutional capacity and developmental requirements rather than adopting a one-size-fits-all approach.

2.3 Sovereign wealth fund governance

The governance of SWFs constitutes a critical determinant of their effectiveness as instruments for natural resource revenue management and sustainable development. Following the OECD's (2015:17) formal definition, SWF governance encompasses the organisational structures, operational processes, and institutional practices that regulate relationships between key stakeholders, including fund sponsors, governing boards, management teams, and external asset managers, while establishing parameters for investment decision-making. Empirical evidence suggests that optimal fund design and robust governance frameworks represent necessary preconditions for SWFs to fulfil their potential as development tools (Dixon & Monk, 2011a). Building on this foundation, Clark and Urwin (2008) identify four cardinal principles of effective SWF governance: (1) institutional coherence, (2) human capital quality ("people"), (3) decision-making processes, and (4) political insulation. These elements collectively form an institutional matrix that either enables or constrains fund performance. Academic consensus underscores that variations in SWF outcomes, whether successful capital preservation or problematic mismanagement, fundamentally stem from differences in governance quality and institutional architecture (Bauer, 2014). The subsequent analysis systematically examines each governance dimension, drawing on comparative case studies and established best practices to elucidate the institutional prerequisites for effective SWF operation. This examination proves particularly salient for resource-dependent economies, where governance weaknesses frequently undermine the transformative potential of natural resource wealth.

Institutional coherence

The principle of institutional coherence constitutes a foundational element in SWF governance, encompassing three critical dimensions: (1) the fund's explicit mandate and objectives, (2) its integration with national fiscal frameworks, and (3) the consequent implications for governance structures and investment strategies (Clark & Urwin, 2008:9). This tripartite conception of coherence manifests differently across SWF typologies, reflecting varying policy objectives and operational requirements. The Chilean Economic and Stabilisation Fund (ESSF) exemplifies optimal institutional coherence for stabilisation vehicles, demonstrating precise alignment between its mandate (commodity price cycle smoothing) and Chile's structural budget rule (Santiso, 2012:82). Such funds typically reside within central bank or treasury institutional structures, leveraging existing macroeconomic expertise to manage short-term liquidity requirements (Dixon, 2016). Their investment portfolios reflect this stabilisation function, concentrating on highly liquid, low-risk sovereign bonds that ensure rapid deployability during economic shocks (Triki & Faye, 2011:6). Norway's GPFG illustrates the enhanced governance requirements of savings-oriented funds. While sharing institutional proximity with stabilisation vehicles, these funds demand distinct portfolio architectures to accommodate their long-term horizons and higher risk tolerances (Hove, 2016). The Norwegian solution, i.e. delegating management to the professionally staffed Norges Bank Investment Management (NBIM) while maintaining treasury oversight, demonstrates the sophisticated governance needed to balance independence with accountability (Santiso, 2012). This model addresses the OECD's (2018) emphasis on specialised capabilities for managing complex asset allocations across generations. Kazakhstan's Samruk-Kazyna underscores the unique governance challenges of development-focused SWFs. Unlike stabilisation funds that can leverage existing fiscal institutions, development funds require purpose-built architectures combining: (1) direct investment expertise, (2) project evaluation capabilities, (3) performance monitoring systems (Santiso, 2008). These requirements often exceed the human capital capacities of both government agencies (due to skill gaps) and the private sector (due to recruitment challenges) in developing economies (Dixon, 2016). This typological analysis reveals an institutional coherence continuum: from the relatively straightforward stabilisation models embedded in fiscal institutions, through the technically demanding but conceptually clear savings funds, to the complex institutional innovations required for effective development funds. The governance intensity escalates with the sophistication of the fund's objectives, creating distinct implementation challenges for resource-rich developing economies.

People

The effectiveness of SWFs as financial institutions fundamentally depends on their ability to cultivate high-quality human capital capable of competing in global financial markets. This imperative creates unique governance challenges at the intersection of public sector accountability and private sector efficiency. As Dixon and Monk (2014) demonstrate, SWFs must develop specialised human resource strategies to attract, retain, and incentivise professionals with the technical competencies required to manage complex investment portfolios. The recruitment paradigm for SWFs necessitates strict adherence to meritocratic principles, with empirical evidence showing that funds prioritising technical expertise over political connections demonstrate superior long-term performance (Dixon, 2016). New Zealand's Superannuation Fund exemplifies this approach through its institutionalised merit-based selection processes, which explicitly mandate objective assessment criteria to ensure both fairness and technical rigour in personnel decisions (New Zealand Superannuation Fund, 2019). The human capital challenge stems from SWFs' hybrid institutional nature as public entities operating in competitive financial markets (Clark & Monk, 2012). This creates what might be termed a "compensation paradox". At the same time, subject to public sector oversight and often facing political constraints on remuneration, SWFs must simultaneously compete with private financial institutions for scarce investment talent. Leading funds have addressed this challenge through innovative organisational adaptations, including compensation restructuring that approximates private sector benchmarks while maintaining public accountability. The Qatar Investment Authority's recruitment of Ugo Arzani, formerly of Merrill Lynch, and Abu Dhabi Investment Authority's appointment of John McCarthy from Deutsche Bank (Clarke, 2013) illustrate how elite funds strategically target professionals with proven private sector experience, often creating customised compensation packages to attract

such talent.

These cases reveal an emerging best practice framework for SWF human capital management, characterised by three key elements: rigorous merit-based selection processes, competitive but accountable compensation structures, and strategic recruitment targeting specific technical competencies. However, as Dixon and Monk (2011a) caution, implementing such approaches requires careful navigation of political economy constraints, particularly in developing country contexts where public sector wage structures may be inflexible. The resulting "professionalisation paradox", maintaining public oversight while achieving private sector efficiency, represents a central governance challenge for SWFs worldwide. Successful resolution of this paradox appears correlated with fund performance, suggesting that human capital quality serves as a key differentiator between successful and underperforming sovereign investors. These insights hold particular relevance for emerging SWFs in developing economies seeking to build technical capacity while maintaining fiduciary responsibility and public legitimacy.

Process

The effectiveness of SWFs as institutional investors hinges critically on the sophistication of their decision-making architectures and risk management capabilities. As Clark and Monk (2012:12) emphasise, the quality of investment outcomes in such financial institutions is fundamentally determined by how decision processes are "framed, routinised, and implemented" within their organisational structures. This requires establishing robust governance mechanisms that ensure both transparency and accountability in investment operations (Dixon & Monk, 2011b). Norway's GPFG exemplifies this principle through its rigorous reporting regime, where Norges Bank Investment Management (NBIM) provides quarterly and annual disclosures to the Ministry of Finance, which subsequently submits comprehensive reports to the Storting (Norwegian Parliament) (Asian Development Bank 2016). This multi-tiered accountability framework serves as a governance benchmark for SWFs globally. A critical dimension of effective SWF management involves the precise alignment between investment strategies and institutional risk tolerance. The catastrophic experience of the Libyan Investment Authority (LIA) under the Gaddafi regime illustrates the consequences of misalignment, where the fund's venture into complex derivatives and private equity investments without adequate technical capacity resulted in catastrophic losses exceeding 98% of value (Saigol & O'Murchu, 2011). This case demonstrates how governance failures can transform SWFs from wealth preservation vehicles into instruments of value destruction, particularly when political considerations override prudent investment principles. The establishment of clearly articulated investment beliefs constitutes another pillar of sound SWF governance. As Dixon and Monk (2011b) contend, such beliefs form the philosophical foundation guiding asset allocation and risk-taking behaviour. Norway's GPFG operationalises this through its strategic plan (NBIM, 2020), which explicitly defines three core asset classes (equities, fixed income, and real assets) while maintaining strict geographic diversification rules to mitigate domestic economic overheating risks. This disciplined approach contrasts sharply with the ad hoc decision-making observed in poorly governed funds, highlighting how institutionalised investment philosophies contribute to long-term performance sustainability. These case comparisons reveal a spectrum of governance quality in SWF operations, where best practice funds demonstrate (1) formalised decision-making hierarchies, (2) risk-aware investment frameworks, (3) explicitly articulated investment beliefs, (4) multi-stakeholder accountability mechanisms. The empirical evidence suggests that deviations from these governance standards, particularly when combined with political interference, significantly impair SWF performance and undermine their intended economic stabilisation and wealth preservation functions. This analysis contributes to the broader discourse on public institutional investors by identifying specific governance attributes that differentiate successful from unsuccessful sovereign investment vehicles.

Politics

SWFs inherently embody a fundamental tension between their political genesis and operational requirements for financial autonomy. While these institutions emerge from political decisions regarding national resource allocation, their effective management necessitates substantial insulation from direct political interference in

investment decisions (Clark & Monk, 2012). This creates what might be termed the "sovereign investor's dilemma", the challenge of maintaining appropriate political oversight while preserving the professional independence required for optimal financial performance. Literature establishes a clear normative framework for addressing this dilemma. Dixon and Monk (2011a) articulate a principle of institutional separation whereby political actors should limit their involvement to establishing the fund's strategic mandate and exercising performance oversight, while delegating all investment decisions to professional managers. This distinction proves critical because, as Dixon (2016) demonstrates through comparative analysis, political interference frequently manifests in economically suboptimal investments that prioritise political objectives over financial returns. The case of the Libyan Investment Authority (LIA) under the Gaddafi regime provides a particularly stark illustration of this dynamic. As documented by Saigol and O'Murchu (2011), the LIA's US\$300 million investment in Palladyne International Asset Management - directed through personal networks connected to the ruling family - lost 17% of its value within twelve months, exemplifying how politically motivated investment decisions can systematically undermine portfolio performance. The composition and selection of SWF governance bodies represent a critical institutional mechanism for maintaining this balance between accountability and independence. Dixon and Monk (2011b) emphasise the necessity of establishing rigorous, competency-based appointment processes that prioritise financial expertise over political considerations. Australia's Future Fund Act (2006) provides an exemplary institutional model in this regard, with Section 38(3) establishing strict professional qualifications for board members that include: (1) substantial experience in financial asset management, (2) demonstrated investment expertise, and (3) proven corporate governance capabilities. This legislative framework creates what might be conceptualised as a "technocratic firewall" that safeguards the fund's investment decisions from partisan political influence while maintaining appropriate channels for democratic accountability. The comparative evidence suggests that successful SWF governance systems typically institutionalise three key principles: (1) a clear functional separation between political oversight and investment operations, (2) meritocratic appointment processes for both board members and senior management, and (3) transparent mechanisms for performance evaluation and accountability. These governance structures help reconcile the inherent tension between SWFs' public ownership and their need for operational independence in financial markets, while mitigating the risks of political capture and value-destructive investments. The contrasting outcomes between well-governed funds like Australia's Future Fund and politically compromised vehicles like the Gaddafi-era LIA underscore the critical importance of these institutional design choices for long-term SWF performance and sustainability.

3. Methodology

This study employed a qualitative research methodology grounded in the interpretivist paradigm. Data was collected using documentary analysis augmented by elite interviews. Documents such as government policy documents, legislative texts, central bank publications, and reports from international organisations such as the IMF and World Bank were analysed. These were selected through purposive sampling. To complement and enrich the documentary findings, the study incorporated elite interviews with six participants. Referral sampling was used to select the research participants. The interviews followed a structured protocol examining the design and governance effectiveness of the Pula Fund. All interviews were recorded, transcribed verbatim, anonymised to ensure confidentiality, and subjected to rigorous thematic analysis.

4. Data presentation and analysis

4.1 Botswana's natural resource revenue management framework

Botswana has emerged as a paradigmatic case of successful natural resource governance among resource-dependent developing economies, distinguished by its prudent and institutionally robust framework for managing mineral revenues (Kojo, 2010). The country's exemplary performance stems from a carefully designed natural resource revenue management system that systematically aligns fiscal policy with long-term

development objectives. At its core, this framework rests on two mutually reinforcing institutional pillars: (1) macroeconomic stabilisation to mitigate the volatility inherent in commodity markets, and (2) strategic prioritisation of development expenditure to transform finite mineral wealth into sustainable growth drivers (OECD, 2019). These pillars are operationalised through two key mechanisms that have become hallmarks of Botswana's governance approach. First, the Pula Fund serves as both a stabilisation vehicle to smooth fiscal revenues across commodity cycles and a savings instrument to preserve wealth for future generations. Second, the SBI functions as a non-statutory fiscal rule that guides expenditure decisions by maintaining discipline between recurrent spending and non-mineral revenues (AfDB, 2016). Together, these institutions embody what scholars have identified as Botswana's distinctive capacity to avoid the "resource curse" through forward-looking institutional innovation (Leith, 2005).

The effectiveness of this framework becomes particularly evident when contrasted with the experiences of other resource-rich developing nations. While many commodity-dependent economies struggle with fiscal profligacy during boom periods and painful austerity during busts, Botswana's institutional architecture has enabled remarkable macroeconomic stability despite diamond price fluctuations. Similarly, where other nations have squandered resource windfalls on unproductive expenditures, Botswana has consistently channelled mineral revenues into strategic investments in physical infrastructure, human capital, and economic diversification. The following analysis examines the key components of this framework in detail, focusing on how the interplay between the Pula Fund and the SBI has fostered Botswana's exceptional economic performance. This examination not only illuminates the specific mechanisms of Botswana's success but also offers broader insights into the institutional prerequisites for sustainable resource management in developing country contexts. The case demonstrates how carefully designed fiscal rules combined with sovereign wealth instruments can help overcome the governance challenges that frequently undermine resource-rich developing economies.

Sustainable Budget Index (SBI)

Botswana's fiscal framework is theoretically anchored in the Hartwick-Solow rule, which posits that sustainable development in resource-rich economies requires reinvesting resource rents into productive capital to offset the depletion of natural assets. This principle informs Botswana's distinctive approach to managing mineral revenues, which emphasises the conversion of finite diamond wealth into long-term investments in physical infrastructure, human capital, and financial assets (IMF, 2020). The government's fiscal strategy deliberately constrains the use of resource revenues for recurrent expenditures, thereby mitigating the risk of Dutch Disease while preserving intergenerational equity. This theoretical foundation is institutionalised through Botswana's SBI. This non-statutory fiscal rule operationalises fiscal discipline via a transparent metric: the ratio of recurrent expenditure (excluding health and education, which are classified as developmental spending) to non-mineral revenue (Barbier, 2005). By tethering recurrent budget outlays to sustainable non-resource income streams, the SBI functions as a self-imposed fiscal anchor that prevents excessive consumption of resource windfalls (Kojo, 2010). The exclusion of health and education expenditures from the recurrent spending calculation reflects Botswana's policy prioritisation of human capital development as a form of intergenerational wealth preservation (Leith, 2005; Andreasson, 2010).

The SBI serves as a critical fiscal management tool, with its numerical threshold providing clear policy signals. An SBI exceeding 1 indicates the unsustainable financing of recurrent expenditures through resource revenues, while values below 1 demonstrate compliance with Botswana's fiscal sustainability framework (Meija & Castel, 2012). As several interviewees emphasised, including a former senior official at the Bank of Botswana, "*The SBI's strength lies in its simplicity. It creates a bright line that even non-economists in Parliament can understand and monitor*". This institutional clarity, combined with strong political commitment across successive administrations, enabled Botswana to maintain an SBI below 1 for 30 of 32 years between 1983/84 and 2014/15, with only temporary deviations during 2000/01 and 2004/05 (AfDB, 2016).

The developmental outcomes of this fiscal discipline have been transformative. As one interviewee from the Ministry of Finance noted, "*The SBI forced us to think strategically about every pula from mineral revenues. We couldn't just spend it on government salaries or subsidies*". This discipline facilitated massive investments in national infrastructure, with Botswana's paved road network expanding from just 5 km at independence to over 32,500 km by 2024 (Statistics Botswana, 2024). Human capital indicators show equally dramatic improvements, with literacy rates soaring from 25% to 90% between 1966 and 2020 (UNESCO, 2020), while GDP per capita grew nearly 100-fold (IMF, 2024). These achievements, as Andreasson (2010) documents, reflect the consistent channelling of diamond revenues into productive investments rather than consumption.

However, the post-2014 period has seen growing challenges to the SBI framework. Multiple interviewees cited three key pressure points (1) rising public sector wage bills consuming larger shares of non-mineral revenues, (2) declining and volatile SACU transfers reducing the denominator in the SBI calculation and (3) extraordinary expenditures related to COVID-19 response (IMF, 2020). These pressures have exposed structural limitations in the SBI framework. As the AfDB (2016) notes, while the SBI effectively controls aggregate expenditure levels, it provides no guidance on the quality or composition of investments. One independent economist interviewed remarked, "*We built roads and schools, but not always where most needed, and sometimes without proper maintenance planning*".

In response, Botswana has proposed reforms to strengthen its fiscal framework, including: (1) a new 60/40 rule for resource revenue allocation between investments and savings, (2) enhanced project appraisal systems and (3) stronger parliamentary oversight mechanisms (IMF 2020). Yet as Collier's work (cited in AfDB, 2016) suggests, these technical fixes must be balanced with political realities. The same interviewees who praised Botswana's past discipline expressed concerns about maintaining it amid growing social demands and declining resource revenues. This tension highlights the broader challenge facing resource-dependent economies: how to sustain intergenerational equity principles when the fiscal space becomes more constrained. The case of Botswana ultimately suggests that while rules like the SBI provide essential fiscal anchors, their long-term effectiveness depends on complementary governance structures that ensure both disciplined implementation and adaptive refinement as economic circumstances evolve. As the country's experience shows, even the most well-designed fiscal rules require ongoing political commitment and institutional reinforcement to maintain their effectiveness across changing economic and political cycles.

Pula Fund

Botswana's Pula Fund, symbolically named after the Setswana word for "rain" to reflect its role as a fiscal buffer, represents a critical component of the nation's natural resource management architecture. The fund currently holds approximately 70% of Botswana's international reserves, comprising two distinct components: (1) the Government Investment Account, which accumulates fiscal surpluses, and (2) the Bank of Botswana's excess foreign reserves beyond immediate liquidity requirements (Kojo 2010; Revenue Watch Institute, 2013). As of December 2023, the Fund's assets amounted to 20% of GDP, invested primarily in global equities and fixed-income securities (IMF, 2024:42). However, interviews with current and former central bank officials reveal growing concerns about the fund's dual stabilisation-savings mandate. One senior economist at the Bank of Botswana noted: "*The lack of clear operational guidelines for drawdowns has created tension between the fund's short-term stabilisation role and its long-term intergenerational wealth preservation objective. This tension has intensified amid declining diamond revenues, with the fund's assets decreasing from 45% of GDP in 2008 to the current 20%*".

Recent reform proposals seek to address these challenges through two key measures. First, a new fiscal rule will mandate direct transfers of mineral revenues to a reconstituted SWF (IMF African Department, 2024). Treasury has proposed legislation that aims to clarify withdrawal protocols and enhance parliamentary oversight (Mguni, 2024). However, concerns persist about the fund's governance. Media investigations and confidential interviews

with fund suggest irregular withdrawals, including an alleged monthly P5 million disbursements to intelligence services (The Patriot on Sunday, 2019) and unspecified stabilisation drawdowns lacking transparent reporting (Botswana Gazette, 18 April 2024). As one former treasury official cautioned: *"Without proper safeguards, even the best-designed funds can become vulnerable to off-budget appropriations"*. These issues highlight the delicate balance Botswana must strike between maintaining fiscal flexibility and ensuring the Pula Fund's long-term integrity as a savings vehicle. The Fund's evolution reflects broader challenges facing resource-dependent economies: how to maintain fiscal discipline amid revenue volatility while preventing the erosion of hard-won institutional safeguards. Botswana's ongoing reforms will test whether middle-income countries can adapt sovereign wealth frameworks to changing economic realities without compromising their original governance principles.

4.2 Governance architecture of the Pula Fund

Institutional coherence

The Pula Fund's institutional design reflects a governance model that strategically combines elements of Chile's Economic and Social Stabilization Fund (ESSF) framework with Botswana specific adaptations. Like its Chilean counterpart, the Pula Fund was conceived as a complementary institution to Botswana's SBI, providing both stabilisation capacity during commodity price volatility and intergenerational savings functions (IMF, 2024:42). However, as several interviewees emphasised, the fund's unique dual mandate has created ongoing governance challenges. The stabilisation component remains institutionally embedded within the Bank of Botswana, leveraging the central bank's macroeconomic expertise. As one fund official explained: *"Having the stabilisation function under the Bank ensures rapid response capability during crises, but requires careful firewalls to prevent monetary policy conflicts"*. This arrangement aligns with international best practices for stabilisation funds, which typically reside within central banks or finance ministries (Dixon, 2016).

Conversely, the savings component operates under a more complex governance structure. While formally overseen by the Bank's board, day-to-day management involves collaboration with external asset managers. As the IMF (2024) notes, this hybrid approach attempts to balance public oversight with private-sector investment expertise. However, multiple interviewees expressed concerns about this model's effectiveness. One senior investment advisor to the Fund stated: *"The current structure creates ambiguity - are we maximising risk-adjusted returns or serving political-economic objectives?"* These tensions reflect a broader governance dilemma identified in the literature. As Clark and Monk (2012) demonstrate, successful savings funds typically require specialised asset management structures that combine three elements: (1) operational independence from short-term political pressures, (2) professional investment teams with global market expertise, (3) clear accountability mechanisms to ultimate beneficiaries. Botswana's partial outsourcing model, while innovative, appears to fall between these institutional paradigms. As one former minister of finance acknowledged: *"We've avoided the pitfalls of full political control seen in some African SWFs, but haven't fully embraced the arm's-length model of Norway's GPF"*. The ongoing reforms referenced in previous sections suggest Botswana's policymakers recognise these institutional gaps. The proposed legislative changes and potential creation of a dedicated asset management entity (IMF African Department, 2024) indicate movement toward the professionalised governance structures that scholars identify as critical for long-term SWF success (Bauer, 2014). However, as the interview data reveals, the political economy of such institutional transitions remains complex, particularly in resource-dependent middle-income economies facing fiscal pressures.

People

The Pula Fund's human resource architecture represents a deliberate institutional innovation designed to overcome Botswana's domestic skills constraints in sovereign wealth management. Recognising the specialised expertise required for global portfolio management, the Bank of Botswana has implemented a hybrid recruitment model that combines international headhunting with local oversight (Chigumira et al., 2013:76). This approach

addresses what one fund official described as *"the fundamental paradox of SWF staffing in developing economies, the need for world-class asset management capabilities in contexts without deep financial markets"*. The fund's talent acquisition process involves three distinctive elements. First, through its partnership with a London-based executive search firm, the fund accesses a global talent pool of investment professionals. As one board member explained: *"We benchmark candidates against top-tier asset managers, not just regional standards"*. This international recruitment strategy helps mitigate the brain drain challenges common in African financial sectors. Second, fund managers operate under strict output-focused agreements that tie compensation to predefined benchmarks. Interview data reveals these contracts incorporate relative performance metrics against relevant indices, risk-adjusted return targets and portfolio diversification requirements. Third, the semi-annual review process goes beyond simple performance measurement. As one former manager noted: *"Assessments evaluate investment philosophy consistency, risk management adherence, and contribution to team knowledge-sharing"*. Underperforming managers face contract termination, with turnover rates averaging 15-20% annually according to internal documents.

This governance model reflects emerging best practices in SWF human capital management identified by Dixon and Monk (2014), particularly for resource-rich developing countries. However, interviews with current and former staff reveal two ongoing challenges. First, the tension between global compensation standards and Botswana's public sector pay scales. One portfolio manager recruited from a major investment bank commented: *"The performance bonuses help, but total compensation still lags the private sector by 30-40%"*. Second, the difficulty of building local capacity. While the international recruitment strategy ensures immediate expertise, several interviewees emphasised the need for more systematic skills transfer programs. As one board member acknowledged: *"We're still developing the next generation of Botswana investment professionals who can eventually take over these roles"*. The Pula Fund's experience offers important lessons for other African SWFs seeking to balance technical competence with institutional development. Its hybrid model demonstrates how developing country funds can access global talent markets while maintaining national oversight. However, the long-term sustainability of this approach depends on parallel efforts to build domestic human capital in financial management.

Process

The Pula Fund's asset allocation framework reflects its dual mandate, with investment decisions carefully calibrated to balance short-term stabilisation needs with long-term wealth preservation objectives (World Bank 2018). A Bank of Botswana official highlighted that: *"The fund maintains a globally diversified portfolio comprising fixed income securities (60-65%) and equities (35-40%), aligning with SWF risk-return profiles."* This strategic asset allocation is implemented through a rigorous risk management framework overseen by the Bank of Botswana's specialised risk office, which conducts continuous portfolio stress testing and ensures compliance with board-approved risk parameters (Chigumira et al., 2016).

However, interviews with current and former fund officials reveal significant operational challenges. First, multiple sources confirmed unusual opacity surrounding withdrawal decisions. As one Bank of Botswana official noted: *"Even within the Bank, comprehensive information on stabilisation drawdowns is restricted to a small circle of executives"*. This aligns with media reports documenting limited parliamentary oversight of Fund operations (Botswana Gazette, April 2019). Second, the fund's hybrid design has created persistent governance tensions. A former board member explained: *"Without legal firewalls, stabilisation needs consistently override savings objectives during fiscal crises"*. Resultantly, a fund official laments that *"The fund's portfolio has dwindled by an average of 1.8% annually since 2015."* Treasury's recent legislative proposal (Mguni, 2024) responds to what one IMF official termed *"the classic stabilisation-savings dilemma"*. The proposed reforms aim to (1) legally separate stabilisation and savings pools, (2) establish clear withdrawal protocols, (3) enhance parliamentary reporting requirements. The Pula Fund's ongoing evolution underscores the complex trade-offs facing commodity-dependent nations seeking to address short-term macroeconomic stability and long-term

intergenerational equity simultaneously. Its reform process offers a critical case study in institutional adaptation, with implications for fiscal policy design across sub-Saharan Africa's resource economies.

Politics

The Pula Fund's formal governance structure embodies political insulation and accountability mechanisms. As the World Bank (2018) notes, Botswana's legal framework establishes a relatively robust separation between political oversight and investment decision-making. The Fund operates under a three-tier governance model. First, Parliament and the Minister of Finance set broad policy objectives through national development plans and enabling legislation (Revenue Watch Institute, 2013). Second, the Bank of Botswana's board, comprising the Governor, a Finance Ministry representative, and seven independent directors, approves investment policies and monitors performance (Chigumira et al., 2016). Third, an investment committee chaired by the Governor of the Bank of Botswana implements strategy through external managers, with back-office support from central bank departments. This structure has generally succeeded in minimising direct political interference in investment decisions. As one independent board member noted: *"Our investment committee meetings focus strictly on risk-adjusted returns, not political considerations"*. The accountability framework includes (1) regular performance reporting to the Minister and Parliament (World Bank, 2018), (2) provision for special audits by the Auditor General and (3) independent external valuation of assets (Revenue Watch Institute, 2013). However, interviews reveal significant operational challenges beneath this formal governance veneer. A former senior fund manager explained: *"The rules for stabilisation drawdowns remain unwritten. Decisions emerge from closed-door meetings between the Governor and Finance Minister."* While technically independent, several interviewees noted that the President appoints all non-executive directors without legislative confirmation. One civil society representative argued this creates *"subtle but real pressure to align with executive priorities."* This pressure is particularly visible during periods of fiscal stress. As one IMF official observed: *"Botswana's governance framework works well in calm waters but shows strain during storms."* Ongoing reform efforts, including proposed legislative amendments (Mguni, 2024), present an opportunity to address these gaps while preserving the fund's core governance strengths. Their success will depend on translating formal accountability mechanisms into daily practice, a challenge familiar to many natural resource-funded institutions across the Global South.

Conclusion and policy recommendations

Little is known and understood about SWF design and governance in Africa. Thus, many African SWFs are poorly designed and poorly attuned to their sponsors' macroeconomic objectives. Botswana's experience provides both a model and a cautionary lesson. It proves African nations can successfully harness resource wealth when governance systems combine technical rigour with political legitimacy. However, it also reminds us that such systems require constant nurturing and adaptation. As Africa pursues Agenda 2063's development aspirations, this study underscores that sustainable resource management demands more than just financial mechanisms - it requires governance architectures that are simultaneously technically sound, politically astute, and authentically African in their conception. The path to transforming natural resource wealth into lasting development lies not in imported models, but in institutional innovations that resonate with local realities while meeting global standards of accountability and transparency. This delicate balance between technical excellence and contextual relevance represents the next frontier in Africa's governance evolution. The policy implications are clear: African states must prioritise phased SWF development pathways aligned with institutional capacity, legislate strict firewalls between political actors and fund management, and establish independent fiscal oversight bodies.

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CONSUMER PROTECTION LAW COMPLIANCE IN RETAIL: AWARENESS, SOCIO-ECONOMIC CHALLENGES AND IMPLICATIONS**Mathews Smangaliso Shange ¹, Sandile Mkhize ², Steven Kayambazinthu Msosa ^{3*}**^{1,3*}*Mangosuthu University of Technology, Durban, South Africa*²*Durban University of Technology, Durban, South Africa**E-mails:*¹ mathews.shange@mut.ac.za; ² sandilem15@dut.ac.za; ^{3*} msosa.steven@mut.ac.za (Corresponding author)*Received 15 July, 2025; accepted 26 October 2025; published 30 December 2025*

Abstract. The Consumer Protection Act (CPA) was adopted in South Africa to safeguard consumer rights and promote fair business practices. However, its effective implementation remains inconsistent across the retail sector, particularly among small and medium enterprises. This study explores the awareness and application of the CPA among retailers in Pinetown, KwaZulu-Natal. Using a qualitative, exploratory research design, data were collected through in-depth interviews from a purposive sample of 11 retailers across hardware, appliance, and clothing sectors. The findings reveal limited awareness of CPA provisions, a reliance on informal information sources, and the prioritisation of internal store policies over statutory obligations. Retailers also reported a lack of structured training, poor communication tools, and minimal efforts to educate consumers about their rights. These gaps undermine consumer redress mechanisms and weaken regulatory enforcement. The study offers practical recommendations for enhancing CPA compliance through targeted training, collaborative stakeholder engagement, and improved consumer education. It contributes to the discourse on retail ethics, regulatory enforcement, and consumer empowerment in emerging market contexts.

Keywords: consumer protection; awareness; retail sector; consumer rights; compliance

Reference to this paper should be made as follows: Shange, M.S., Mkhize, S., Msosa, S.K. 2025. Consumer protection law compliance in retail: awareness, socio-economic challenges and implications. *Insights into Regional Development*, 7(4), 60-70. <http://doi.org/10.70132/x8446652243>

JEL Classifications: D18

Additional disciplines: law; political sciences; sociology; information and communication

1. Introduction

Consumer protection has become a critical dimension of both regulatory policy and business strategy, particularly in retail environments where high-frequency consumer transactions present opportunities for both value creation and exploitation. Globally, the evolution of consumer rights legislation reflects growing attention to market transparency, ethical conduct, and the need to redress power imbalances between businesses and consumers (Mishra & Varshney, 2024). In the South African context, the Consumer Protection Act (CPA) No. 68 of 2008 was enacted to safeguard consumer rights and enhance accountability across all sectors, with retail occupying a central position given its direct interface with consumers.

Retailers, particularly small and medium-sized enterprises (SMEs), play a crucial role in implementing the principles of the CPA in their daily operational practices. Yet, despite its comprehensive legislative framework, recent studies (Mugobo & Malunga, 2015; Tentu & Reddy, 2025; Orji-Okafor, 2025) suggest that CPA

compliance remains inconsistent, particularly among SME retailers. Persistent challenges include inadequate legal literacy, lack of formal training, over-reliance on internal store policies, and limited awareness of statutory obligations. These gaps not only hinder regulatory enforcement but also undermine consumer trust and exacerbate service failures. The discrepancy between legislative intent and on-the-ground implementation raises important questions about the accessibility, clarity, and operationalisation of CPAs in retail settings (Laing, 2021). While national-level assessments and policy reviews provide high-level perspectives on CPA enforcement, a notable gap remains in context-specific, qualitative research that explores how retailers at the local level understand and apply the Act. This gap is especially evident in non-metropolitan areas, such as Pinetown, KwaZulu-Natal, where small, independent retailers predominate and may have limited access to compliance resources, legal support, or regulatory training. Localised studies are therefore essential to understanding the lived realities of CPA implementation and developing tailored interventions that reflect the challenges and capabilities of these businesses. Thus, this study aimed to analyse consumer protection law compliance in the retail sector. Specifically, the following are the research objectives that guided this study:

- To identify the sources of information, retailers use to learn about the CPA
- To assess retailers' level of understanding of the key provisions of the CPA
- To analyse the extent to which the CPA is applied in resolving customer complaints
- To examine systemic and operational barriers that hinder compliance

This study makes three key contributions. Empirically, it offers localised qualitative insights into how SME retailers interpret and implement the CPA, addressing a gap in current literature. Theoretically, it contributes to the discourse on regulatory compliance and consumer rights enforcement in emerging market contexts. Practically, it provides policy-relevant recommendations for improving retailer training, strengthening CPA enforcement mechanisms, and enhancing consumer awareness initiatives. In doing so, the study responds to national policy imperatives around consumer justice and offers valuable guidance for industry associations, regulators, and retail managers alike.

2. Literature Review

Consumer protection is the set of actions proposed and taken by state authorities, non-state bodies or single activists directed towards defending consumers' rights, avoiding fraud and ensuring equitable trade practices (including promotion). The global character of the new economy is accompanied by an international character of consumption, with needs, challenges, and solutions related to customer protection being very similar and, in some cases, common all over the world (Radu, 2023). The Consumer Protection Act (CPA) 68 of 2008 represents a foundational shift in South Africa's regulatory landscape, aiming to establish a fair, accessible, and transparent marketplace for consumer transactions (Mupangavanhu & Kerchhoff, 2021). The Act's core principles mandate business compliance in crucial areas such as the right to disclosure and information, fair and responsible marketing, and fair value, quality, and safety (Hamonangan & Sakti, 2024). Institutions such as the National Consumer Commission (NCC) and the National Consumer Tribunal (NCT) are responsible for regulatory oversight, investigation, and enforcement.

However, the gap between legislative intent and practical enforcement remains a significant challenge. Recent scholarship highlights a form of "regulatory dissonance," where the existence of comprehensive laws does not automatically translate into effective consumer protection on the ground (Mupangavanhu & Kerchhoff, 2021). Institutional inefficiencies, resource constraints within enforcement bodies, and limited accessibility for consumers in rural and peri-urban areas exacerbate this issue. Tentu and Reddy (2024) argue that this dissonance undermines the CPA's potential, leaving consumers vulnerable despite the robust legal framework designed to protect them. This situation is not unique to South Africa; global studies also point to under-resourced agencies struggling to keep pace with evolving market dynamics, particularly in the digital retail space (Howells, 2021).

2.1. Retailer Conduct, Compliance Behaviour, and Ethical Practices

Retailers, particularly Small and Medium-sized Enterprises (SMEs), are the primary agents for operationalising the CPA. However, their compliance behaviour is often inconsistent. Research indicates that internal store policies frequently supersede statutory obligations, especially regarding refunds, returns, and warranties (Baloyi & Kotze, 2017). This tendency is influenced by several factors, including a lack of legal literacy among SME owners, inadequate staff training, and a perception of compliance as a financial or administrative burden rather than a strategic imperative (Orji-Okafor, 2025). A study by Makuwa and Collins (2024) found that many small retailers operate without formal compliance protocols, relying instead on informal norms that may contravene CPA provisions.

Ethical considerations are closely linked to compliance. Practices such as failing to disclose key terms, using ambiguous language in contracts, and refusing to process legitimate refunds represent not only legal breaches but also ethical lapses that erode consumer trust (Mupangavanhu & Kerchhoff, 2021). In resource-constrained environments, the pressure to maintain profitability can lead businesses to prioritise sales over consumer rights, reinforcing a compliance gap that damages both the consumer experience and the legitimacy of the regulatory framework (Orji-Okafor, 2025). An understanding of blame is particularly beneficial for online retailers, as it explains to what extent an online retailer may be held responsible for harm caused by selling fakes, despite having sold and/or transported them by third-party sellers (Keshner, 2019).

To stimulate household consumer confidence and spending, national institutions and authorities must strive to increase consumers' trust in retailers, enhance their awareness of their rights, and improve complaints and conflict resolution mechanisms. Consumer protection can be seen as a channel of transmission of consumer confidence to consumption spending, that is, where those households with more consumer protection due to consumer legislation at the national and supranational levels have more consumer confidence and consumption expenditure, and those residing in countries with minimal consumer protection also have minimal consumer confidence and consumption expenditure (Ferrentino & Vota, 2025).

2.2. Consumer Awareness, Power Asymmetries, and Communication Gaps

The effectiveness of the CPA is fundamentally dependent on consumer awareness, yet studies consistently show that a large segment of the South African population remains unaware of their specific rights (Makuwa and Collins, 2024). This information asymmetry creates a significant power imbalance, tilting decisively in favour of retailers. Uninformed consumers are less likely to identify unfair practices, question store policies, or pursue redress when their rights are violated (Baloyi & Kotze, 2017). This dynamic allows exploitative practices to persist, as retailers face minimal pressure to change their behaviour (Ivančík et al., 2024).

Communication from retailers and regulatory bodies is critical to bridging this awareness gap. However, the tools for disseminating CPA information, such as in-store signage, pamphlets, and staff communication, are often inadequate. Zenda et al. (2020) note that even where information is provided, it is rarely presented in a simple, multilingual format that is accessible to all consumers. The absence of standardised, visible, and easily understandable communication about consumer rights at the point of sale remains a major barrier to consumer empowerment and effective regulatory enforcement.

The proliferation of artificial intelligence and the technology revolution presents challenges for both retailers and consumers. Generative AI has the potential to produce advert copy that is detrimental to consumers. For instance, it has the ability to generate misleading information by exaggerating a product's positives, downplaying its negatives, or failing to disclose all the extra charges. It may serve this purpose intentionally, by generating non-compliant prompts, or unintentionally, as content generated by AI will never perfectly depict a product in real life (Ivančík & Andrassy, 2023; Duivenvoorde, 2025). Thus, increasing the overall transparency of information

related to consumers can be especially helpful in enabling them to make informed purchasing decisions and in reducing the likelihood of unintentionally receiving a counterfeit product. Shoppers are looking to the online seller for information about the parties responsible for both ownership of inventory (i.e., the seller) and order shipment (i.e., the shipper). As a response to this information asymmetry, online sellers have increasingly strengthened their service designs by disclosing which parties sell and ship goods. Contrary to everyone's expectation, these disclosures are not necessarily reflective of real service processes since retailers can mix their own inventory with that of third-party sellers in an attempt to benefit from inventory-pooling efficiencies (Williams, 2019). Counterfeit merchandise purchased by one third-party seller may be used to fulfil orders placed with any other seller, including the retailer.

2.3. Challenges in Enforcement and Compliance Support

While the CPA outlines mechanisms for redress, their practical success hinges on robust compliance support systems for both retailers and consumers. Many SMEs lack affordable access to legal advice, sector-specific training, and clear, practical guidance on CPA implementation (Tentu & Reddy, 2024). This leaves them ill-equipped to develop compliant policies or manage disputes effectively. For consumers, barriers to accessing redress include bureaucratic delays, the perceived complexity of lodging a complaint, and a lack of faith in the responsiveness of enforcement institutions (Sibanda et al., 2023).

Collaborative, industry-led initiatives are often more effective than purely top-down enforcement. International models demonstrate that strategies combining legal enforcement with education, certification schemes, and incentives can significantly improve compliance rates (Howells, 2021). In the South African context, however, such support systems are scarce, particularly in townships and non-metropolitan areas. The absence of localised consumer protection offices or trained intermediaries exacerbates the disconnect between the law as written and the reality of business practices, perpetuating a cycle of non-compliance and consumer vulnerability (Baloyi & Kotze, 2017).

3. Research Methodology

This study employed a qualitative and exploratory research design to ascertain retailers' awareness and application of the CPA. According to Maher and Dertadian (2018), qualitative research is particularly effective in understanding complex behaviours, motivations, and perspectives. The flexibility of qualitative research enabled an in-depth understanding of retailers' experiences and challenges in implementing consumer protection laws. Furthermore, Saunders et al. (2016) opine that an exploratory research approach is useful in uncovering emerging issues and providing rich insights into real-world problems.

This study adopted a phenomenological approach, which emphasises the lived experiences of participants (Saunders et al., 2016). By focusing on retailers' perspectives, this approach allows for a nuanced understanding of their awareness and application of the CPA. Phenomenology enables the researcher to interpret respondents' subjective experiences while minimising personal biases (Kumar, 2011). This methodological stance ensures that findings are grounded in the realities of the participants, rather than pre-conceived theoretical assumptions. The study employed a case study strategy, utilising in-depth interviews to collect qualitative data. As suggested by Woolcock (2013), case studies are effective in exploring contemporary issues within specific contexts. The research was conducted in Pinetown, a representative urban area, to examine how retailers interact with and apply the CPA in their daily business operations.

The target population for this study were all retailers operating in Pinetown. A non-probability sampling approach known as purposive sampling was used to select 11 retailers. Purposive sampling, as described by Harman et al. (2013), enables researchers to collect data efficiently from respondents based on their knowledge and understanding of a particular phenomenon. Thus, in this study, pre-qualifying questions were used to ensure that

selected retailers had relevant experience with the CPA. The sample included various retail segments such as clothing, hardware, and appliance stores, to provide a diverse perspective on CPA awareness and application. While purposive sampling has limitations in terms of generalizability, it remains an effective approach for qualitative and exploratory research (Burns & Bush, 2014).

Given the qualitative nature of the study, data were collected through in-depth, face-to-face interviews. An interview guide with open-ended questions was developed to explore respondents' awareness, interpretation, and application of the CPA. The study employed thematic analysis to identify recurring patterns and insights from the collected data (Saunders et al., 2016). Thematic analysis provides a systematic approach to categorising qualitative data, facilitating the identification of key themes related to CPA awareness and implementation. Themes were developed based on the research objectives and emerging trends in respondents' answers.

Table 1. Unit of analysis

Participant	Gender	Type of shop
1	Male	Retail Hardware
2	Male	Retail Clothing
3	Female	Retail Clothing
4	Male	Retail Hardware
5	Male	Retail Hardware
6	Male	Retail Hardware
7	Male	Retail Hardware
8	Male	Retail Appliances
9	Male	Retail Appliances
10	Male	Retail Clothing
11	Male	Retail Hardware

Source: authors' construction

This method enabled an in-depth interpretation of the data while ensuring consistency with the study's objectives. Table 1 above shows the unit of analysis for this study.

4. Results

This study sought to evaluate the level of awareness among retailers regarding the Consumer Protection Act (CPA) and its implications for their business operations. The findings of this study show mixed views regarding the level of awareness, knowledge and application of the Consumer Protection Act. While the majority of respondents had encountered the CPA, only two demonstrated a substantive understanding of its provisions. This limited comprehension can be attributed to the absence of structured training programs, reliance on informal sources of information, and insufficient engagement with legal or regulatory bodies. For instance, respondent 10 indicated: *"I am aware and have heard about it, but have no specific details of what the Act says and how I can apply it in my business. The truth is that I am unaware of any section that affects my business due to my limited knowledge of the Act"*.

Furthermore, the sources through which retailers acquired information about the CPA were primarily informal, including word of mouth and radio broadcasts, as shown in Table 2. The limited formal knowledge of the CPA among retailers suggests that while awareness exists at a general level, the depth of comprehension remains insufficient for practical implementation. Identifying the sources of information about the CPA is essential in assessing the effectiveness of dissemination strategies. The study identified multiple channels through which retailers gained awareness. Table 2 shows the sources of information about CPA.

Table 2. Sources of information about the CPA

Source of Information	Number of retailers
Radio broadcasts	3
Legal representatives	2
Word of mouth	2
Training courses	1
No exposure to CPA	3

Source: authors' construct

The predominance of informal sources highlights a significant gap regarding the understanding and knowledge of the Consumer Protection Act. For instance, Participant 3 highlighted: *“we do not need the CPA due to the area we are operating in and also the type of customers that we service”*. These findings suggest that without systematic and standardised educational programs, retailers are unlikely to develop the requisite legal literacy needed for effective CPA implementation. Despite recognising the existence of the CPA, most respondents demonstrated a limited understanding of its specific provisions relevant to their businesses. Only a few respondents could identify key aspects related to consumer rights and refund policies, while others struggled to specify relevant legal clauses. One retailer admitted: *“I know the CPA exists, but I don't know which sections apply to my business”*. The study also examined the extent to which retailers actively incorporate CPA provisions into their business operations. The findings revealed that a significant proportion of retailers continued to rely on internal store policies rather than the CPA when addressing consumer disputes. For instance, participant number 8 averred: *“staff is educated on store policy and handling customer complaints in line with it”*.

The responses indicate varying levels of awareness and application of the Consumer Protection Act (CPA) among retailers. Four respondents revealed that store policies were often prioritised over the provisions of the CPA, suggesting a preference for internal guidelines rather than compliance with national consumer legislation. For instance, respondent number 7 said: *“no, because we always solve issues with customers based on our retail store policy”*. This view is shared by respondent number 4, who stated: *“we do not apply or refer to the Consumer Protection Act, but we do exchange goods or handle complaints according to the retail store policy”*.

Despite the availability of store policies, the findings further reveal the rigid application of these policies. For instance, respondent 4 stated: *“No slip, no service”*, indicating a rigid adherence to store policies that may not align with consumer protection laws. Such practices can undermine consumer trust and limit access to legal redress, as they prioritise internal rules over statutory protections.

The findings of this study further show that several factors impact consumer advocacy and compliance efforts. First, a lack of consumer awareness was identified by two respondents, complicating the ability of consumers to advocate for their rights. Additionally, one respondent mentioned that unclear Consumer Protection Act (CPA) regulations lead to uncertainty in their application and enforcement. Furthermore, four respondents noted a reliance on store policies over the CPA, which may prioritise business interests over consumer rights; this trend has also been observed in international studies. Lastly, some retailers pointed out the absence of CPA-related staff training, reflecting findings in African studies that emphasise the need for targeted legal education for retailers. For instance, respondent 4 indicated: *“we only educate staff on retail store policy and customer complaints handling. There is no specific training given to staff on the Consumer Protection Act”*.

The study also explored the extent to which retailers engage suppliers in ensuring CPA compliance. Findings revealed that none of the respondents actively monitored suppliers' adherence to CPA guidelines. For instance, respondent 6 indicated: *“we do not discuss the Consumer Protection Act with our suppliers”*. Some retailers assumed that suppliers would naturally provide quality goods, while others believed compliance monitoring was

unnecessary. Thus, respondent 4 said “*suppliers do not give guarantees on product quality, which makes it difficult to guarantee quality to customers*”. The laxity in the supplier-retailer relationship is evident in the remark made by one of the respondents (10) who said: “*we do not ensure compliance with the Consumer Protection Act as suppliers know that they supply quality goods*”. This lack of enforcement suggests that retailers may inadvertently stock products that fail to meet CPA standards, exposing themselves to legal risks.

Consumer education plays a crucial role in the effective implementation of the Consumer Protection Act (CPA). However, the study revealed that most retailers do not actively promote consumer awareness. Specifically, only three respondents mentioned that retailers inform customers about the CPA, while eight respondents noted that retailers tend to assume consumers already possess this knowledge. One respondent (2) stated: “*most customers already know the store policy, so we don’t need to explain the CPA*”. This assumption represents a missed opportunity to educate consumers about their rights. Retail employees play a pivotal role in enforcing consumer protection laws; however, a study revealed that CPA-related training was minimal, with four respondents indicating that no formal CPA training was provided to staff, while eight respondents noted that only store policy-focused training was offered. The lack of structured training means that employees may not be adequately equipped to resolve customer disputes in compliance with the CPA. For instance, respondent 10 indicated; “*no training is given to members of staff about the Consumer Protection Act. We focus only on training on the store policy and procedures*”.

Retailers have identified deficiencies in CPA communication tools that hinder the effective implementation of their strategies. For instance, ten respondents noted that there are no CPA pamphlets or posters available in-store. One respondent mentioned that high costs act as a barrier to the adoption of communication tools. The lack of visible CPA-related information reduces consumer awareness, making it challenging for customers to assert their rights. One respondent (3) pointed out: “*Customers are not educated about the CPA because there are no workshops or printed materials available*”. This highlights the need for greater investment in awareness campaigns and accessible resources. These challenges underscore the need for targeted interventions to enhance CPA compliance, increase consumer awareness, and ensure fair retail practices. Addressing these issues requires a multifaceted approach, including enhanced regulatory oversight, structured training programs for retailers, and consumer education initiatives.

5. Discussion

This study examined the awareness and application of the Consumer Protection Act (CPA) among retailers in Pinetown, KwaZulu-Natal. The findings revealed significant knowledge gaps, inconsistent application of CPA provisions, and a reliance on informal sources of information. While the CPA is a critical framework for consumer rights protection in South Africa, its effectiveness is undermined by limited awareness among retailers and consumers. These findings align with international studies, such as those by Howells (2021), which highlight that consumer protection laws often fail due to inadequate dissemination of legal information and weak enforcement mechanisms.

The study further reveals critical gaps in CPA awareness and application among retailers, which ultimately negatively impact consumer protection. Key implications include the following: limited awareness of the CPA diminishes its effectiveness in safeguarding consumer rights; reliance on internal store policies puts consumers seeking redress at a disadvantage; the absence of CPA training for staff results in inconsistent consumer dispute resolution; and a lack of CPA communication tools hinders consumer education and transparency. This view is shared by Orji-Okafor (2025), who found that in Nigeria, retailers often rely on peer discussions and non-official sources, leading to fragmented understanding and inconsistent compliance. Similarly, Imani and Prastyanti (2025) documented comparable challenges, emphasising the need for government-led training initiatives. This corresponds with existing literature, which emphasises the need for formalised and continuous training initiatives

to ensure retailers are adequately equipped with relevant legal knowledge (Mugobo & Malunga, 2015; Išoraitė & Gulevičiūtė, 2023; Orji-Okafor, 2025). Orji-Okafor (2025) highlights that in Nigeria, informal learning methods contribute to inconsistent application of consumer laws, reinforcing the need for standardised educational initiatives. The lack of direct engagement with authoritative bodies, such as consumer protection agencies and trade associations, further underscores the necessity for robust communication and education mechanisms.

The findings also show that many retailers do not use the CPA because customers are often unaware of it, which makes its implementation difficult. This aligns with Mugobo and Malunga (2015), who assert that general awareness of consumer protection laws does not equate to the ability to apply them in business practices. Without adequate knowledge of the legal framework, retailers risk violating consumer rights, which can potentially lead to legal disputes and reputational damage. Research indicates that informed consumers are better equipped to demand fair treatment and hold businesses accountable (Makuwa & Collins, 2024). This is supported by international findings, such as those by Bashir et al. (2023), who highlight that consumer education plays a critical role in shaping retail compliance practices. Similarly, Orji-Okafor (2025) argues that in the African context, consumer awareness initiatives significantly enhance business accountability and adherence to the law.

The findings indicate a lack of training on the CPA in general and its implementation in particular, as well as a failure to orient staff members on how to utilise the CPA to address customer issues. According to Makuwa and Collins (2024), retailers who lack formal legal education struggle to interpret and apply consumer protection laws effectively, leading to inconsistent compliance. Furthermore, this superficial awareness limits retailers' ability to align their business practices with CPA requirements, potentially exposing them to legal disputes and consumer dissatisfaction (Tentu & Reddy, 2025). These findings align with the study by Tentu and Reddy (2025), which argues that government-led initiatives to enhance CPA awareness among retailers have not been adequately implemented. Furthermore, a study conducted by Orji-Okafor (2025) in Nigeria highlights the role of informal networks in disseminating legal information, which, although useful, often leads to a fragmented and inconsistent understanding of consumer rights laws.

The findings of this study indicate a strong preference for in-store retail policies over the CPA. This lack of alignment between store policies and legal obligations raises concerns about retailer accountability and the effectiveness of consumer protection mechanisms in ensuring fair transactions (Tentu & Reddy, 2025). This suggests that many retailers prioritise internal policies over legal obligations, thereby limiting consumer redress and fair resolution mechanisms (Makuwa & Collins, 2024). Such practices indicate a lack of integration of consumer protection frameworks into business transactions, reinforcing the need for targeted training and regulatory oversight. These findings are supported by research indicating that inadequate legislative clarity and lack of regulatory guidance contribute to ineffective policy implementation (Tentu & Reddy, 2025).

The findings of this study show that retailers do not ensure that suppliers comply with the CPA in terms of supplying goods that meet acceptable quality standards and adhere to the CPA. International studies have demonstrated that supply chain monitoring reduces consumer risks and enhances accountability (Kraft et al., 2022). Similarly, African research highlights the role of supplier partnerships in strengthening compliance frameworks (Orji-Okafor, 2025). In the South African context, Mugobo and Malunga (2015) argue that inadequate supply chain oversight can lead to gaps in consumer protection, necessitating stricter regulatory enforcement.

Conclusions

This study examined the awareness and application of the Consumer Protection Act (CPA) among retailers in Pinetown, KwaZulu-Natal. To enhance CPA compliance and consumer protection within South African retail environments, a multifaceted approach is essential. Recommendations include enhancing retailer awareness and

legal literacy through workshops and digital education platforms to ensure a comprehensive understanding of CPA provisions. Promoting consumer awareness via community outreach initiatives, particularly in township and peri-urban areas, is crucial to empower consumers regarding their rights under the CPA. Institutionalising CPA communication tools by mandating the display of CPA materials in retail spaces and training frontline staff will help consumers effectively assert their rights. Strengthening monitoring and enforcement through the establishment of local consumer protection offices, whistleblower reporting mechanisms, and the implementation of more substantial penalties for non-compliance will bolster accountability. Ultimately, fostering a collaborative compliance culture among government regulators, industry associations, retailers, and consumers is crucial for establishing a sustainable framework that promotes consumer protection and enhances retailer accountability in a dynamic retail landscape.

Despite its contributions, the study acknowledges several limitations. The reliance on a small sample size limits the generalizability of findings. Additionally, the use of convenience sampling may have introduced selection bias, as some retailers were more accessible than others. The qualitative nature of the study also means that findings are interpretive rather than statistically representative. Future research could benefit from a larger sample and mixed-methods approaches to enhance the trustworthiness of the study.

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Data Availability Statement: Data can be provided on request.

Author Contributions: Conceptualisation: *M.S.M.*; data curation: *S.M.*, *S.K.M.*; formal analysis: *M.S.M.*; investigation: *M.S.M.*; methodology: *M.S.M.* *S.K.M.*; project administration: *M.S.M.*; supervision: *S.M.*; validation: *S.M.*, *S.K.M.*; visualisation: *M.S.M.*; writing – original draft: *M.S.M.*; writing – review & editing: *M.S.M.*, *S.M.*, *S.K.M.* All authors have read and agreed to the published version of the manuscript.

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IMPACT OF EXTERNAL POWERS ON LAND GOVERNANCE IN AFRICA: CRITICAL JUNCTURES AND THE SEARCH FOR SOCIAL JUSTICE**Hardlife Zvoushe***School of Public Management, Governance and Public Policy, University of Johannesburg, South Africa**E-mail: hzyoushe@sociol.uz.ac.zw**Received 22 August 2025; accepted 26 October 2025; published 30 December 2025*

Abstract. Land governance in much of Africa remains rooted in inherited colonial structures, and African governments have yet to develop a pathway toward social justice amidst ongoing global neoliberal influences. The paper sought to identify and critically analyse how historical and ongoing critical junctures have created opportunities for land reclamation and social justice in Africa. Specific critical junctures analysed in the paper include the Cold War era, structural adjustment programmes (SAPs), land grabbing under globalisation, the establishment of foreign military bases in Africa, the transition to multiparty democracy, post-conflict reconstruction periods, the establishment of Pan-African institutions and frameworks, and digital land governance reforms. The paper employs an integrative review approach to examine these critical junctures and the opportunities they have provided to African governments over time. Findings from the identified critical junctures show that geopolitical dynamics, combined with local elitism and entrenched cultures of patronage politics, influence ownership, access, and control over land in Africa. The paper observes that Western hegemonic forces still retain significant influence over the direction of land governance, which explains why most of the critical junctures that presented opportunities for transforming the legacies of skewed post-independence land ownership patterns were not fully utilised or partially utilised.

Keywords: critical junctures; historical injustices; land governance; reforms; social justice; Africa

Reference to this paper should be made as follows: Zvoushe, H. 2025. Impact of external powers on land governance in Africa: critical junctures and the search for social justice. *Insights into Regional Development*, 7(4), 71-83. <http://doi.org/10.70132/h5697386974>

JEL Classifications: D02, D18

Additional disciplines: public administration, political sciences

1. Introduction

Postcolonial land governance in Africa still bears the marks of unresolved colonial legacies, including inequitable land ownership patterns, bimodal agrarian structures, legal pluralism, economic inequality, and entrenched racial and class hierarchies (Austin, 2010). These legacies reflect the failure of post-independence governments to implement transformative reforms. Attempts at land reform have yielded mixed results, generally demonstrating a lack of genuine social transformation due to ongoing insecurities in land rights, unequal benefit distribution, continued marginalisation of vulnerable social groups, and even patterns of ethno-regionalism (Mkodzongi & Lawrence, 2019). A considerable body of literature has investigated various aspects of land governance, such as land tenure systems in Africa, customary and statutory regimes, land rights and tenure security, and neoliberal land reforms (Wegerif et al., 2025). However, there has not been much attention towards analysing how African governments have consistently missed critical junctures to address colonial legacies of land injustices. What has

not been comprehensively investigated is how critical junctures—defined as moments when the likelihood of change is highly probable—have presented windows of opportunity for transforming land ownership.

Studies on critical junctures in Africa are commonly found in political science, covering areas such as democracy, urban planning and governance, women's rights, and civil wars (García-Ponce & Wantchekon, 2023; Paulson-Smith & Tripp, 2021). The few studies focusing on critical junctures in African land governance primarily examine a single critical juncture, such as the digitalisation of land governance, institutional development, and institutional change in land governance (Home, 2021). Others that analyse the dynamics of land governance reforms (see Klopp & Lumumba, 2017) do not apply the critical junctures perspective and thus overlook nuances related to windows for potential structural change opened by watershed events and processes at regional and national levels. Additional works explore the challenges and politics involved in reforming land policy within multi-level governance contexts (Klopp & Lumumba, 2017). The primary focus of those is on intergovernmental relations and their implications for changes in land governance. The work of Salman & Mori (2023) reviews the conditions, timing, and processes of land governance change; however, it functions merely as a generic template for understanding land governance changes and does not analyse specific historical events with transformative potential in land ownership.

The paper argues that over time, African governments not only missed critical moments for transformative land reform but also allowed geopolitical imperial pressures to reinforce exclusionary land ownership systems on the continent. The paper further argues that if past flat-footedness and reluctance persist, African governments will likely miss critical junctures, such as the rise of Pan-African land institutions and digital land governance reforms, which present new opportunities for pursuing equitable land governance. The paper contributes to historical institutionalism in African land studies by synthesising missed historical critical junctures, governmental inaction, and geopolitical dynamics in the persistent land injustices in Africa. The paper sought to answer the following research questions:

- What critical historical junctures presented windows of opportunity for African governments to address land inequalities?
- What are the possible reasons behind the missing or underutilisation of critical junctures for reforming land ownership structures?

2. The concept of critical junctures

By definition, a critical juncture is understood as “a moment in which change is of heightened probability” (Volpi & Gerschewski, 2020:1032). It reflects a key but rare moment that is characterised by endogenous or exogenous shocks, where institutions, practices, norms, and structures can potentially undergo radical transformation. This is made possible by the loosening of structural constraints, which may have had a disempowering effect on actors, making it favourable to create new institutions (Munck, 2021). The intellectual foundation of ‘critical junctures’ goes back to the work of Lipset and Rokkan (1967), who first applied the idea of critical junctures in the context of Western European party systems, which, as the authors argued, were shaped by ‘three crucial junctures’ in the history of each country. Critical junctures are rooted in the traditions of historical institutionalism (Hogan, 2019), where the focus of analysis is on how formal rules, informal norms, and organisational structures influence or shape the patterns of change over time (Sorensen, 2023).

Following Mahoney (2000), before changes occur in a critical juncture, two critical conditions must be met. First, what he called ‘antecedent conditions’, that is, the pre-existing historical conditions (social, economic, cultural, etc) that will influence the choices or plausible options that will be followed by actors during the critical juncture; for example, Africa's historical legacies of inequitable racial land ownership, tenure insecurity, and land protests. Second, what are called ‘permissive conditions’, that is, the factors that permit the occurrence of significant changes in policies, structures, practices, and norms (Sorensen, 2023). It is, therefore, the antecedent and

permissive conditions that provide the basis for critical junctures (Mahoney, 2000). Notably, when critical junctures come, and relevant actors fail to seize them, they come across as 'moments of missed opportunities' for creating and shaping long-term trajectories (path dependencies) of social justice (Capoccia, 2015). Decisions and options chosen during a critical juncture birth new, path-dependent institutions that shape future development. Once installed, these may not be easily changed.

Over time, critical junctures emerge from exogenous or endogenous disruptions and shocks, such as economic crises, wars, or political upheavals, creating windows of opportunity for making transformative decisions (Capoccia, 2015). Historically, African countries have experienced shared and sometimes distinct phases of economic crises, such as those that led to the adoption of Structural Adjustment Programs (SAPs) in the 1990s. SAPs became a significant opportunity for extensive economic restructuring in African countries (Mkandawire & Soludo, 2003). Additionally, several countries historically faced highly disruptive civil wars, and their post-conflict reconstruction periods provided opportune moments for redirecting socio-economic and political trajectories (Potel & Gloria, 2022).

Research on critical junctures has provided insights into historical causation (Sorensen, 2023), explaining why opportunities for initiating change have either led to transformative outcomes when seized on time or resulted in policy stagnation and continuity due to missed chances (Capoccia & Kelemen, 2007). Critical juncture perspectives have been employed to analyse historical legacies, constitutional reforms, social justice, and policy change (Hogan, 2019; Paulson-Smith & Tripp, 2021). This paper focuses on identifying historical and ongoing critical junctures and examining how African countries have responded to them, particularly in the context of land governance. Land issues remain highly controversial in Africa's post-independence period; therefore, the African Union "has continued to advocate for secure land tenure and improved land governance systems as prerequisites for poverty reduction, sustainable development and peace and stability on the continent" (AU, 2021:7). Critical junctures have been closely linked with social reform worldwide, and in many parts of the Global South, several postcolonial periods have presented opportunities to address colonial legacies such as skewed land ownership patterns and tenure-related challenges (Home, 2021).

3. Methodological note

The paper aimed to analyse critical historical junctures and how these were missed or underutilised over time in post-independence Africa. The paper was constructed following an integrative review approach, which was intended to assess, critique, and synthesise literature on specific moments that offered opportunities for reforming land governance in independent Africa. To gather the literature, some of the databases used included Scopus, Google Scholar, JSTOR, African Journals Online (AJOL), and institutional repositories. From these sources, the study accessed and analysed peer-reviewed papers, books, official reports from organisations, monographs, grey literature, and policy briefs on land governance in Africa. The study performed a thematic synthesis by identifying key historical developments, such as the Cold War era, Structural Adjustment Programmes, and others, which were then evaluated in terms of how they presented opportunities to address land inequalities in African countries. In some cases, cross-case comparisons were conducted to highlight the diversity of experiences with land redistribution or reform during particular critical junctures.

4. Historical and ongoing critical junctures and control over land in Africa

Several historical and contemporary geopolitical and local dynamics have contributed to and continue to influence processes of access, ownership, and control over land in African nation-states. Not only have African governments missed critical opportunities to pursue justice in land ownership and rights, but their collusion with foreign forces has often worsened the situation. The result is the ongoing inheritance of injustices and vulnerabilities among marginalised groups. In the subsections below, the discussion focuses on specific historical

critical junctures that were missed, as well as ongoing ones that may be overlooked or underutilised by African governments.

4.1 The Cold War era

The Cold War era (circa 1947-1991) opened Africa to competition between the superpowers of the East and West, both vying to influence newly independent African states (Wengraf, 2021). In this context, land reform became a key arena for ideological battles, pitting US capitalism against Soviet communism. Consequently, the direction of land reforms and redistribution in Africa was shaped by each government's political alignment. Aligning with the West-influenced market-driven land reforms—a strategy that generally failed to address historical injustices and instead promoted elitism in landholding, which widened disparities (Moyo, 2007). China and the USSR supported African countries aligned with their communist ideals, which led to the adoption of centralised, state-controlled land models, mainly in authoritarian regimes. The experience of Ghana under Nkrumah illustrates superpower rivalry in Africa. Initially aligned with the USA, Nkrumah's government promoted American investments and smallholder farming. However, he shifted focus toward large-scale state farms, reflecting a move from market-based to state-controlled land governance. Although intended to modernise agriculture, this shift created a tri-modal land tenure system prioritising state control and private ownership over traditional systems (Kunkel, 2022). This disrupted land tenure arrangements and worsened land ownership inequalities by marginalising traditional systems. Overall, superpower ideological rivalry introduced competing development models to Africa, influencing land reform and redistribution through aid and technical assistance tied to political loyalty rather than fairness. Western donors' priority was to have an agricultural model focused on export crops and high-yield varieties grown on large-scale, mechanised commercial farms (Alwang & Siegel, 2003). This exclusionary approach marginalised smallholders and displaced communities as land was consolidated for commercial exploitation. Africa's historical circumstances during the Cold War era indicate that governments had an opportunity to initiate the implementation of equitable land reforms based on the available political capital and the somewhat varied access to financial resources from three possible sources: former colonial masters, superpowers, and international financial institutions. For example, Britain gave Zimbabwe a total of £47 million in financial support for land reform, helping purchase 2.1 million hectares for resettlement (Njaya & Mazuru, 2010). The Cold War geopolitical influences distorted land policies through ideological biases, but the post-Cold War period allowed African political leaders “a more decisive role in shaping local institutions” (García-Ponce & Wantchekon, 2023:4). This presented an opportunity to create sustainable institutions for land governance, which would then lead to the establishment of legal frameworks for land reform, cadastres, and land registries. Where local capacity was limited, alliances with superpowers could have been leveraged to access technical support for land reform and redistribution programmes.

4.2 Structural Adjustment Programmes (SAPs)

The direct link between SAPs and land policies in African countries was based on SAPs' promotion of the security of property rights, which often meant prioritising individual titles to land even at the expense of communal land rights. In Zimbabwe, the Economic Structural Adjustment Programme (ESAP) influenced the country's land policy; however, as Moyo (2000) argued, it was not properly tailored to address the country's diversified agrarian system and dualistic economy. During the SAPs era, external donor pressures compromised state sovereignty over land governance, limiting the state's role in land redistribution and leaving everything to market forces. SAPs reflected a missed critical juncture for tackling historical land injustices because, as a phase of wide-ranging economic reforms where land policies could have been re-evaluated and land tenure systems reshaped, it should have included aspects of transitional justice, such as land redistribution, restitution, and protection of customary land tenure (Mkandawire & Soludo, 2003). The complete omission of corrective measures regarding colonial socio-politico-economic legacies, such as land dispossession and inequitable landholding, made SAPs ahistorical and reflected a mere reshaping of African economies without any leeway to democratise land ownership. From the perspective of critical development theory, SAPs reflected a missed opportunity for handling the African land issue as a social right because they were never meant to promote

equitable economic access. Rather, they constituted a chip from the capitalist block, meant to benefit the global capitalist system through its corporations, which were among the beneficiaries of the privatisation and commercialisation of land ownership on the continent (Chitonge, 2024). Policy options proposed in the SAPs had negative effects that worsened existing landholding issues. The prescription to ‘roll back the frontiers of the state’ saw governments being pushed back in land redistribution and social responsibility over vulnerable populations. The deregulation of land markets and the prioritisation of privatised individual land titles over customary communal systems deepened structural inequalities. SAPs’ emphasis on the commodification of land and the formalisation of individual land titles triggered land speculation, which intensified patterns of land ownership among foreign entities and local elites (Moyo, 2000). These trends occurred because the new legal system required financial and legal capacity to protect land rights and secure individual titles, which the majority lacked under communal and customary tenure.

4.3 Land grabbing under globalisation and foreign investment

Neoliberal policies of the SAPs period further thrived in the globalisation wave, which promoted foreign investment by deregulating trade. The marketisation of land spurred a land rush fuelled by two key issues: the food crises in territories without arable land, and the global financial crisis of 2007/2008, which drove equity investors to seek new investments (Gilbert, 2017). There were also ‘green grabs’ driven by the push for carbon offsets, conservation programmes, and climate change mitigation strategies, resulting in investments in biofuels (Chitonge, 2024). International investors acquired vast expanses of land for the production of food, cash crops, and biofuels. However, the large-scale land acquisitions disregarded communal land systems and led to the dispossession and displacement of communities. It has been reported that at least 90% of land deals in Africa diverted land from local food production to green energy, mineral extraction, and carbon offsetting (Chomba & Belay, 2024). In recent years, a carbon trading UAE-based firm, Blue Carbon, bought 25 million hectares of forests and farmland in five African countries (Kenya, Liberia, Tanzania, Zambia, and Zimbabwe). In Kenya, however, the lack of consultations, the lack of equitable sharing of carbon benefits, and the violent displacement of the Ogiek community from their ancestral lands in the Mau Forest drew criticism and sparked controversy (Arko, 2024). With the foregoing experiences, the globalisation wave reflects an ongoing critical juncture being missed by African governments so far, in the sense that while the wave has brought significant foreign investments in food production, green energy and carbon offsetting, these have come at the expense of communities mostly under customary tenure who have been dispossessed to make way for the large-scale farmlands and forests acquired by foreign corporations. Through the uncritical adoption of market logics that entrench exclusionary tenure systems, governments are missing the opportunity for just, inclusive, and sustainable development, as well as social justice in land governance. Additionally, when governments commodified land and restructured investment laws to accommodate global capital, they missed the opportunity to expedite the legal recognition of customary tenure for local communities. Legal recognition would activate the principle of free, prior, and informed consent (FPIC), which is derived from the right to self-determination, in the event of proposals for large-scale investments. The FPIC serves to protect the rights of indigenous people in cases where investments encroach on their ancestral lands.

4.4 Military bases as imperial land footprints

Since the turn of the millennium, foreign powers (e.g., China, France, Germany, Italy, the United Kingdom, and the United States) have been setting military bases or establishing military presence, drone hubs, and other strategic infrastructure in countries such as Chad, Democratic Republic of Congo (DRC), Djibouti, Equatorial Guinea, Niger, Mali, Senegal, and Somalia (Olumba, 2024). Strategically located countries such as Djibouti have ended up hosting multiple military bases. These imperial land footprints have only served to assert geopolitical influence, allowing them strategic access to resources, and perpetuating their hegemony. As Tricontinental (2023:1) explained in the case of US military presence, they are there to perform gendarme functions, including maintaining the smooth flow of raw material through shipping corridors and, overall, serving “as the guarantor of Western corporate interests and the principles of capitalism”. Notably, African governments have hosted foreign

military operations on communal land appropriated from local communities, often without fair compensation. The repurposing of communal lands to accommodate imperial interests reflects not only the continuation of colonial dynamics of land alienation and dispossession, but also the government's abrogation of its role in asserting land sovereignty and its failure to leverage negotiations with foreign powers for land governance that is inclusive and rights-based. As with the case of land grabbing, African governments could have resorted to international best practices and principles such as the FPIC to protect citizens' land rights. Additionally, governments could have made the terms of the bilateral agreements transparent and open to public scrutiny for accountability purposes.

4.5 The transition to multiparty democracy

Historically, transitions to multiparty democracy in Africa are critical moments that offer opportunities to address land inequalities through inclusive constitutional reforms and legislative changes that integrate principles of social justice, communal land rights, and equitable landholding. However, as shown in the cases below, these critical moments were largely missed because governments failed to seize the opportunity; in some cases, ethnic patronage, challenges of reform implementation, and gluttonous elitism thwarted the people's land revolution (Klopp, 2002). Kenya's transition to multiparty politics marked a period of reforming the constitution and land policy, driven by popular demands to improve land administration and land policy (Klopp, 2002). Public grievances over land were genuine—especially in areas like the Rift Valley—where land allocation during the Mau Mau uprising mainly benefited Kikuyu elites. Additionally, electoral violence in 1992, 1997, and 2007 was partly caused by unresolved land disputes (Dyzenhaus, 2021). During the multiparty era, President Mwai Kibaki invited public input, debates, and contributions to land policy reforms in 2002, which led to the adoption of a new constitution in 2010, a new national land policy in 2009, and the Land Acts of 2012 (Boone et al., 2019). The new constitution established the non-partisan National Land Commission, tasked with addressing historical land injustices and managing public land. However, implementing land law reforms in Kenya faced challenges due to the complexities of cooperation among involved institutions and stakeholders. Boone et al. (2019) observed that devolution of power to county governments complicated matters, since actors at various levels, with some veto powers, influenced reform processes, either delaying or hindering implementation driven by political interests. The elite's desire for land led them to manipulate land laws for their benefit, creating institutional blockages that left the majority frustrated (Boone et al., 2019).

The introduction of multiparty politics normally brings electoral competition—and in some cases, hyper-competitive party politics—which development should compel parties to prioritise addressing colonial legacies such as land redistribution, reform, and restitution. In the case of South Africa, the transition from apartheid to democracy in 1994 was marked by high expectations on the new ANC government to address land dispossession, inequality, and poverty (Clarke & Bassett, 2016). Expectedly, the campaign messaging of the ANC prioritised land restitution and redistribution. However, the ANC government initially adopted the 'willing buyer, willing seller' model, which was slow-moving, underfunded, and trapped in procedural inertia (Greenberg, 2004). Hence, to this day, not much land redistribution has taken place, and many South Africans in the countryside have insecure land rights. The phase of multiparty democracy further brings opportunities for the thriving of a vibrant civil society, playing roles of advocating and lobbying for the recognition of the rights of the dispossessed, landless, and those under insecure communal tenure. For instance, in South Africa, organisations such as the Landless People's Movement (LPM) arose in the post-apartheid period to advocate for an equitable land reform programme and challenge the government's preferred yet slow 'willing buyer, willing seller' model of land redistribution (Greenberg, 2004). However, the pushback efforts of CSOs are sometimes threatened by state repression and even assassinations of vocal activists, as was the case with Sikhosiphi 'Bazooka' Rhadebe in South Africa.

4.6 Post-conflict reconstruction periods

Throughout the years, most reconstruction periods presented governments with windows of opportunity for social and political reconfiguration, including the restructuring of landholding, tenure systems, and restitution. Notable cases of such opportunities include post-war Angola, post-genocide Rwanda, and post-war Liberia and Sierra Leone. Several conflicts that have occurred in the past (e.g., Liberia, Rwanda, and South Sudan) were land-related. Where such conflicts are left unaddressed in post-conflict periods, they can easily degenerate into fresh conflicts. In Burundi, the return of displaced people almost disrupted peace in communities when they encountered difficulties reclaiming their rights to land (Theron, 2009). Rwanda presents a different and positive case. Before the genocide, insecurity over landholding fomented tensions between communities, and consequently, in the post-genocide period, addressing land ownership insecurities became a major priority for the government, which went on to enact laws and formulate policies such as the National Land Policy of 2004 (Potel & Gloria, 2022). This was followed by the implementation of the Land Tenure Regularisation (LTR) programme for the registration and administration of land ownership. By contrast, the cases of Angola and Liberia reflect squandered post-conflict opportunities for pursuing equitable land ownership, largely because attempts by governments to address land grievances had a bias towards elitist landholding, leaving communal land rights unsecured. While two-thirds of Angola's population were subsisting on land over which they had no tenure, the enactment of the Land Act of 2004—which aimed to formalise land rights—sidelined customary land tenure systems and prioritised registered titles (Forley, 2007). This perpetuated insecurities around communal land claims. Post-conflict periods, however, may pose challenges to processes meant to bring agrarian justice and secure land rights under communal tenure. Joireman & Tchatchoua-Djomo (2023) observed three possible post-conflict changes to customary land tenure systems, that is, (i) Erosion, where the existence of customary tenure systems is threatened as in the cases of Burundi and Sudan; (ii) Adaptation, where customary land tenure shifts to accommodate diverse needs as in the case of northern Uganda; and (iii) Replacement, where the post-conflict period provides the opportunity for replacing customary tenure with statutory tenure, as happened in Rwanda. In addition, land restitution may be complicated where only some and not all of the displaced populations return, and where no land records showing the boundaries, occupation, and value exist (Joireman & Tchatchoua-Djomo, 2023).

4.7 The rise of Pan-African institutions and frameworks

Opportunities for transformation could arise from Pan-African institutions such as the AU, NEPAD, and regional policy initiatives like the Land Policy Initiative, the Framework and Guidelines on Land Policy in Africa, African Union Declaration on Land Issues and Challenges (2009), and more recently, the Land Governance Strategies (LGS) 2023-2032. These have played a key role in driving the urgency for addressing land-related challenges in member states by mobilising collective commitment and providing a unified policy platform for addressing colonial legacies in land ownership, as well as offering technical support and capacity building for rural transformation (AUDA-NEPAD, 2019). The AU has continued supporting member states in developing and implementing land policies. However, pan-African institutions have faced institutional weaknesses that have limited their effectiveness. For example, the non-binding nature of some of these frameworks has allowed member states to ignore or partially implement them. In some cases, the prioritisation of national sovereignty over regional frameworks hampers the implementation of African land policies (Nyah et al., 2025). Additionally, there are no effective mechanisms for monitoring and evaluation, which prevents the tracking of progress and measuring the impact.

4.8 Digital land governance reforms

There is a growing trend of digital land governance reforms, involving digital land registries, satellite imagery, land records based on blockchain, and the use of mobile platforms for land-related services (Ndugwa & Omusula, 2025). The transformative potential of these reforms could help modernise land administration, simplify procedures for land titling, democratise land access, reduce the cost of land transfer services, and improve transparency in handling land issues, which together minimise land disputes and corruption (Bar & Dossa, 2025).

To date, at least four African countries have undertaken efforts to digitise land governance. Among these, Rwanda pioneered the reforms, completing work on digitising the national cadastre and land registry in 2023 (Haugerud et al., 2024). Two key developments stand out: first, the implementation of the Land Tenure Regularisation Programme (2007-2012), which formalised land rights for the majority of people and included mapping and titling parcels of land; second, the deployment of the Land Administration Information System, an online centralised digital land registry. In 2021, Kenya launched *ArdhiSasa*, a programme that automated land-related services, starting with converting paper land registries into electronic formats. Ghana experimented with a blockchain land registry in 2017 (Haugerud et al., 2024). Other countries such as Botswana, Nigeria, Uganda, and Zambia have also adopted various digital tools in land administration. While the digitisation of land governance offers significant promise in tackling some of its most pressing challenges, realising these benefits depends on strengthening institutional capacities, adopting participatory approaches, ensuring the availability of land data records, and promoting community-based land management (Bar & Dossa, 2025). Furthermore, the opportunities presented by digital technology in land governance can only be fully realised in contexts where an appropriate regulatory framework is in place (Deininger & Goyal, 2023).

5. Emerging explanatory factors behind missed junctures

The missing or underutilisation of critical junctures for equitable land reforms and redistribution often resulted from political expedience and elite interests, which foster elite resistance to grassroots pressure for land reform. The primary goal of elite strategies has been either maintaining or gaining personal power or wealth by manipulating land tenure rules to create land communities and decide which ones should remain under customary tenure (Rose, 2002). Realising how land is inextricably linked with the maintenance and retention of political power, African elites in clientelistic systems have used it as part of patronage schemes to gain political support, in open disregard for an equitable, systematic, and programmatic approach to land redistribution (Chavunduka, 2018). In Kenya, for instance, it is not uncommon for political leaders to manipulate access to and control over land by mobilising exclusive ethnic enclaves. Historically, those who gained land ownership during the Kenyatta and Moi regimes were hesitant and even opposed efforts for land redistribution (Moskowitz, 2024). In South Africa, the land question has perennially remained “an unquiet ghost haunting the national imagination” in the post-apartheid era (du Toit, 2024:207). Two reasons have been put forward to explain the long wait: first, despite the constitutional provision for equitable access to land, there has not been sufficient political will to do it, if at all; second, the land reform assumed a class agenda and consequently lost its pro-poor focus to prioritise medium- and large-scale black farmers (Cousins, 2021). The complex relationship between land and politics explains how political preferences are formed and how they influence decisions regarding settlement, dispossession, and land-related inequality.

In numerous cases, newly independent African states inherited colonial systems of administration, which, as Imaka & Ebiede (2025) explain, were institutions “built for domination and resource extraction, not inclusive governance”. As a result, post-independence governments struggled to reform these to suit the post-independence developmental agendas, such as equitable land redistribution, because the state itself was largely a Western creation with no roots in the economy and society (Hyden, 2020). What was missing was a strong administrative apparatus and the requisite experienced and skilled personnel to successfully implement the state’s developmental ideals. In Nigeria, the land reform provided for in the Land Use Act of 1978 was affected by the state’s weak vertical enforcement capacity, which led to the continued existence of a dual system of statutory and customary land tenure (Tan, 2025). In other cases, the land reforms implemented by post-independence African governments generated limited impact because governments had limited capacity to reorganise the peasantry. Budgetary inadequacies equally played a part in delaying land redistribution programmes; for example, in South Africa, the land reform programme received less than 0.4% of the national budget between 1994 and 1998 (Wily & Mbaya, 2000).

The capacity challenges and economic crises often led African governments to seek financial assistance from international financial institutions, and this opened doors for external influence whose conditionalities dictated the nature and focus of reforms. Notably, in land governance, the reforms recommended were far removed from the path of social justice and equitable redistribution. Preference was given to neoliberal land reform programmes, which prioritised deregulation, private land ownership, and security of property rights. However, sustained popular demands for land redistribution disproved that neoliberal model (Moyo, 2007). The influences of external forces demonstrate the complexities of the nexus between the global financial systems and the autonomy of developing countries in the making of development choices. It mirrors a relationship of ‘unequals’ predicated on neoliberal schemes, which has been interpreted by some as a manifestation of an incomplete process of decolonisation in former colonies—making the persisting African land issue “a by-product of globalised control of land” (Moyo, 2007:1). With the foregoing indictment, externally-driven reform initiatives can only be acceptable if the intentions of external actors are in sync with the local agenda of the recipient country (Takeuchi & Marara, 2021). Some of the reform efforts made so far have unduly emphasised technical approaches that tend to assume neutrality and, therefore, are somewhat limited in addressing historical land injustices, which by nature are deeply political issues. Technocratic reforms primarily focused on legally formalising land tenure systems and promoting economic development, without necessarily addressing land redistribution issues. The Flexible Land Tenure System (FLTS) in Namibia, for instance, improved land registration and tenure security in urban areas but did not tackle land redistribution, which should have addressed widespread land inequalities in rural areas (Christensen, 2015). Similarly, Uganda implemented land administration reforms without directly addressing land inequalities rooted in historical injustices (Ndugwa & Omusula, 2025). Internationally, the global land community outside Africa is increasingly adopting the ‘pro-poor land administration’ paradigm, supported by tools such as the pro-poor land recordation tool (PPLRT), which “contains a set of design elements developed to improve protection and access to land for the poor, particularly women, youth and vulnerable groups” (Hendriks et al., 2019:21). While acknowledging that Africa’s digital land governance has already started with the adoption of ‘fit-for-purpose land administration’ tools, deliberate focus on the poor and vulnerable has been missing or at least under-emphasised (Home, 2021). Questions still linger on the advancement of social justice in the transition from manual to digital land administration forms, mainly because of Africa’s digital divide and weak e-readiness, which have already impacted technological access and inclusion of the rural poor in other areas such as e-government, e-services, and e-democracy (Haugerud et al., 2024). The region’s digital transformation has generally been slow.

The role of civil society in mobilising for equitable land ownership has been quite limited during critical moments; yet, the expectation is that a strong and unified civil society should demand land justice and carry out sustained advocacy, leading to transformational land reforms, especially during key historical periods (Bellem, 2023). Challenges often arise from the competing priorities and interests of civil society organisations due to the diversity of constituencies they represent, including rural farmers, the urban poor, and pastoralists, among others. These issues may be further complicated by ideological differences, where preferences may differ between radical land reform and neoliberal approaches. In contexts where the state co-opts some groups, their ideological preferences are likely to align with state ideology. The concentration of African civil society in urban areas has left grassroots rural struggles underrepresented (Moyo, 2005). Moreover, the urban-rural disconnect between urban social movements and their rural counterparts has not only led to fragmentation but also impacted the coherence of messaging for land reforms (Leonard, 2014). Despite the weaknesses, there are a few demonstrative cases of coordinated engagement between civil society and the state, as well as strategic alliances among civil society organisations in land reform dialogues. For example, the Uganda Land Alliance—a consortium of over 60 non-governmental organisations—has been working to promote people-centred land governance and has been very influential in fighting for the protection and enforcement of land rights. Elsewhere, the coalition of civil society organisations in Senegal influenced the direction of the reform process by fighting for the protection of communal land rights and advocating for an inclusive and participatory land reform, which involved mobilising rural stakeholders to voice their concerns in shaping land policy (Delville et al., 2021). The Senegalese civil

society further initiated and informed public debate, producing studies and frameworks shared at workshops and meetings.

Conclusion

Colonial land governance structures and mechanisms have largely persisted in post-independence Africa, despite various attempts at land reforms. The post-independence period has had several opportunities to challenge inherited land governance structures, and this paper focused on identifying and discussing specific critical historical and ongoing moments that offered chances to revolutionise land governance. Observations in the paper indicate that many past opportunities were largely missed or underutilised by African governments, and consequently, the continued existence of colonial land institutions has entrenched skewed ownership and maintained path dependencies such as legal pluralism, which hinder smooth reforms. The paper notes that factors including elite interests, political expediency, institutional inertia, weak state capacity, external influences, neutral technocratic approaches, and fragmentation of civil society drove the underutilisation of critical reform junctures. From these missed opportunities, future potential windows include climate-related displacements, youth activism, and women's movements. Moving forward, reforms should be driven by inclusive political coalitions involving grassroots actors, youth, women, and vulnerable groups to ensure legitimacy and acceptance. Civil society also needs stronger coordination through strategic alliances and shared strategies to influence land reforms. Approaches adopted should decentre neoliberalism to reflect African realities and contextual imperatives better. Theoretically, this paper makes its contribution through its attempt to bridge the concept of critical junctures and the domain of land governance, which has been underexplored to date, mostly because critical junctures as an analytical lens are commonly applied in historical institutionalism and political science.

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DATA INTEROPERABILITY OF HEALTH INFORMATION SYSTEMS IN PUBLIC HOSPITALS IN THE GAUTENG PROVINCE OF SOUTH AFRICA***Kabelo Given Chuma^{1*}, Mpho Ngoepe²**^{1,2}*Department of Information Science, College of Human Science, University of South Africa*E-mails: ^{1*}chumakg@unisa.ac.za; ²ngoepms@unisa.ac.za*Received 25 August 2025; accepted 8 November 2025; published 30 December 2025*

Abstract. The fragmentation of health systems remains one of the most persistent barriers to achieving integrated and coordinated healthcare delivery in South Africa. Many public hospitals continue to operate within silo-based systems, which hinder the delivery of comprehensive and efficient care. In this context, data interoperability emerges as a critical enabler for bridging these gaps. Despite the existence of national digital health strategies, there is a lack of frameworks to guide public hospitals in implementing interoperable systems. This study aimed to investigate the data interoperability of health information systems in public hospitals in the Gauteng Province of South Africa, with a view to proposing a framework that can serve as a reference for breaking down data silos and ensuring data sharing and collaboration between health facilities. A convergent mixed-methods design was employed, using questionnaires with 144 clinical and administrative staff and interviews with 16 managers, complemented by document analysis. Data were analysed thematically and descriptively. The findings revealed that existing national digital health strategies are perceived as inadequate due to weak infrastructure support, limited technical guidance, and insufficient stakeholder engagement. Participants recommended the inclusion of implementation roadmaps and timelines, regulatory compliance mechanisms, defined infrastructure requirements, and strong governance structures. The study proposes a framework to enhance cohesive, efficient, and patient-centred healthcare. The framework offers practical guidance for stakeholders and contributes to the theoretical advancement of data interoperability in developing countries. Achieving effective interoperability requires not only frameworks but also active stakeholder engagement, capacity building, sustained political commitment, and strategic infrastructure investments.

Keywords: data interoperability; data silos; health information systems; universal health coverage; digital health strategies; public sector hospitals

Reference to this paper should be made as follows: Chuma, K.G., Ngoepe, M. 2025. Data interoperability of health information systems in public hospitals in the Gauteng province of South Africa. *Insights into Regional Development*, 7(4), 84-101. <http://doi.org/10.70132/z6986464949>

JEL Classifications: H4

Additional disciplines: public administration

1. Introduction and background of the study

In today's fast-paced digital landscape, data interoperability has increasingly become the heart of digital transformation in the healthcare industry, enabling a connected ecosystem, improving access to clinical data, and streamlining healthcare service delivery. It serves as a fundamental requirement for delivering efficient, equitable,

* This work was supported by the NIHSS-SAHUDA doctoral scholarship, under the grant number (SDS20/1532). The technical and financial support provided for this study has been instrumental in its completion.

and patient-centred healthcare (Piera-Jiménez et al., 2024). Pantuvo and Oluwarore (2024) define data interoperability as the ability of diverse information systems, applications, and devices to access, integrate, and collaboratively share data securely, seamlessly, and effectively across organisational, regional, and national boundaries. Most importantly, data interoperability is considered a foundational prerequisite and enabler of universal health coverage (UHC) through ensuring that healthcare services are delivered in a coordinated and resource-efficient manner. Chukwu and Obande-Ogbuinya (2025) recognise data interoperability as a cornerstone of a sustainable health system, essential for advancing UHC by ensuring equitable access to quality care services and enabling real-time or near-real-time data exchange across multiple healthcare settings. However, in the absence of interoperable systems, it becomes difficult for healthcare facilities and hospitals to provide consistent, coordinated care, particularly within fragmented health systems commonly found in developing countries.

Mamuye et al. (2022) stress that more African countries are excited about data interoperability, especially since their healthcare systems struggle with many infectious and chronic diseases, big differences in resources, and limited technology. As a consequence, African countries such as Kenya, Zimbabwe, Nigeria, and Uganda have made major strides towards adopting digital health interventions; however, these efforts often remain fragmented and poorly aligned with national policy frameworks, limiting their overall impact. According to Rikhotso et al. (2024), a major contributing factor to this failure is the continued reliance on outdated legacy systems, which are neither integrated nor capable of communicating with one another or consolidating patient health data across multiple platforms and care facilities. This situation has led to an uncoordinated and fragmented health landscape, where patient data remains siloed within isolated systems, resulting in delayed and compromised clinical care, increased operational costs, and poor healthcare outcomes across health facilities in Africa (Li et al., 2022).

Although numerous continental initiatives have advocated digital health and promoted the homogenisation of data interoperability, such as the Digital Transformation Strategy for Africa, the Africa Digital Health Networks, and the World Health Organization, only a few African countries have developed frameworks which can provide a clear guideline for the integration of health information systems across the public health sector. In South Africa, as in many other African countries, the situation reflects many of these challenges but also presents unique opportunities. Chuma and Ngoepe (2024) advocate the view that the country has consistently demonstrated its commitment to digital transformation through national frameworks such as the National Digital Health Strategy for South Africa (2019–2024), National Health Insurance, and National eHealth Strategy (2012–2016), all of which advocate and mandate the integration of data interoperability within healthcare information systems to improve overall healthcare and patient outcomes. However, in practice, the South African healthcare sector remains highly fragmented, segmented, and characterised by data silos and heterogeneous health systems. As Wright et al. (2017), as well as Abbott and Sigamoney (2024), would attest, public sector hospitals in South Africa frequently operate with Electronic Health Record systems (EHRs) that are vertically and horizontally fragmented, characterised by misaligned incentives and inadequate interoperability.

This national challenge is also evident in the Gauteng province, where many public hospitals and primary health care (PHC) clinics are constrained by siloed operations and fragmented data systems across departments. Bosire et al. (2020), along with Roper (2025), contend that regional and district hospitals and clinics throughout Johannesburg and Tshwane often operate independently with incompatible systems, resulting in disjointed care and significant barriers to delivering holistic, patient-centred treatment. As a result, this persistent siloisation within public hospital systems often results in disjointed care, ultimately compromising patient safety and health outcomes. Similarly, Rispel (2016) substantiates that fragmentation across South African hospitals and other healthcare facilities undermines efforts to deliver coordinated, multidisciplinary care while hindering improved clinical workflows and effective decision-making. Building on this concern, Tsegaye and Flowerday (2021) argue that the situation is further exacerbated by the absence of standardised national frameworks and models that offer clear and robust guidelines on how hospitals and clinics in South Africa can implement data interoperability to enhance care coordination and support the global health goals of the UHC initiative.

The South African government has enacted the *National Digital Health Strategy for South Africa (2019–2024)*, the *National Health Insurance (NHI)* policy, and the *National eHealth Strategy (2012–2016)*, all of which are still applied in public hospitals. However, these national frameworks, while recognising the importance of data interoperability in healthcare, fall short of providing operational and technical guidelines to direct hospitals and stakeholders on how to achieve and sustain data interoperability across the health system. Therefore, the lack of a framework exposes a wider gap in the governance of digital health in South Africa. Addressing this gap is vital not only for improving healthcare delivery in the Gauteng Province but also for developing scalable and policy-aligned solutions that can be applied to other provinces across the country and the continent at large. Accordingly, this study seeks to investigate the interoperability of health information systems in public hospitals in the Gauteng Province of South Africa, with a view to proposing a framework that can be used as a reference to break down data silos and ensure data sharing and collaboration between health facilities.

Despite existing national interoperability frameworks in South Africa, which are particularly focused on broad policy directives, this study places itself at the operational level, tackling practical realities of data sharing among public hospitals in Gauteng Province. The province demonstrates a unique testing ground where advanced technical infrastructure coexists with attempts for data interoperability failures. By focusing on this context, the study provides valuable insights that are not only scalable in South Africa but also transferable to African countries facing similar challenges of fragmentation, resource disparities, and legacy systems.

2. Problem statement

While the South African government has invested in healthcare systems, evidence suggests that the public healthcare sector remains burdened by numerous challenges, including impediments to data sharing, system fragmentation, and information blocking—factors that collectively lead to inefficiencies in care delivery. The core issue lies in the fact that public hospitals in South Africa operate within siloed, vertically and horizontally fragmented systems, compounded by misaligned incentives and ineffective interoperability. For example, Ngoepe and Marutha (2020) highlight that the lack of integration in healthcare systems often results in a new file being created each time a patient visits a different hospital. This situation occurs even within a single province and is exacerbated when patients seek care across provincial boundaries. Such practices point to a fragmented healthcare system characterised by overlapping and duplicate records. It is therefore necessary to undertake a study using the Gauteng Province as a case study, with the aim of proposing a framework that can serve as a reference for breaking down data silos and facilitating data sharing and collaboration between health facilities. Gauteng is selected due to its status as the economic hub of the country and its relatively advanced healthcare infrastructure.

It is anticipated that the proposed framework will support the development of a cohesive, efficient, and patient-centred health environment, align with national digital health strategies, and contribute towards the establishment of a robust digital health ecosystem that can be scaled across South Africa. Despite the fact that existing interoperability frameworks used in African countries such as eHealth interoperability framework, National Health Normative Standards Framework, e-government interoperability framework, AU interoperability framework and African Union's Digital ID framework have advanced the policy discourse, they remain short in providing infrastructural, technical and operational guidance to public sector hospitals. This study is distinct in proposing a framework that incorporates interrelated dimensions designed specifically for public hospitals, including hospital integrated networks, regulatory compliance, data security, interoperability services, action cycles, and enabling factors. This positioning addresses the critical implementation gap between national interoperability frameworks and operational requirements of health information systems.

3. Purpose and objectives of the study

The purpose of this study was to investigate the data interoperability of health information systems in public hospitals in the Gauteng Province of South Africa, with a view to proposing a framework that can serve as a reference for breaking down data silos and promoting data sharing and collaboration between health facilities. The specific objectives were to:

- Analyse health policies and strategies in supporting data interoperability in public hospitals in South Africa
- Propose a framework for incorporating data interoperability of health information systems in public hospitals in South Africa

4. Review of related literature on interoperability frameworks

The increasing complexity of healthcare systems and the growing diversity of patient care, particularly in developing countries such as Uganda, Nigeria, and South Africa, underscore the urgent need for data interoperability in health information systems. Saini, Reddy, Kumar, and Ahmad (2021) define data interoperability as the ability of different health information systems, applications, and technologies to exchange, interpret, and use patient data seamlessly across hospitals, clinics, and other care settings. In response to these challenges, Ndlovu, Mars, and Scott (2021) emphasise that healthcare facilities in resource-constrained environments such as South Africa must establish harmonised legal, policy, and technical frameworks that provide clear guidance for implementing interoperability across diverse systems, including cross-border networks. This literature review explores existing interoperability frameworks both globally and locally, assesses their relevance, and identifies the gaps that informed the development of a proposed framework for public hospitals in Gauteng Province.

4.1 Global and regional national frameworks for interoperability in healthcare

In the global context, many different countries have made significant efforts to establish and adopt frameworks to support the integration of interoperability in healthcare. According to Simms, Prakash and Garg (2025), the United Kingdom established the NHS Interoperability Toolkit (ITK) as the primary framework to support the integration of data interoperability in the healthcare landscape. The framework aims to address challenges arising from competing and incompatible solutions by providing technical specifications and recommended technologies. In contrast, Canada has implemented the Pan-Canadian Health Data Content Framework, incorporating Fast Healthcare Interoperability Resources (FHIR), to serve as a roadmap for achieving interoperability across hospital systems (El Sabawy et al., 2024). Similarly, Kouroubali and Katehakis (2022) underscore that countries in the European Union such as Belgium, Germany, Spain, and the Netherlands adhere to the European Interoperability Framework (EIF), which offers structured guidelines for achieving interoperability within the public sector. While existing interoperability frameworks in developed countries provide valuable insights, they do not provide a comprehensive and contextualised approach to the unique challenges of interoperability faced by low- and middle-income countries (LMICs). On the other hand, many LMICs, such as Angola, Rwanda, Nigeria, and Tanzania, have made progress towards implementing frameworks and models to integrate data interoperability in healthcare. According to Adeniji et al. (2022); Pantuvo and Oluwarore (2024); and Adegoke et al. (2025), the most commonly used interoperability frameworks in these countries include the African Union (AU) Interoperability Framework, Government Interoperability Frameworks (GIFs), the Reference Model for Open Distributed Processing (RM-ODP), the Health Information Systems Architecture (HISA) Framework, the National Digital Health Architectural Framework, the eHealth Interoperability Framework, Open Health Information Exchange (OpenHIE), and Open Group Architecture Framework (TOGAF). In these frameworks, there are many clear gaps, such as the lack of specific technical guidelines for healthcare workers like administrators, health IT staff, and records managers on how to practically implement interoperability among

health information systems in their institutions. The frameworks concentrated solely on policy principles, technical standards and protocols, as well as interoperability goals, without providing actionable implementation roadmaps or operational procedures. The South African government has established several national frameworks to promote digital data interoperability in healthcare facilities, including the National eHealth Strategy (2012–2016), the Health Normative Standards Framework (HNSF), the National Digital Health Strategy (2019–2024), and the National Health Insurance (NHI) model. While these frameworks set high goals for interoperability, they mainly lack clear instructions, standardised methods for putting them into practice, and thorough plans to help healthcare facilities, hospitals, and primary healthcare clinics maintain interoperability. Chuma and Ngoepe (2024) stress that existing national frameworks in South Africa fail to incorporate localised operational contexts, including the disparity in infrastructure between hospitals and the variation in digital literacy among healthcare workers, as well as differences in procurement cycles. Nonetheless, these gaps limit the sustainable integration of interoperability between health information systems in health facilities in South Africa.

4.2 Comparative analysis of interoperability frameworks and models proposed by scholars in Africa and South Africa

This section presents a comparative analysis of data interoperability frameworks and models proposed in South Africa and other African countries. Beyond the national framework established by the South African government, numerous academic scholars both within the healthcare domain and from other disciplines have proposed a range of frameworks and models aimed at advancing interoperability in the healthcare sector as well as in other areas of public service. Table 1 illustrates a comparative analysis of the literature on proposed frameworks for interoperability in healthcare.

Table 1. A comparative analysis of the existing literature frameworks and models for interoperability in healthcare

Author	Year	A	B	C	D	E	F	G	H	I	Features
Rikhotso, Kalema & Seaba (2024)	2024	✓	✓	✓	x	x	x	x	x	x	Model for Data Interoperability Assessment Model for Health Information System
Tsegaye & Flowerday (2021)	2021	✓	✓	✓	✓	x	x	✓	x	x	System architecture for interoperability in a South African national electronic health record system
Kotze and Alberts (2017)	2017	✓	✓	✓	x	x	x	x	x	x	Conceptual Model for an e-Government Interoperability Framework for South Africa
Adelusi, Osamika, Kelvin-Agwu et al. (2025)	2025	✓	✓	x	✓	x	✓	✓	x	✓	Federated interoperability framework for seamless health data exchange using FHIR standards
Oluwaseyi, Adebola, Nzechukwu et al. (2019)	2019	✓	✓	x	x	x	x	x	✓	x	Framework for Health information exchange and Integration for Nigerian Healthcare System
Ndlovu, Mars & Scott (2021)	2021	✓	✓	x	✓	x	x	x	x	x	Framework for eRecord systems Interoperability Framework in Botswana
Thela, Zlotnikova, Galani et al. (2025)	2025	✓	x	x	x	x	x	✓	x	x	Service-Oriented Interoperability Framework: The Botswana E-Government System Case Study
Matshaba, Nxosi, & Herselman (2023)	2021	✓	✓	✓	x	x	x	✓	x	✓	A Conceptual IT Governance Framework for Interoperable Health Information Systems
Angula & Dlodlo (2018)	2018	✓	✓	x	✓	x	x	✓	x	x	A framework for semantic interoperability of data in heterogeneous health information systems in Namibian public hospitals
Abima, Nakakawa & Kituyi (2023)	2023	✓	✓	x	x	✓	x	x	x	x	Service-oriented framework for developing interoperable e-health systems in a low-income country

Note. A=interoperability, B=healthcare focus, C= South Africa, D=regulatory compliance with legislation and data standards, E= implementation guidelines, F= monitoring and evaluation, G=data privacy and security provision, H= infrastructure requirements, I= stakeholder engagement

This literature review demonstrates that, although global and national frameworks, as well as those proposed by academic scholars, offer valuable reference points, they often fall short in terms of contextual adaptability and practical implementation within public hospitals. Notable gaps, such as regulatory compliance, implementation guidelines, infrastructure readiness, data security, and stakeholder engagement, underscore the need for a framework that supports data interoperability within the unique context of the South African public healthcare system.

3. Methodology

This study was conducted at six anonymised public hospitals located in the Gauteng Province of South Africa. In line with the ethical approval by the Tshwane Research Ethics Committee, the hospitals were not identified by name to ensure institutional confidentiality and mitigate reputational risks. Instead, they were described by their type (tertiary or district) to provide contextual detail while upholding ethical requirements. These public hospitals were selected because they serve the majority of the South African population and are the primary sites for implementing national digital health strategies such as the NHI and the National Digital Health Strategy. Gauteng Province was also chosen as it is the economic hub of South Africa, with the largest concentration of tertiary and district hospitals, as well as relatively advanced health infrastructure. Despite this advantage, Gauteng still experiences significant interoperability failures, making it a suitable case for identifying both systemic challenges and scalable solutions. The insights gained here are not intended to exclude other provinces or the private sector, but to provide a replicable framework that can later be adapted and validated in other contexts. A convergent mixed-methods design was adopted, enabling a more comprehensive understanding of the challenges related to data interoperability in public hospitals. Unlike previous studies conducted on data interoperability in Africa which applied either qualitative or quantitative, this study is distinct by integrating questionnaires, interviews and document analysis. This strengthened the methodological rigor of this study through qualitative depth and quantitative breadth. A multi-level sampling technique was employed to select 144 respondents, including administrative, clinical, and IT support staff—for the quantitative phase of the study, which aimed to assess their knowledge of frameworks for integrating data interoperability. In contrast, 16 participants, comprising administrative, clinical, IT, and records managers, were purposively selected for the qualitative phase. The total sample size for this study was 160, as illustrated in Table 2. This sampling technique facilitated the inclusion of diverse perspectives by ensuring representation across various organisational strata.

Table 2 Distribution of the target population (n=160)

Clinical and Administrative staff	No. of sample surveyed	Management staff	Codes	No. of sample interviewed
Doctors	20	Clinical managers	CM	2
Nurses	17	Records managers	RM	3
Administrative clerks	23	IT managers	ITM	5
Network controllers	16	Administrative managers	AM	6
IT technicians	21			
Revenue clerks	12			
Registry clerks	16			
Ward clerks	8			
Data capturers	11			
Total	144	Total		16

Source: the authors

The quantitative data for this study were collected through an online questionnaire generated on Microsoft Forms. A questionnaire was distributed electronically via email and WhatsApp from 01 September to 30 November 2022. A request was made to the relevant managers from the ICT, records, and administrative departments to assist in gathering contact information, in particular the e-mail addresses and mobile numbers of relevant employees. In this manner, the researchers were able to compile a contact list and distribute the questionnaire link to selected

participants via email and WhatsApp. To achieve a higher response rate, key informants were encouraged to share the link with their colleagues. In contrast, semi-structured interviews were used to collect qualitative data. Interviews were conducted in the English language, and each lasted between 20 and 30 minutes. The interviews were conducted in person and via Microsoft Teams and were both audio and digitally recorded to ensure comprehensive data capture.

The recordings were transcribed verbatim to maintain accuracy and fidelity to participants' responses. Furthermore, field notes were taken throughout the data collection process to provide contextual insights and enhance the depth of the analysis. Document analysis was also conducted to review the National eHealth Strategy (2012–2016), the Health Normative Standards Framework (HNSF), the National Digital Health Strategy (2019–2024), and the National Health Insurance (NHI) policy to examine how these national frameworks support and promote the integration of data interoperability in public hospitals.

Descriptive statistics were generated using the Statistical Package for the Social Sciences (SPSS), version 27, to compute counts, frequencies, and percentages for quantitative data. For the qualitative data, a thematic analysis was conducted using ATLAS.ti software, version 9.0, to systematically identify, analyse, and interpret emerging themes. Transcripts were carefully reviewed, and recurring patterns were grouped into broader thematic categories. In the interpretation phase, we combined the numbers and the descriptive findings to see where they matched or differed by looking at the patterns from both sets of data, which helped us better understand how to integrate data interoperability.

To ensure validity, reliability and rigour, the questionnaire was reviewed by clinical and IT managers, and their feedback was used to rephrase and refine the questions for clarity and relevance. A pilot study involving 30 respondents was conducted to test the feasibility and comprehensibility of the questionnaire, ensuring that participants could respond to the questions effectively. Data for the feasibility study were not included in the final analysis. The trustworthiness of the qualitative analysis was enhanced through the triangulation of survey data, field notes, and document analysis to validate the findings. All data were anonymised during the analysis to maintain confidentiality and uphold ethical standards. To enhance the credibility of the findings, qualitative data were converged with corresponding quantitative data, facilitating cross-validation and a more nuanced interpretation of the results. The findings from interviews, questionnaires and document analysis were systematically triangulated to strengthen analytical depth. As a result, the quantitative data offered insight into the scale of the challenges, whereas the qualitative revealed the underlying cause and document analysis provided evidence on policy gaps. During this integration, the findings moved from description to interpretation, ensuring that the convergent design was systematically applied.

Ethical approval was granted from the University in South Africa. Furthermore, permission to collect data from hospital facilities was granted by Tshwane Research Ethics Committee (Ref: GP_202207_097). Informed consent was obtained verbally and in writing, and all participants selected "Yes, I agree to participate" prior to beginning the interviews and surveys. As part of the interview phase, verbal consent was audio-recorded prior to each interview in order to ensure that there was compliance with ethical standards. Participants were clearly informed that their involvement was voluntary and that they could withdraw from the study at any time without penalty. No incentives were provided for participation.

5. Results and discussions

This section presents the findings of this study in figures, tables, verbatim quotes, as well as narration.

5.1 Health policies and strategies in supporting data interoperability in public hospitals

Respondents were asked in the questionnaire to indicate whether current national digital health policies and strategies (e.g., NHI, eHealth Strategy, Digital Health Strategy) are effective in supporting the implementation of data interoperability within health information systems at the hospital level. The majority of respondents, 57% (82), indicated that national digital health policies and strategies are not effective in supporting the implementation and adoption of data interoperability in their hospitals. In contrast, 26% (38) believed these policies and strategies are effective, while 17% (24) were unsure. Figure 1 illustrates these findings.

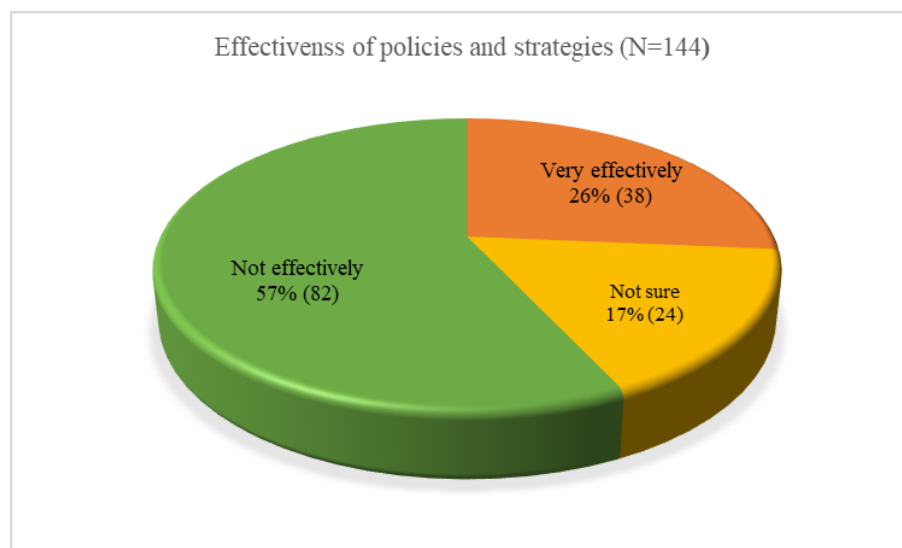


Figure 1. Effectiveness of digital national health policies and strategies for supporting data interoperability (N=144)

To complement the quantitative findings, interview participants were asked the same question. Most participants expressed their views that current national digital policies and strategies are ineffective, as evidenced by the following expertts:

“From experience working in the hospital, the national health policies and digital strategies that we have in South Africa are too broad and they lack clear and actionable guidelines as how hospitals and stakeholders can go about to implement interoperable health systems that communicate with each other and share data seamlessly. Without clear guidelines its actually difficult to make progress on interoperability in healthcare” (ITM-2).

“I think the national digital health strategies that have been put in place are not effective in terms of supporting data interoperability because there is a serious disconnection between these strategies and what is happening on the ground. This lack of alignment is what makes our hospitals left to figure things on their own. I don’t think we will achieve the highest level of data interoperability soon in South Africa” (CM-2)

“I don’t think our national strategies and policies are effective because they don’t provide practical steps and procedures that need to be followed to achieve interoperability across hospitals at various levels. We frequently receive high level documents from Department of Health every year, but they lack a clear framework to guide us through the technical aspects of attaining data interoperability in hospitals” (RM-1)

“Our national digital health strategies are not effective because there is no consistent national direction. Each public hospital is left to interpret the strategies on their own, leading to fragmented efforts. Without centralized leadership and standardization, data interoperability in South African healthcare is nearly impossible” (ITM-4)

Findings from both the quantitative and qualitative components of this mixed-methods study reveal a shared perception that current national digital health policies and strategies are largely ineffective in supporting data interoperability at the hospital level. Survey results indicated that 57% of respondents viewed national policies and strategies as ineffective. This sentiment was echoed in the qualitative interviews, where participants similarly described existing frameworks as inadequate for facilitating effective data interoperability. While the quantitative data quantify the extent of dissatisfaction, the qualitative findings provide deeper context and underscore the need for more pragmatic, clearly defined, and collaboratively developed policy frameworks to support interoperability within the South African public health sector.

5.2 Gaps/Limitations in the current national digital health policies and strategies to support data interoperability

Respondents were asked to identify the gaps or limitations they perceive in current national digital health policies and strategies in supporting data interoperability in public hospitals. An overwhelming majority of respondents, 92% (132), indicated that these policies and strategies do not specify the infrastructure and IT capacity necessary for the successful implementation of data interoperability. In contrast, 78% (112) highlighted the absence of clear, actionable directions and technical guidelines; 68% (98) indicated a limited prioritisation of stakeholder engagement; and 23% (33) noted poor alignment between national and hospital-level strategies. A minority of respondents, 19% (28), mentioned a lack of monitoring and evaluation mechanisms in existing national policies and strategies. Figure 2 illustrates these findings.

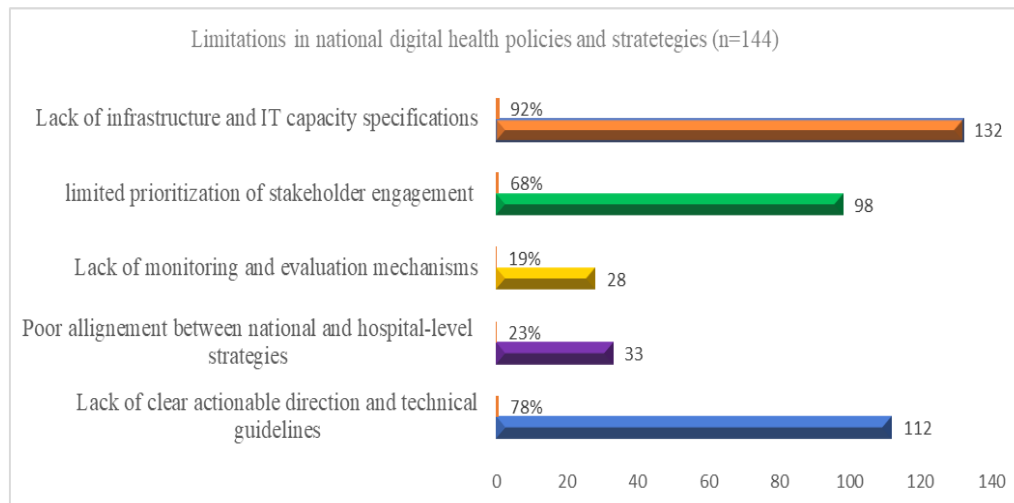


Figure 2. Gaps/limitations in current national digital health policies and strategies (N=144)

In the qualitative phase, participants were asked a similar question. Most of the participants expressed the following views:

“I think one of the major gaps in our frameworks and strategies is the absence of clear technical guidelines. The policies that we have outline the goals of data interoperability, but they don't specify the technical steps and procedures we should follow, which leaves too much room for inconsistent implementation of interoperability in our hospitals” (AM-3)

“The most noticeable gaps in our national policies and strategies for digital health is that they rarely mention the digital infrastructure and technical resources need for supporting the implementation of data interoperability between systems. Technical things like secure servers, software, reliable internet connectivity, and system integration tools are essential, but they are not adequately addressed in the national policy and strategy documents” (ITM-3).

“The current policies and strategies we have in South Africa they lack clear direction on how to comply with existing legislation, regulations and health data standards. This creates uncertainty around legal risks, especially when exchanging patient data across platforms” (AM-6)

“One of the greatest limitations is that our digital health strategies and policies are too high-level and don’t provide enough operational detail. We need clearer implementation frameworks that outline both infrastructure requirements and compliance checkpoints” (RM-2)

The document analysis conducted to review digital health strategies and policies in hospitals revealed several critical gaps, including a lack of emphasis on stakeholder engagement, inadequate specification of the infrastructure required for interoperability, limited attention to legislative compliance, and the absence of clear roadmaps for achieving interoperability. Both survey respondents and interview participants identified the absence of clearly defined infrastructure requirements, insufficient technical guidance, and limited stakeholder engagement as major shortcomings in existing digital health strategies and policies. The qualitative data added further depth, revealing that current frameworks are often overly high-level, lacking practical implementation steps, legal specificity, and alignment with the operational realities of hospitals. The document analysis corroborated these findings, highlighting minimal attention to implementation frameworks, infrastructure requirements, and compliance with established standards. Collectively, these insights underscore a significant disconnect between policy intent and operational execution, which ultimately hinders the sustainable implementation of data interoperability in the public health sector.

5.3 Core elements to be included in national digital health policies and frameworks to ensure effective data interoperability in public hospitals

Respondents were asked, through the questionnaire, to identify the key components that should be incorporated into national digital health policies and frameworks to ensure the sustainable implementation of data interoperability among public hospitals. As presented in Table 3, the majority, 83% (120), indicated that these policies and frameworks should include clear implementation roadmaps, guidelines, and timelines. Furthermore, 78% (112) emphasised the importance of incorporating best practices in stakeholder engagement, while 66% (95) pointed to the need for specifying the digital infrastructure and technical resources required. Additionally, 29% (42) of respondents highlighted the need for alignment with regulatory compliance, including relevant legislation and standards, whereas a minority, 22% (32), underscored the importance of strong data governance and security measures.

Table 3 Elements to be incorporated in national digital health policies and strategies (N=144)

Responses	Frequency (N)	Percentage (%)
Strong data governance and security measures	32	22%
Clear implementation roadmaps and timelines	120	83%
Digital infrastructure and technical resources required	95	66%
Regulatory compliance with legislation and standards	42	29%
Good practice in stakeholder engagement	112	78%

Source: the authors

In the interviews, participants responded as follows:

“Our national digital health strategies and policies need to prioritise targeted investment in digital infrastructure and related technical and human resources. They should explicitly outline the specific infrastructure requirements for hospitals to support the sustainable implementation of data interoperability between different health systems” (ITM-1).

“Stakeholder engagement is often neglected and overlooked in most frameworks. I believe that our national policies and frameworks for digital health should be revised to place greater emphasis on involving key stakeholders throughout the process, as their input is essential for the effective implementation of interoperable health systems” (RM-3).

“I think our national digital health strategies should provide clear, practical guidelines and detailed roadmaps for achieving system interoperability. Hospitals and relevant stakeholders need to understand both the legal and technical expectations to implement this technology effectively and confidently.”(AM-4)

The findings demonstrate strong alignment between the quantitative and qualitative data regarding the essential components required in national digital health policies to support sustainable data interoperability in public hospitals. The interviews echoed these priorities, with participants calling for practical guidance, targeted investments in infrastructure and resources, and meaningful involvement of key stakeholders throughout the policy development process. While these views were prevalent in the survey responses, the qualitative insights offered richer context, highlighting operational challenges and underscoring the need for a more practical and actionable framework to inform policy formulation. Despite descriptive frequencies revealed the magnitude of challenges, for instance 92% (132) of respondents indicated inadequate infrastructure and IT capacity whereas 83% (120) emphasised the establishment of clear implementation roadmaps, the qualitative findings provided significant insights, revealing that infrastructure was understood by participants as a reliable internet and integration tool, while roadmaps as step-by-step processes and timelines. In contrast, document analysis further confirmed that these elements are either absent in current strategies. These triangulated insights provide a more analytical understanding of why existing national digital health policies remain ineffective in practice.

5.4 Stakeholders involvement in the development of national digital health policies and strategies

Respondents were asked to identify stakeholders who should be involved in the development, implementation, and governance of national digital health policies and strategies to ensure the effective and sustainable implementation of data interoperability in public hospitals. As shown in the results, the majority of respondents 79% (114) indicated that IT and health information professionals should be actively involved in the development of national digital health policies and strategies. This was followed by 69% (99) who cited the National Department of Health, and 67% (97) who identified systems and database vendors as key stakeholders. Additionally, 37% (53) highlighted the importance of involving policymakers and legislative bodies, while 14% (20) mentioned administrative support staff, and 13% (19) pointed to provincial health authorities (see Figure 3 below).

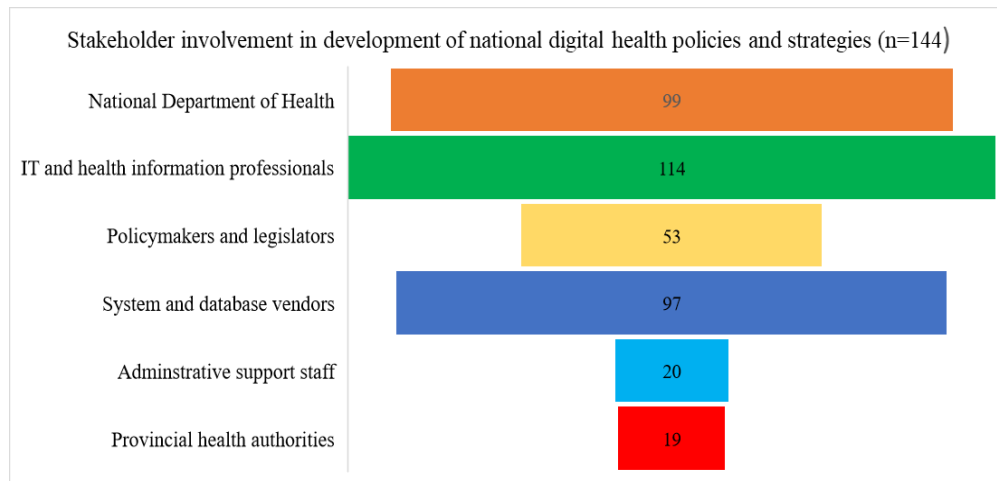


Figure 3. Stakeholder involvement in the development of national digital health policies and strategies (N=144)

“Personally, I believe that the Department of Health, IT and cybersecurity professionals, data vendors, and clinical staff should be actively involved as key stakeholders in the development of digital health policies and strategies” (AM-6)

“During the development and implementation of national policies and frameworks for digital health interoperability, it is crucial for the government to engage a broad range of stakeholders such as policymakers, legal experts, healthcare workers, provincial and district health authorities, and IT professionals to ensure effective and contextually relevant execution” (ITM-5).

“I believe that the development of digital health strategies and related frameworks should include meaningful participation from the National Department of Health, IT personnel, policymakers, and patient advocacy groups. These voices are essential to creating technologies that truly support and enhance healthcare delivery” (CM-1)

This study found a strong convergence between the quantitative and qualitative data regarding the key stakeholders required for effective and sustainable interoperability of healthcare data in public hospitals. A large majority of respondents identified IT professionals, health information professionals, the National Department of Health, and system and database vendors as essential stakeholders, with additional support for the inclusion of policymakers and administrative staff. Participant interviews reinforced these views by emphasising the importance of broad and inclusive stakeholder engagement, incorporating clinical staff, IT and cybersecurity experts, legal professionals, and patient advocacy organisations. While the quantitative data highlighted the stakeholder groups considered most relevant, the qualitative responses offered deeper insight into why their involvement is critical, underscoring the importance of cross-sector collaboration to ensure that digital health policies and strategies are both contextually appropriate and technically feasible. Beyond widely recognised challenges such as legacy systems, inadequate infrastructure and regulatory gaps, this study offers new empirical evidence from public hospitals, where a large majority of respondents called for the establishment of clear implementation roadmaps (83%) and infrastructure specifications (92%) for hospitals. Moreover, these quantitative insights together with qualitative perspectives, offered a well-grounded contribution to health interoperability research in African countries.

6. Proposed framework for incorporating data interoperability of health information systems in public hospitals

This study addresses a critical gap in the literature and highlights the shortcomings of key national policy documents; namely, the South African National eHealth Strategy (2012–2016), the HNSF, the National Digital Health Strategy (2019–2024), and the National Health Insurance (NHI) model, which collectively hinder data interoperability in public healthcare. In response, the study proposes a framework designed to foster a cohesive, efficient, and patient-centred health environment. This framework aligns with national strategic goals and

contributes to the development of a robust and integrated digital health ecosystem in South Africa. Figure 4 illustrates the proposed framework for incorporating data interoperability in public hospitals.

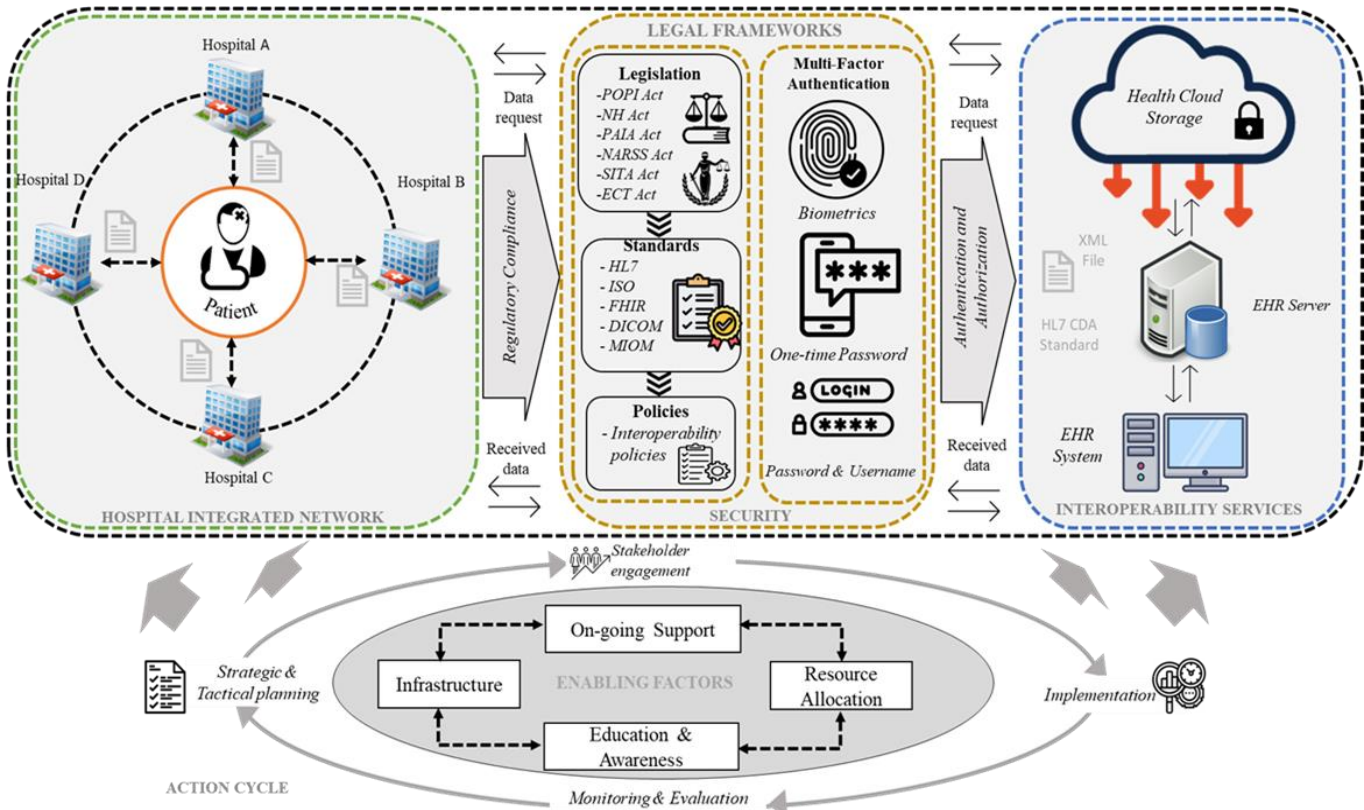


Figure 4. Proposed framework for data interoperability of health information systems in public hospitals

As illustrated in Figure 4, the proposed framework comprises six interrelated dimensions. These dimensions are derived from quantitative insights (i.e., calls for clear implementation roadmaps, security protocols, infrastructure specifications), qualitative perspectives (i.e., stakeholder engagement and regulatory compliance) as well as alignment with gaps in national frameworks as they lack actionable implementation guidelines. Despite exiting national interoperability frameworks remain focus on policy level, the six dimensions incorporated in this framework are operationalised for the hospital context. For instance, hospital integrated network is framed as legally binding agreement between two or more public hospitals, aimed at working together to seamlessly share data across various systems; regulatory compliance is tied to legislation and technical standards for data interoperability; security focuses on data protection through defensive mechanisms for hospitals; action cycles provide step by step implementation processes to be followed. As a result of this operationalisation, the proposed framework differs from existing national frameworks by translating high-level goals into actionable strategies relevant to South African public hospitals. These dimensions are discussed in detail as follows:

6.1 Hospital integrated network

A hospital integrated network consists of aligned public hospitals collaborating to deliver efficient, coordinated, and patient-centred care. This dimension of the framework promotes legally binding agreements among participating hospitals to enable the secure sharing, access, and exchange of patient health information. Centralised data systems facilitate continuity of care across multiple locations, strengthen inter-facility collaboration, and enhance patient outcomes. Hospitals in South Africa are particularly encouraged to adopt this networked model to improve care quality and operational efficiency.

6.2 Regulatory compliance

Regulatory compliance is foundational to establishing trust and legitimacy in interoperability initiatives. The framework requires public hospitals to adhere strictly to relevant legislation, including the POPIA, the PAIA, the NHA, the NARSSA, SITA, and ECTA. Compliance with technical standards such as HL7, ISO, FHIR, DICOM, and MIOM is also essential to ensure uniformity and interoperability. The National Department of Health and regulatory authorities must mandate adherence to these legal and technical frameworks. Furthermore, public hospitals should develop internal policies and monitoring mechanisms aligned with national digital health strategies to ensure sustained regulatory compliance. Failure to implement such governance structures may significantly hinder data interoperability efforts.

6.3 Security

Data security is a critical enabler of data interoperability. Public hospitals must implement robust security protocols to control access and ensure the confidentiality and integrity of health data, particularly when stored or transmitted via cloud platforms. The framework recommends the use of Multi-Factor Authentication (MFA), including biometric systems, passwords, and one-time passwords (OTPs), to authenticate users securely across hospitals. A layered authentication model will safeguard sensitive health information from unauthorised access and cybersecurity threats, attacks and data breaches.

6.4 Interoperability services

Interoperability services within the framework are supported by cloud storage, hospital servers, and EHR systems. These technologies enable seamless communication across institutions, providing authorised users with real-time access to patient records, even across disparate systems. For example, the HL7 CDA standard enables structured data exchange, allowing EHRs and HISs to connect and share patient information effectively. Hospitals are encouraged to create XML files conforming to HL7 CDA to standardise communication between systems. This ensures system compatibility and supports continuity of care across facilities.

6.5 Action cycle

The action cycle encompasses a series of sequential steps required to implement data interoperability effectively. Public hospitals must develop a strategic implementation plan outlining timeline, responsibilities, resource allocations, and technology requirements. Crucially, stakeholder engagement is embedded within this cycle, involving collaboration with government agencies, clinicians, IT vendors, regulatory bodies, and other key actors. Active participation from stakeholders ensures alignment with institutional goals and facilitates shared ownership of the initiative. Continuous project review meetings, performance tracking, and timely resolution of implementation challenges are essential. Monitoring and Evaluation (M&E) mechanisms must be in place to assess whether interoperability objectives are being achieved and to inform ongoing improvements.

6.6 Enabling factors

The final dimension emphasises the critical enablers that support the successful implementation and long-term sustainability of data interoperability. These include (a) government support and leadership commitment; (b) allocation of human, technical, and financial resources; (c) capacity building, staff training, and education; and (d) investment in digital infrastructure, including hardware, software, and secure, high-speed internet. The study identifies inadequate funding and infrastructure as major barriers. The government should allocate sufficient budget to enable public hospitals to upgrade their systems and networks to meet data interoperability demands. Collaboration between the National Department of Health, provincial authorities, IT personnel, policymakers, and health officials is essential to ensure adequate infrastructure, enforce standards, and promote workforce readiness.

Conclusion and future studies

This study aimed to propose a framework for incorporating data interoperability of health information systems in public hospitals in the Gauteng Province of South Africa. It is hoped that the proposed framework will help promote a cohesive, efficient, and patient-centred health environment. Findings from both qualitative and quantitative data revealed a consistent consensus that national digital health policies and strategies, despite their intentions, are inadequate in guiding public hospitals towards achieving data interoperability across systems. Key limitations identified include insufficient stakeholder engagement, inadequate technical guidelines, weak alignment with existing policy and legal frameworks, and the absence of clear infrastructure specifications. This framework addresses these shortcomings by incorporating six interconnected dimensions: hospital integrated networks, regulatory compliance, security, interoperability services, action cycles, and enabling factors, all aimed at promoting a patient-centred digital health environment. The framework provides technical guidelines designed to assist healthcare stakeholders in addressing fragmentation within the public health sector. The framework further builds upon existing frameworks such as the OpenHIE, the National eHealth Interoperability Framework and Interoperability Framework of the African Union. Although these initiatives set policy principles and technical standards, they remain limited in providing operational guidance at the hospital level. The proposed framework addresses this gap by offering actionable guidelines like implementation phases, infrastructure requirements, and regulatory compliance.

A major limitation of this study is that the proposed framework has not been tested or validated in practice. It is therefore recommended that future research be conducted to assess its applicability and effectiveness across different provinces in South Africa, as well as in other countries with varying governance structures and levels of infrastructural capacity. The study concludes that the pursuit of interoperable health systems requires more than the establishment of robust frameworks; it also demands meaningful stakeholder engagement, sustained political commitment, and strategic investment in infrastructure to ensure effective and sustainable implementation. The novelty for this lies in its two-fold contribution. From the methodological perspective, the study employed a convergence parallel design across six public hospitals which allowed to capture both experiential and systematic perspectives. Moreover, the study proposed that framework that bridges the gap between policy and operational hospital level. As opposed to existing frameworks which place an emphasis on policy alignment in isolation, the proposed framework incorporates stakeholder engagement, regulatory compliance and infrastructure preparedness, thereby providing practical blueprint for data interoperability, particularly for healthcare systems that are resource-constrained.

From our perspective as researchers, the long-term vision for South African health information ecosystem should be the establishment of a nationally integrated system that bridges the gap between high-level digital health policies and hospital-level implementation. Such a system could address fragmentation within the public sector and ensure equitable, efficient, and patient-centred care. At the same time, we contend that this national system should be designed for regional compatibility, in line with African Union initiatives on interoperability and digital identity. This dual approach national leadership with regional alignment, could allow South Africa not only to strengthen its internal digital health landscape but also to contribute to continental efforts aimed at enabling cross-border healthcare data exchange and advancing universal health coverage in Africa.

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Funding: This work was supported by the NIHSS-SAHUDA doctoral scholarship, under the grant number (SDS20/1532). The technical and financial support provided for this study has been instrumental in its completion.

Author contributions: Kabelo Given Chuma conceptualized the study, developed the research design, and wrote the first draft of the manuscript. Mpho Ngoepe contributed to data interpretation and provided critical revisions. Both authors approved the final version of the paper.

Data availability: The data that support the findings of this study are available from the corresponding author, KG Chuma upon reasonable request.

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

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WOMEN ENTREPRENEURSHIP IN SOUTH AFRICA: PECULIARITIES OF STRESS**Justice Ngonidzashe Muchineripi***Management Department, Faculty of Management and Public Administration Sciences, Walter Sisulu University, Butterworth Campus N2, Ibika Industrial Area, Butterworth, 4960, South Africa**E-mail: justice.muchineripi@gmail.com**Received 10 September 2025; accepted 11 November 2025; published 30 December 2025*

Abstract. Mental health is a growing concern in the realm of entrepreneurship. Whilst entrepreneurs in general are prone to mental health challenges associated with the pressures of running a business, women face unique stressors that are passed across generations. Women in entrepreneurship are vulnerable to stress more than their male counterparts due to specific challenges they face because of their gender. Accordingly, they need strategies to cope with that stress to promote positive performance for their businesses. This study adopted a qualitative approach to explore coping strategies implemented by women in entrepreneurship to address intergenerational stress. A sample of 14 female entrepreneurs participated in this study, and data were collected using a semi-structured schedule. Findings from the study indicate that women in entrepreneurship understand the concept of mental health. Furthermore, the study established that challenges such as lack of mentors, limited access to finance, work and family balance, as well as religious and cultural stereotypes, trigger feelings of stress among women in entrepreneurship. The study further established that female entrepreneurs utilise strategies such as networking, seeking mentorship, exercising, spirituality, and time management. The study recommends that government agencies and policymakers develop gender-sensitive networking and mentorship platforms that emphasise breaking the intergenerational cycle of stress. Furthermore, the entrepreneurship development initiative needs to incorporate time and stress management training for women. Lastly, cultural and religious leaders, along with entrepreneurship ecosystems, should promote inclusive policies and reduce stigma for women who balance multiple roles. The study offers novel and original insights into how intergenerational stress is transmitted between generations of female entrepreneurs. Furthermore, the study highlights gender specific coping strategies that female entrepreneurs use to address intergenerational stress.

Keywords: Stressor; generations; coping strategies; entrepreneurship; gender; historical

Reference to this paper should be made as follows: Muchineripi, J. N. 2025. Women entrepreneurship in South Africa: peculiarities of stress. *Insights into Regional Development*, 7(4), 102-115. <http://doi.org/10.70132/b6273472929>

JEL Classifications: I31, M20

1. Introduction

The past three decades have witnessed a significant increase in the participation of South African women in entrepreneurship, marking a notable achievement in promoting women's economic participation (Bobek, Schachl, & Horvat, 2023). However, these achievements are faced with peculiar psychological issues unique to female entrepreneurs. As women's participation in entrepreneurship increases, there has also been a rise in academic interest in the intersection between mental health, entrepreneurship and gender (Thandabhani, 2020). Due to cultural, historical and socio-economic factors, women encounter obstacles that are not normally faced by their male counterparts, thus impacting their mental health differently (Zehrer & Leib, 2019). These mental health challenges can be traced back to intergenerational stressors with far-reaching implications for the current generation of women entrepreneurs. These stressors include cultural stereotypes that exclude women from economic participation, gender roles, social structure and the patriarchy (Krithiga & Velmurugan, 2024a).

In the South African context, women entrepreneurs are impacted by socio-economic inequalities, apartheid legacy, cultural beliefs and traditional roles. Oggero et al. (2023) state that women entrepreneurs must strike a balance between managing their businesses and fulfilling family roles, such as being submissive wives and raising children. These dynamics perpetuate intergenerational stress among women, a phenomenon characterised by the transmission and accumulation of stressors across family lines, which can significantly impact mental well-being and business outcomes. A study by Tao, Essers, and Pijpers (2021) found that women entrepreneurs operate within a business landscape closely linked to social and cultural norms and economic conditions. Unlike men, women tend to face other challenges, such as insufficient funds, gender discrimination, and limited travel, which increases their stress levels and mental issues (Sarwar et al., 2021). The stressors related to business and having to comply with traditional gender roles exact a heavy price on their emotional and mental well-being, and consequently lead to chronic anxiety and self-esteem issues (Soomro et al., 2024). Women entrepreneurs frequently suffer from chronic stress because of the demands of their careers and family responsibilities. Because of traditional norms in South Africa, women are expected to perform household chores while managing their business roles, which creates an imbalance and increases psychological distress (Muhammad & Ximei, 2022). The concern for family obligation, along with the desire to excel in business, can exhaust one emotionally, thereby increasing the risk of mental disorders. These challenges jointly heighten feelings of inadequacy, which further discourage women from fully participating in entrepreneurship or obtaining professional psychological care.

Underlying these adverse circumstances is a more serious issue of emotional instability, which, in the long run, is likely to reduce productivity (Malik et al., 2023; Qadeer et al., 2025). Whilst the body of knowledge on mental health among entrepreneurs is growing, there is limited research focusing on intergenerational stress among female entrepreneurs from a South African context. Makola (2025) examined the interplay between stressors, coping mechanisms, and support systems for entrepreneurs in general by analysing how entrepreneurial demands interact with available resources and addressing South Africa's unique socio-economic and cultural context. On the other hand, Dzomonda, Neneh and Jaiyeoba (2025) conducted a study to examine whether coping strategies positively influence the subjective well-being of women entrepreneurs in South Africa. Thus, it neglects intergenerational stress amongst women. Given the legacy of historical inequalities between women and men, women continue to face unique challenges that were inherited from previous generations, thus requiring specific attention (Zelekha, 2021). However, there is a need to gain context-specific insights into the nature of intergenerational mental health challenges experienced by women and explore strategies they employ to cope with intergenerational stressors that affect their mental health. This study examines the mental health perceptions of women-owned businesses in South Africa, with a specific focus on navigating intergenerational stress. Insights from the study add to the knowledge about how South African female entrepreneurs experience, perceive and manage mental health challenges. This is important because it helps in the development of targeted strategies aimed at addressing intergenerational stress among South African female entrepreneurs. Furthermore, the study's findings also aid in formulating more targeted psychological treatment procedures, mental health programs, and policies to enable women entrepreneurs to pursue their entrepreneurial aspirations in a more conducive environment.

2. Literature review

2.1 Women entrepreneurs in South Africa

Women entrepreneurship occurs when a woman develops a business idea, assembles resources, and provides leadership to transform it into a commercial success (Pergelova & Mandakovic, 2024). Women entrepreneurship refers to the process of creating and managing a new venture or business by a woman or a group of women, who assume significant ownership and decision-making responsibilities for the enterprise (Rosas-Rodríguez & Kato, 2025). It involves identifying and capitalising on opportunities to create new value in the marketplace through innovation, creativity, and risk-taking, thereby generating profit and driving growth for the business and its

stakeholders. Another definition of women's entrepreneurship is provided by John and Wani (2025, p. 7). who states that women's entrepreneurship is a "process of designing, launching and running a new business venture by women or a team of women who initiate, organise, and manage a business undertaking, assuming significant accountability for the risks and the outcome." Women entrepreneurs typically demonstrate the ability to identify opportunities, create them, and contribute to economic development (Gulvira et al., 2024). The past two decades have seen a significant increase in women's participation in economic activities, particularly entrepreneurship. Current statistics indicate that women comprise approximately 45% of business owners and entrepreneurs in South Africa, with the majority operating small and micro-enterprises informally (Bowmaker-Falconer et al., 2023). The rise of women entrepreneurs has been driven by deliberate government policies aimed at promoting gender equality through women's empowerment, as well as the lack of formal employment and the availability of entrepreneurial opportunities, which women leverage to earn a living and attain financial independence (Corfah, 2024). Women are among previously disadvantaged groups that have had limited access to economic opportunities, primarily due to political and cultural practices that sidelined them from participation in the mainstream economy (Mulaudzi & Schachtebeck, 2022). This legacy of marginalisation impacts current entrepreneurial endeavours by women in South Africa. Women face numerous challenges, including cultural stereotypes, limited access to finance, balancing family roles, and limited business networks (Chaudhry, Javed, & Hussian, 2025). These challenges affect women-owned businesses and also contribute to increased stress and mental vulnerabilities.

2.2 Mental health

Mental health is primarily concerned with cognitive and behavioural patterns. Gish et al. (2022) define mental health as a state of well-being characterised by the ability to experience positive emotions, maintain healthy relationships, and effectively manage challenges. Shahab et al. (2025) define mental health as optimal psychological functioning that enables individuals to realise their potential in work, relationships, and personal growth. It encompasses the ability to adapt to change, think clearly, and make sound decisions (Gish et al., 2022). Mental health challenges result from stressors that negatively impact one's mental well-being. Notable stressors for women in entrepreneurship include conflicts, gender dynamics, a lack of financial resources, and conflicting roles between running a business and fulfilling family responsibilities as prescribed by cultural norms, as well as intergenerational disenfranchisement of women (Essuman et al., 2024). Furthermore, the pressure that comes with being an entrepreneur also contributes to mental health challenges. This study focuses on intergenerational stress on women entrepreneurs (Hundera et al., 2021).

2.3 Intergenerational stress among women entrepreneurs in South Africa

Entrepreneurs in general are vulnerable to stressors linked with entrepreneurial activities such as working long hours, work overload, constant pressure and isolation, which causes anxiety, depression and burnout leading to mental health issues (Krithiga & Velmurugan, 2024b). Whilst this reality is true for entrepreneurs, Hundera et al. (2019) state that women entrepreneurs experience unique stressors due to numerous factors that affect them because of their gender. Women were historically disenfranchised due to cultural stereotypes, gender discrimination and religious beliefs, which perpetuated the oppression of women and limited their participation in economic activities, leading to intergenerational stress (Rehman & Basit, 2023). Intergenerational stress refers to the transmission of stressors, trauma, and coping patterns from one generation to another (LaDage et al., 2023). In the South African context, this phenomenon is shaped by historical injustices, economic hardship, and changing family dynamics. Many women entrepreneurs are part of extended family networks, where they are expected to provide financial and emotional support to both older and younger generations (Perez-Encinas et al., 2021). Traditionally, means of production were owned by men, which gave men better opportunities to engage in entrepreneurship than women. In the context of South Africa, women entrepreneurs inherited disenfranchisement from past generations. The plight of women, especially black women, was worsened by the discriminatory policies of the apartheid regime, which focused on promoting white supremacy, ignored equality and empowerment of historically disadvantaged groups (Tao et al., 2021). Women are among the economically

disadvantaged groups in South Africa despite the end of Apartheid and the implementation of various policies aimed at addressing past injustices and discrimination against women (Saka, 2024). Poverty, inequality and structural violence, which negatively affect female entrepreneurs, have been experienced by consecutive generations and trigger past stressors which could have lingering psychological effects that continue to influence socio-emotional behaviour and mental health. Furthermore, the caregiving role of women in South African society extends not only to the immediate family level but also to the extended family, which includes nephews, nieces, in-laws, the sick, and, in some instances, community members. All this puts women under significant strain as they navigate the competing demands of business, family, and community obligations. The cumulative impact of these stressors can manifest in chronic anxiety, burnout, and other mental health challenges, ultimately affecting business sustainability (Irene et al., 2019). Although women's cultural and family roles often put them at a disadvantage in entrepreneurship circles, these roles are frequently passed down from generation to generation as traditional expectations. This perpetuates an intergenerational stressor for women in South Africa.

2.4 Intergenerational stress and mental health challenges among women-owned businesses

Women in entrepreneurship face emotional complexities, particularly because they inherit psychological burdens that span generations, resulting in intergenerational stress (Dzomonda et al., 2025). Essuman et al. (2024) point out that intergenerational stress among women is rooted mainly in cultural expectations, economic hardships and historical trauma, which compounds mental health challenges faced by women in entrepreneurship. Though direct research linking intergenerational stress to entrepreneurial mental health remains sparse, insights from resilience studies and coping frameworks offer valuable entry points (Hundera et al., 2019; Dzomonda et al., 2025). Keller, Hayek and Tsiakas (2024) point out that the prevalence and incidence of psychiatric disorders generally vary with biological sex. For instance, a study by Chadwick and Raver (2019) reveals that anxiety and depression are twice as prevalent in women as in men. Whilst Shahab et al. (2025) suggest that differences in mental disorders are biologically determined, Olohunlana et al. (2024) argue that social factors play a significant role in determining these differences. Notable factors contributing to mental health challenges, differences between men and women in entrepreneurship include social support, social norms, family environment and cultural beliefs. Women entrepreneurs must strike a balance between running their own businesses and performing care roles, a task that many women find exhausting (Panda, 2018). Mental disorders emanating from these stressors have been in existence for a long time and experienced by different generations. Research conducted by Makola (2022) highlights how women compromise business operations in favour of familial responsibilities. Such findings indicate the inter-wovenness of stressors between generations of women. In the context of South Africa, intergenerational stressors affecting female entrepreneurs include gendered stereotypes, financial exclusion, low self-efficacy, and bureaucratic hurdles that contribute to stress patterns inherited across families and communities (Ebewo, Schultz, & Mmako, 2025). Whilst stressors that specifically affect women entrepreneurs from past to present generations are often cited as reasons for mental health challenges among female entrepreneurs, Shahab et al. (2025) argue that mental health challenges emanate from mismatches between expectations and experiences at three interacting levels, which include achievements, autonomy and purpose. According to Sun et al. (2024), these mismatches emerge as variances between what entrepreneurs ideally seek to achieve and what they actually experience, resulting in a diminished sense of worthiness, control and direction. This in turn leads to a cycle of negative emotions which includes shame, guilt, isolation and anxiety (Ebewo et al., 2025). These diverse views on the source of stress for women in entrepreneurship necessitate an inquiry to gain insights into the impact of intergenerational stress on mental health challenges.

2.5 Coping mechanisms utilised by women entrepreneurs to manage stress

Women entrepreneurs employ several coping strategies to manage stress related to stressors inherited from past generations. Coping strategies refer to how women entrepreneurs manage stressors associated with their entrepreneurial work (Ukandu, 2024). These strategies aim to address the stresses caused by stressors experienced by consecutive generations of women, particularly those involved in entrepreneurship. Coping strategies for managing stress are classified into two categories, namely emotion-focused and problem-focused mechanisms

(Dzomonda et al., 2025). Wiklund et al. (2019) state that the interplay between inherited stress and current entrepreneurial well-being suggests compelling avenues for future study.

Existing research indicates that women who employ problem-focused and emotion-focused coping strategies tend to report positive subjective well-being. Problem-focused coping strategies refer to strategies that can be deployed to directly address stressful situations and their underlying causes (Ahmed et al., 2022). Krithiga and Velmurugan (2024) define problem-focused coping as active efforts to confront stressors and implement effective solutions. Krithiga and Velmurugan (2024b) state that such strategies are typically deployed when a person views stress as modifiable or controllable. Common and notable strategies typically employed by individuals include practising time management, creating a to-do list, efficient resource allocation, and seeking support from associates and experts (Baldacchino & Sasseti, 2025). While the strategies above apply to general situations, there is a need to understand how women from unique contexts, such as South Africa, address stress, particularly those in entrepreneurship. Huang and Chen (2021) summarised problem-focused coping strategies as efforts to address stressors, including obtaining external support, planning, structuring, prioritising, and formulating possible solutions. Based on available literature, women in entrepreneurship can deploy problem-focused strategies by enhancing access to mental health care services.

Access to mental healthcare is associated with effective management of anxiety and stress. Furthermore, Drnovšek and Slavec Gomezel (2022) established that stress among women entrepreneurs can be addressed through mental health awareness campaigns. Mental health awareness campaigns are important because they help reduce stigma associated with mental health challenges, such as stress, and equip women with knowledge to manage and identify burnout, anxiety and stress (Dzomonda et al., 2025). Furthermore, due to competing responsibilities between family roles and entrepreneurial responsibilities, Bagheri et al. (2024) recommend striking a work-life balance as crucial in addressing the inherent stress resulting from these conflicting responsibilities. Hundera et al. (2019) state that strategies for achieving work-life balance include family members being supportive of female entrepreneurs, developing flexible schedules, and implementing stress reduction measures. Additionally, women in entrepreneurship also address stressors associated with gender discrimination, stereotypes, and violence by advocating for gender-inclusive policies (Lepeley et al., 2019). Specifically, the policies should aim to promote legal protections, ensure equal opportunities, and foster gender equality. Bullough et al. (2017) also established that establishing financial support mechanisms is an essential strategy for addressing stressors related to lack of access to capital, loans and other grants. To enhance financial support and proper management, Women entrepreneurs use networks and mentorship to disrupt generational cycles of stressors (Bastian et al., 2019). Mentorship programs and networking events can connect experienced entrepreneurs with beginners (Kamberidou, 2013). Experienced and successful women entrepreneurs can share valuable insights on navigating gender-specific challenges, enabling women to address these issues, which often cause stress.

Emotion-focused stress management also provides an avenue for addressing intergenerational stress passed down from previous generations (Krithiga & Velmurugan, 2024a). Also referred to as self-management, emotion-focused stress coping strategies refer to ways of influencing one's thoughts, beliefs and patterns in a self-motivating way that is necessary for good performance. Specific strategies available to women entrepreneurs for managing intergenerational stress include self-care, cognitive reframing, and cultivating psychological resilience. Fisher et al. (2021) established that self-care is a significant strategy for managing all forms of stress. Self-care for stress management encompasses getting enough sleep, exercising, and eating healthily to keep stress hormones, such as cortisol, in check. Consistent physical activity is an essential strategy for dealing with stress, as it is positively associated with increased self-confidence, enhanced concentration, and a refreshed mind. Prakash et al. (2018) recommend that meditation and mindfulness programs are key methods for minimising feelings of overwhelm, which are commonly associated with entrepreneurship, particularly for women who face unique challenges due to their gender. The coping strategies discussed above emphasise the fact that women can significantly disrupt intergenerational stress by employing various coping mechanisms. While intergenerational

stress remains a silent undercurrent in women's entrepreneurial journeys, emerging research underscores that coping strategies are powerful levers for promoting mental health among self-employed women.

3. Methodology

The study employed a qualitative methodology to explore participants' experiences and perceptions of navigating intergenerational stress, with a greater emphasis on personal experiences and perspectives (Denzin & Lincoln, 2018). This approach facilitated a comprehensive understanding of participants' views on the subject and the underlying principles of the research. The exploratory research design offered detailed insights into the topic within a real-world context (Bloomberg & Volpe, 2018). The research involved ten female entrepreneurs operating businesses in East London, South Africa. Data was collected between July and August 2025 through semi-structured interviews, with all questions clearly comprehensible to the participants (Mills & Birks, 2014). These questions were formulated using insights from the reviewed literature. Participants were informed about the research at the outset and were advised of their right to withdraw from the study at any time. To maintain confidentiality, no personal information was recorded, and participants' responses were kept confidential (Myers, 2025). Data collected for this study were analysed using the thematic technique (Barbour, 2018).

Table 1. Sampling frame

Pseudonym	Enterprise category	Years in operation	Number of employees	Annual turnover (Million Rands)
1	Small	4	11	≤50
2	Micro	3	2	≤10
3	Micro	1	1	≤10
4	Micro	5	3	≤10
5	Small	7	12	≤50
6	Micro	11	2	≤10
7	Micro	15	4	≤10
8	Small	10	13	≤50
9	Micro	4	3	≤10
10	Micro	6	1	≤10
11	Micro	2	1	≤10
12	Medium	22	54	≤250
13	Micro	8	2	≤10
14	Small	20	11	≤50
14	Micro	3	2	≤10

The sampling frame from which the data were collected is presented in Table 1 above.

4. Findings

4.1 Mental health perceptions

Mental health perceptions are primarily shaped by various factors, including culture, religious beliefs, and the level of awareness about mental health (Shahab et al., 2025). Cultural and spiritual beliefs are identified as sources of stereotypes which fuel stigma and discrimination associated with mental health. On the other hand, factual knowledge about mental health issues enables entrepreneurs and the community at large to devise and adopt effective strategies for dealing with mental health issues (Sun et al., 2024). Entrepreneurs who participated in this study demonstrated considerable knowledge about mental health and mental well-being. This is revealed in a contribution shared by participant 3, who shared that: *“It means being emotionally stable and able to run my business without constant worry.”*

Participant 8 said: *"In my case, mental health is about balancing business and personal life without falling sick mentally or being affected by stress or challenges inherited from previous generations of self-employed women, which can negatively affect our mental well-being."*

Factual understanding of mental health and mental issues provides the basis for addressing mental health challenges such as stress and anxiety (Gish et al., 2022). Whilst mental health challenges are viewed with discrimination and stigma, there are also growing campaigns to raise mental health awareness, demystify mental health and promote coping strategies.

4.2 Intergenerational stress

Participants also confirmed the existence of intergenerational stress and its impact on their entrepreneurial endeavours. Furthermore, the participants highlighted that they experience stress inherited from their mothers and grandmothers, who experienced similar challenges, which are related to their gender. This is revealed in the response provided by participant 4, who said: *"As women, especially black South Africans, we carry deep-seated stress from our grandmothers and mothers who faced the same challenges that we face today. These challenges are entrenched in our societies by cultural beliefs and the historical marginalisation of women in economic participation. Hence, for me, being in business as a female entrepreneur means continuing the struggle that our foremothers faced, with the same challenges we face today, although the situation has improved. This adds a unique layer of pressure to everything I do."*

Similar sentiments, which highlight the existence of intergenerational stress, were also echoed by participant 12, who said: *"My mother faced the same struggles that I face today, which are running her own small vending business as well as caring for the family. The challenge here is that, as a woman, I am expected to prioritise serving my family's interests ahead of my own. Although today there are more laws and policies meant to foster gender equality, I feel that I still face the same stressful situations which women ahead of me faced, and I feel the pressure to do better than they did."*

Intergenerational stress is triggered by numerous stressors unique to women in entrepreneurship, which are fueled by the prevailing religious and cultural beliefs in a specific context (Dzomonda et al., 2025). These challenges are normalised and are passed down from previous generations, despite existing legislation aimed at promoting gender equality. Keller et al. (2024) note that, while stressful events characterise entrepreneurship in general, women's entrepreneurship has unique stressors linked to cultural expectations and norms, as well as gender roles in society. Stress from these events is experienced by successive generations of women, resulting in intergenerational stress.

4.3 Business stressors

The participants also highlighted stressors linked to their roles as entrepreneurs. Notable stressors highlighted by participants include a lack of financial resources, striking a work-life balance, gender discrimination, and a lack of business mentors. This is revealed in responses shared by participant 7, who said: *"Running a business as a woman can be stressful for many reasons, which include lack of access to funding and business grants, performing business and family roles, gender discrimination, cultural expectations and economic marginalisation at large. All these challenges negatively affect mental well-being by causing more stress and even depression. Due to these issues, it is difficult to run a business, which causes a lot of stress."*

Participant 14 added that: *"Some stressful challenges that affect me as a woman in business include a lack of financial support, balancing business and family roles, which exhausts me and discrimination. As a woman, I expected to close business early so that I could attend to family duties and start late after ensuring the kids had gone to school. I have seen that sometimes my capacity to deliver is met with doubt because I am a woman, and it really stresses me."*

Women in entrepreneurship, particularly in the South African context, face numerous stressors that affect them as women. Panda (2018) notes that financial limitations, lack of mentors, gender-based violence, discrimination, cultural beliefs and gender stereotypes make it difficult for women to operate businesses as successfully as men. Makola (2022) also notes that these challenges affect female entrepreneurs today, as they have affected previous generations; the scale differs due to the transformation of socio-economic laws.

4.4 Coping strategies

Coping with intergenerational stress is crucial for businesses because it enables entrepreneurs to maintain or improve productivity, prevent harmful behaviours, promote mental health, and encourage positive adaptation (Essuman et al., 2024). Entrepreneurs must prioritise their emotional, cognitive, and physical well-being, as their mental health is closely tied to the health and performance of their business (Hundera et al., 2019). As such, women in entrepreneurship are encouraged to adopt and implement coping strategies to manage the stress associated with their entrepreneurial roles. Notable strategies that emerged from the responses provided by female entrepreneurs who participated in this study include prayer, networking, seeking mentorship, time management, and advocating for policies that are sensitive to the plight of women in entrepreneurship.

Networking and mentorship

Participants indicated that they seek mentorship and networking opportunities to manage stress resulting from their business roles and responsibilities. This enables them to learn new ways of dealing with anxiety related to running a business from those who have experience or those who successfully navigated the challenge (Krithiga & Velmurugan, 2024a). This is revealed in the response provided by participant 4, who said: *“To cope with challenges associated with family roles and business responsibilities, I always approach fellow women in entrepreneurship, especially those who are running successful businesses, for advice, inspiration, resources and mentorship on how to navigate stress. I also join platforms where women share experiences about entrepreneurship and roles as family, and most of the time I come out feeling hopeful that the challenges can be overcome.”*

Female entrepreneurs utilise mentorship and networking platforms to manage intergenerational stress. Mentorship allows them to receive context-specific guidance on how to minimise the impact of stress associated with running a business (Panda, 2018). Furthermore, it has been established that entrepreneurs who participate in networking platforms develop social capital, which enables entrepreneurs to access emotional, financial and business support when challenges emerge (Krithiga & Velmurugan, 2024b).

Prayer

The participants also indicated that they resort to prayer to deal with stress resulting from various business stressors. Prayer provides entrepreneurs with hope and spiritual upliftment, which has a significant effect on minimising stress. This is highlighted in a response shared by participant 5, who said: *“Prayer helps me deal with something that bothers me, and I have hope that with consistent prayers, the desires of my heart as a business owner will be answered. So challenges come, but I leave everything to God.”*

This submission highlights the role of spirituality in addressing intergenerational stress. Prakash et al. (2018) state that spirituality is a valuable tool that can provide a framework for finding purpose, fostering inner peace, and promoting a more balanced perspective. It encompasses praying to a Supreme Being and mindfulness programs, which help neutralise and minimise the impact of stress on one's mental health (Shahab et al., 2025).

Time management

Participants also emphasised that effective time management is another key strategy for addressing intergenerational stress. Time management enables female entrepreneurs to prioritise and schedule their roles between family and business (Dzomonda et al., 2025). This is revealed in a response shared by Participant 9, who said: *"Although it is not easy, I always try to schedule my daily tasks, come up with a priority task so that I make sure that I am not neglecting both my family and business responsibilities. This helps me find enough time to do everything I need to do."*

Time management is a proven strategy for managing work-related stress. Eager et al. (2019) note that this approach is also applicable and vital in self-employment contexts. Huang and Chen (2021) emphasise the importance of time management in managing competing demands, cultivating a sense of control, and avoiding being overwhelmed. Time management is considered a proactive approach that is used to prevent feelings of frustration, panic, and last-minute scrambling. Furthermore, Wiklund et al. (2019) argue that time management does not mean doing everything yourself, but rather delegating certain responsibilities to avoid exhaustion. Similarly, Dzomonda et al (2025) warn that the absence of time management results in tasks piling up, leading to a diminished sense of control, fatigue and mental load.

Exercising

Participants also shared that they employ physical activities as a way of dealing with stress related to business responsibilities, as influenced by their gender (women). This is revealed in a response shared by Participant 2, who said: *"I have started exercising, and this has really helped me to get rid of something that bothers me about business and family."*

Similar sentiments were echoed by Participant 13, who said: *"Exercising consistently has really helped me gain confidence and lifts me when I am down. I hope more and more women in entrepreneurship can find time to exercise"*

This confirms indications that exercise is an effective strategy for managing stress. Likewise, women in entrepreneurship can deploy it to address intergenerational stress. According to Dzomonda et al. (2025), individuals who exercise experience physiological and psychological benefits that are essential for managing stress. For instance, Zschucke et al (2020) established that exercising reduces stress hormones (physiological benefit) and increases mental resilience (psychological benefit). Thus, drawing on all this, exercising is an effective strategy for addressing intergenerational stress among women in entrepreneurship.

5. Discussion

5.1 Interpretation of findings

The findings from this study indicate that women in entrepreneurship face numerous business challenges, thereby fueling intergenerational stress. The challenges that are mainly unique to women stem from cultural, religious, and societal beliefs that reinforce gender expectations and roles, which were also experienced by previous generations of women (Dzomonda et al., 2025). The study established that women who participated in this study understood what mental health entails, as well as its importance in managing a successful business and ensuring emotional stability. Stressors identified include lack of business mentors, work and family balance, gender discrimination and financial constraints. These stressors confirm the findings of a study by Chadwick and Raver (2019), who also identified the same stressors as negatively impacting the mental health and well-being of female entrepreneurs. The study noted that coping strategies such as time management, networking, mentorship, exercising and spirituality are key strategies for dealing with intergenerational stress. Whilst these strategies align with findings from existing studies (Krithiga & Velmurugan, 2024b; Baldacchino & Sasseti, 2024), the findings of this study indicate that participants did not mention seeking mental health care/treatment as a coping

mechanism. Yet, it is significantly related to lowering business stress. The findings of this study highlight the duality of challenges faced by female entrepreneurs in South Africa, which includes both inherited systematic stressors and adaptive agency.

5.2 Theoretical implications

The findings present opportunities for theoretical implications on the gendered nature of stress and entrepreneurship, illustrating how religious, historical, and cultural contexts perpetuate stressors that lead to the creation of intergenerational cycles of stress. These findings underscore the importance of examining women's entrepreneurship through the lens of socio-cultural and psychosocial dimensions. Furthermore, the study extends theory on stress by demonstrating how gendered norms and expectations entrench and perpetuate stress across different generations. The findings also contribute to existing coping and resilience frameworks by emphasising the roles of time management, spirituality, social capital, and exercise as key strategies for coping with intergenerational stress. The findings essentially advance a theoretical perspective which highlights the gendered and unique stress experience of female entrepreneurs in the South African context, which is passed down from previous generations and is entrenched in the deep-rooted marginalisation of women's economic roles.

5.3 Practical implications

The findings provide practical implications for the government and women in entrepreneurship. The research highlights the coping strategies being implemented by female entrepreneurs, including time management, mentorship, networking, prayer, and exercise. This highlights the importance of female entrepreneurs adopting proactive strategies and maintaining control over their businesses and lives. Furthermore, the findings also highlight the importance of spiritual beliefs in managing stress, underscoring its role in helping female entrepreneurs to find inner hope and peace. Likewise, the role of exercise as a coping strategy is affirmed, thus emphasising the crucial role of both psychological and physiological well-being of female entrepreneurs. The findings also provide practical implications for agencies and departments that are created to support equitable entrepreneurship growth in South Africa. The need for tailored and context-specific support strategies for female entrepreneurs is emphasised in this study. Whilst support to improve operations and development of business ventures is important, findings of this study highlight the need for interventions aimed at addressing the unique stressors related to gender roles and intergenerational pressure. Drawing on the study's findings, which highlight the role of networking in addressing stress, there is a need to create spaces where female entrepreneurs can share experiences and receive context-specific guidance. Lastly, the study's findings help inform the formulation of policies that are both gender-sensitive and effective in addressing cultural and historical factors that perpetuate stressors.

Conclusions

To conclude, the study shows that stress confronting female entrepreneurs in South Africa is a multifaceted phenomenon which encompasses common entrepreneurship challenges affecting women and a prevalent intergenerational stress. Furthermore, the study also highlighted the importance of specific coping strategies, including time management, mentorship, networking, prayer, and exercise. By recognising the unique and gendered nature of entrepreneurship-related stressors and stress among female entrepreneurs, the study highlights the need for entrepreneurs and business development agencies to develop targeted and context-specific interventions that promote business success and mental well-being. As a result, women's entrepreneurship should be regarded not merely as an economic endeavour but also as a domain where historical challenges, cultural norms, and individual resilience intersect.

The current study followed a qualitative research approach and focused on a smaller section of the population, thus limiting the generalizability of the findings. This presents an opportunity for future and similar research to follow a quantitative approach, which produces generalisable findings. Furthermore, longitudinal studies allow for

the assessment of the effectiveness of coping strategies. Additionally, quantitative designs could measure the strengths of relationships between specific stressors and stress, as well as between coping mechanisms and stress reduction, thereby strengthening the evidence base for context-specific interventions. Furthermore, the term 'mental health' in this study is used in a specific context and has a particular meaning, as described.

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DRIVERS OF ARTIFICIAL INTELLIGENCE ADOPTION IN TOWNSHIP SMALL BUSINESSES IN SOUTH AFRICA**Bramwell Kundishora Gavaza***Management Department, Faculty of Management & Public Administration Sciences, Walter Sisulu University, Private Bag X3182, Butterworth, Eastern Cape 4960, South Africa**E-mail: bgavaza@wsu.ac.za**Received 11 August 2025; accepted 13 November 2025; published 30 December 2025*

Abstract: This study examined the relationship between Artificial Intelligence (AI) and community structures governance in scaling sustainable township businesses in South Africa. A qualitative design was used, and 30 semi-structured interviews were held with entrepreneurs in townships in the Eastern Cape. The results indicate potential for improving business with AI tools, including mobile payment systems and digital platforms; however, this is hindered by low digital literacy, inadequate infrastructure, and a distrust of technology. The community structures, such as cooperatives and ward committees, were observed to affect the acceptance and diffusion of AI in business activities. The paper found collaborations between technology innovation and participatory governance, demonstrating that hybrid strategies can enhance inclusive development. The study concludes by proposing a policy framework that unites AI and local governance to strengthen township economies and foster resilience.

Keywords: Artificial Intelligence (AI); community structures governance; township businesses; sustainable development; financial inclusion

Reference to this paper should be made as follows: Gavaza, B. K. 2025. Drivers of Artificial Intelligence adoption in township small businesses in South Africa. *Insights into Regional Development*, 7(4), 116-129. <http://doi.org/10.70132/c9883956762>

JEL Classifications: L26, O30, O33, O55

1. Introduction

South Africa's township economy is a cornerstone of informal enterprise and local livelihoods, yet it remains structurally marginalised due to apartheid-era spatial exclusions and ongoing systemic barriers (Aspen Network of Development Entrepreneurs, 2021; Gavaza et al., 2025b). Township businesses, while central to community survival, face persistent challenges, limited infrastructure, poor access to finance, low digital literacy, and exclusion from formal value chains (Muchineripi et al., 2025; Mago & Modiba, 2024).

Artificial intelligence (AI) offers transformative potential to overcome these constraints by enhancing operational efficiency, expanding market access, and promoting financial inclusion (World Bank Group, 2022; Kansrini et al., 2024; Pechová et al., 2024; Fichter & Angelov, 2024; Mohammed et al., 2025a, 2025b; Shamsuddoha et al., 2025; Čižo et al., 2025). However, adoption remains uneven due to infrastructural deficits, financial limitations, and cultural scepticism toward technology (Chanday, 2023; Nkwei et al., 2023). Crucially, the role of community governance structures, such as ward committees and cooperatives, in shaping technology acceptance and business legitimacy is underexplored (Khosa et al., 2017; Moloi et al., 2022).

This study presents a novel perspective by examining how local governance mechanisms affect the adoption of AI in township small businesses. It bridges the gap between technological innovation and informal institutional dynamics, offering insights into how AI can be effectively integrated into resource-constrained, culturally embedded entrepreneurial ecosystems. By doing so, it contributes to the design of inclusive, scalable frameworks for digital transformation in South Africa's township economy.

2. Theoretical Framework

2.1 Institutional Theory

Institutional Theory provides a valuable framework for understanding how formal and informal institutions shape the adoption of AI in township small businesses. Drawing on Scott's (2008) three institutional pillars — regulative, normative, and cultural-cognitive — the Theory explains how rules, norms, and shared beliefs influence entrepreneurial behaviour. In township economies, regulative institutions such as licensing requirements, municipal bylaws, and government support schemes determine the legitimacy and access of businesses to formal systems (Rogerson, 2019). Normative institutions, including community norms and informal practices like reciprocal trade and informal lending, guide what is socially acceptable and trusted (Khosa et al., 2017). Meanwhile, cultural-cognitive institutions reflect collective perceptions about entrepreneurship and technology, often manifesting as scepticism or optimism toward AI (Powell & DiMaggio, 2023).

The Theory is particularly relevant in South African townships, where governance is hybrid, blending formal municipal oversight with deeply rooted informal systems. While supportive policies and digital literacy initiatives may create a conducive environment for AI adoption, uptake remains limited if normative and cultural-cognitive barriers persist (Mohammed et al., 2025b). Township entrepreneurs may resist AI if it disrupts established trust networks or threatens township business models that sustain livelihoods (Shamsuddoha et al., 2025). Conversely, when AI is introduced through trusted community actors or embedded within familiar governance systems, it is more likely to be accepted, even in low-formalisation contexts. Institutional Theory thus reveals the dual role of governance as both a facilitator and inhibitor of innovation, depending on how well it aligns with local norms and beliefs (Natarajan et al., 2022). By framing AI adoption as an institutional, not merely technological, process, the Theory enables a more nuanced understanding of the visible and invisible rules that govern township economies (Magoro et al., 2023).

2.2 Sustainable Livelihoods Framework

The Sustainable Livelihoods Framework (SLF) complements Institutional Theory by offering an entrepreneurial-centred lens to assess how AI and governance interventions affect township livelihoods (Magoro et al., 2023). Developed by Chambers et al. (1991), the SLF identifies five key forms of capital: human (skills and digital literacy), social (trust networks and cooperation), financial (access to credit and AI-enabled financial tools), physical (infrastructure and connectivity), and natural (land and water resources) (Scoones, 2015; Charman et al., 2017; UNDP, 2023).

SLF facilitates analysis of how AI technologies interact with these assets to shape outcomes. For example, mobile payments may enhance financial capital, but limited digital skills or poor infrastructure can hinder adoption (World Bank Group, 2019). Social capital is particularly influential, as trust in community structures often determines technology uptake (Charman et al., 2017). The framework also underscores sustainability, advocating for interventions that strengthen rather than erode livelihood assets, especially in resource-constrained environments such as South African townships (Natarajan et al., 2022).

3. Literature Review

3.1 AI Adoption and Operational Transformation in Township Businesses

Township small businesses are increasingly recognised as potential beneficiaries of AI technologies (Shamsuddoha et al., 2025). Tools such as automated inventory systems, digital payments, and chatbots streamline administrative tasks and improve transparency (Bughin et al., 2018; Mhlanga, 2021). In South Africa, platforms like Yoco and SnapScan exemplify the practical benefits of AI in simplifying record-keeping and facilitating transactions (World Bank Group, 2019). However, adoption remains limited due to barriers such as affordability, inadequate digital literacy, and insufficient institutional support (Mhlanga, 2021). Addressing these challenges requires not only infrastructure investment but also targeted capacity-building initiatives that enhance both access and user competence. Peer-to-peer learning and community-based training have proven effective in overcoming resistance and fostering trust.

Beyond operational efficiency, AI enables township entrepreneurs to access broader markets through platforms like Takealot and Facebook Marketplace, which use algorithms to match buyers and sellers, optimise pricing, and analyse consumer behaviour (Gavaza et al., 2025b; Magoro et al., 2023). Despite this potential, high data costs, unreliable logistics, and limited trust in digital systems continue to constrain digital market participation (Charman et al., 2017). Successful local adopters often catalyse broader diffusion, underscoring the need for state-supported infrastructure and data subsidies to align innovation with local socio-economic realities (World Bank Group, 2022). AI also promotes financial inclusion by enabling secure mobile money services and AI-driven credit scoring, which reduce reliance on cash and expand access to microfinance (Mhlanga, 2021; Akinrinde et al., 2024; Gavaza et al., 2025a; Mago & Modiba, 2024). Nonetheless, adoption is hindered by infrastructural deficits, regulatory gaps, and concerns over data privacy and fraud, highlighting the need for transparent governance and inclusive digital policies (Mhlanga, 2023).

3.2 Community Structures, Governance, and Small Business Support

In township settings, formal control is usually restricted or unavailable; therefore, local governance systems play a central role. Market practices are regulated; resource distribution and the legitimacy of entrepreneurs are determined by community councils, cooperatives, and business forums (Pieterse & Coggin, 2023). These mechanisms alleviate the restrictions in formal institutions by providing dispute resolution and reducing transaction costs (Asoba & Mefi, 2020; Muchineripi et al., 2025). They also address mistrust towards state-led systems in post-apartheid South Africa by instilling authority in socially accepted structures (Wiid & Cant, 2021). Nevertheless, the governance process is inconsistent; gatekeeping and favouritism may restrict access to opportunities (Pieterse, 2019). The two-fold role highlights the concept of community governance as both a facilitator and a potential hindrance to inclusive development. Thus, township leadership demonstrates that legitimacy is not an institutional concept but a socially constructed one.

Community engagement in decision-making also lends greater weight to entrepreneurial outcomes through accountability and inclusiveness. Participatory structures, including savings groups and cooperative boards, enable different voices to shape business priorities (Moloi et al., 2022). Such inclusivity fosters resilience and trust in business networks, which in turn minimises the risks faced by township businesses (Wiid & Cant, 2021). The involvement strengthens social capital and promotes cooperation and readiness to explore AI technologies (Khosa et al., 2017). Therefore, concerted institutional changes and inclusion practices lead to equity entrenched in participation, which helps boost sustainability and innovation within the townships.

Community norms of trust, accountability, and collective responsibility also include sustainability in township businesses. Through informal institutions, a set of rules surrounds equitable prices, repayment, and ethics, which minimises uncertainty in economic transactions (Wiid & Cant, 2021). The norms, supported by localised businesses, enhance the power of resource pooling and collective bargaining (Chomane & Biljohn, 2023). Good

governance facilitates responsible behaviour, such as reinvestment in society and innovation (Magoro et al., 2023). On the other hand, poor governance permits predatory behaviour, which undermines trust and stifles innovation (Chandavy, 2023). Accountability systems based on trust are also crucial in upholding community norms and facilitating collaboration (UN Secretary General, 2025). With such systems being transparent and consistent, cohesion and flexibility are also maintained, which provides a platform on which new technologies can be effectively adopted (Mhlanga, 2021). Therefore, social capital, trust, and accountability are crucial to the stability and sustainable development of township businesses.

3.3 Artificial Intelligence Technologies and Local Governance Mechanisms

There is an increasing scepticism among researchers regarding the idea that community stakeholders need to co-design AI solutions, since only participatory development of solutions can be permissible and relevant in low-resource settings (Marchut et al., 2021). The participatory techniques are applied to surface local issues, such as payment, language, and informal trust, which generic technologies would disregard; therefore, increasing the likelihood that the implementation of such tools will be successful (Akbari et al., 2024). At the institution, co-design supplements the normative and cultural-cognitive legitimacy through technological change by integrating it into social norms and leadership structures (Scott, 2014). The difference in regulative policies and locally driven design practices facilitates the distribution of responsibilities and usability (Linders, 2012; Meijer & Bolivar, 2016). Hybrid institutional structures, founded on municipal governance, community organisations, and providers within the private sector, are more likely to sustain innovation than those created through a top-down approach (Asoba & Mefi, 2020). The promotion of the diffusion of new platforms and securing the social values is possible through the development of legitimacy provided by local actors (Ngota et al., 2025). Rather, co-design is not merely a good practice, but a kind of institutional strategy that helps coordinate the rationales of technology and the legitimacy of governance (Scott, 2014).

Studies of smart cities and local e-government reveal that institutional capacity, regulatory clarity, and inter-agency coordination characterise the increased service provision enabled by digital tools, as well as economic inclusion (Anthopoulos, 2017). Hypothetically, this type of integration is symptomatic of institutional isomorphism and learning at the policy level, where urban centres of the same size shift to digital when they observe that the model is working and when the policy incentives align (Powell & DiMaggio, 2023). Therefore, the UNDP (2022) warns that technology can be more flexible in relation to institutional readiness than in accordance with what is referred to as islands of innovation, which do not expand beyond pilot circumstances. Thus, implementing AI in routine administrative tasks, such as permits, market regulation, and payments, can still be achieved without compromising the potential for community control (Meijer & Bolívar, 2016). Another important factor is regulation, where data management, flexibility, and privacy regulations determine how citizens and companies accept services mediated by AI (Petersen et al., 2018). This implies that the intentional institutional design is required to ensure integration and mitigate the threat of non-inclusion (Anthopoulos, 2017; Scott, 2014). In this way, the literature considers the integration process through the prism of coordination and the reformation of state governance.

The case of mobile money in East Africa is frequently cited in the literature as an example of how collaboration between technological innovation and local institutions can facilitate some broad-based benefits. It is an example of how regulatory flexibility, provider networks, and community trust structures worked together to facilitate fast adoption and economic change. It is noted that local intermediaries provided human touchpoints, rules were adjusted to accommodate emerging practices, and product design was iterative, responding to the actual needs of users (Edwards et al., 2016). Scholars argue that these processes, although not straightforwardly applicable to AI, offer significant insights for AI in South African townships, particularly regarding the co-evolution of technology and institutions (World Bank Group, 2022). Although AI presents varying levels of technical challenges, the idea of balancing governance, trust, and innovation remains at the centre stage (Mohammed et al., 2025b; Poruban, 2023).

3.4 Barriers and Enablers to AI Integration in the Township Economy

The literature has consistently highlighted that digital literacy and training deficits are key impediments to the meaningful implementation of AI in township businesses (Akinrinde et al., 2024; Gavaza et al., 2025b). Simply being able to access devices or platforms does not mean that they can be used efficiently, as entrepreneurs often lack the expertise to incorporate digital tools into their business operations effectively. South African research indicates that standardised training models often fail because they do not account for local languages, pedagogies, and livelihood contexts. The Sustainable Livelihoods approach emphasises that the development of human capital should be integrated into social learning networks to become a long-term, sustainable process (Mohammed et al., 2025b). Institutional Theory suggests that low digital literacy is often accompanied by normative and cognitive barriers, as mistrust within communities hinders the exploration of new systems (Akinrinde et al., 2024). There are policy frameworks that suggest blended capacity-building models, including formal training alongside mentorship, peer learning, and community-led models (Marchut et al., 2021). Without such combined strategies, more sophisticated AI tools will have exclusionary effects, serving to strengthen, rather than eliminate, structural inequities.

Coupled with training, a lack of infrastructure and connectivity is extensively reported as a significant impediment to adopting AI in township businesses. In the view of SLF, these deficits constitute vulnerabilities in physical capital that undermine the rate of return on human and financial capital investments (Matheus et al., 2021). Targeted interventions, including subsidised data, electrification, and community Wi-Fi projects, are often essential to policy analyses aimed at addressing inequalities in access (Mhlanga, 2021). Remata and Lomibao (2021) caution that the inequalities that unequal infrastructure upgrades may reinforce will benefit those with greater means, leaving disadvantaged groups behind.

The cross-cutting issues of trust, privacy, and data governance also arise as other critical factors that have a powerful impact on AI implementation among marginalised groups. Studies indicate that the fear of fraud, abuse of personal information, and a lack of a redress system discourage business individuals from adopting AI technology (Muchineripi et al., 2025). When AI is involved, transparency and accountability of algorithms, as well as procedural justice, are necessary to establish legitimacy (Matheus et al., 2021; Mkwela et al., 2024).

4. Methodology

This study employed a qualitative research design to investigate the intersection of AI and local governance in scaling sustainable township businesses in South Africa. The qualitative methods were selected because they offer the opportunity to understand the intricate social processes that cannot be described in numbers (Creswell & Creswell, 2018). Context-specific institutional, cultural, and technological dynamics shape township economies, so qualitative inquiry is especially appropriate (Denzin & Lincoln, 2018). The methodology enabled the researcher to capture subtle perceptions, lived experiences, and unofficial practices of businesspersons and community players. Moreover, the qualitative research helped to investigate interactions between AI usage, institutional frameworks, and the results of livelihoods (Silverman, 2017). The research process is also flexible in exploring participants' responses, allowing for greater clarity and a deeper understanding of sensitive issues such as trust, technology use, and institutional legitimacy. Holistically, a qualitative design ensured that the results are contextual and reflect the reality of the participants, rather than abstract assumptions (Creswell & Creswell, 2018; Gill, & Baillie, 2018).

Semi-structured interviews were used to gather the data, during which 30 participants were interviewed. The sampling approaches employed include purposive and snowball sampling strategies, designed to fully capture the diversity and a broad range of perspectives relevant to the study (Etikan, 2016). Interviews ranged between 20 and 30 minutes each, making the answers more comfortable, authentic, and accurate. The systematisation of patterns and themes was applied through the use of thematic analysis on the dataset (Braun & Clarke, 2006). Deductive

coding guided by Theory and inductive knowledge that resulted from the lived experience of participants was performed (Nowell et al., 2017).

The study was conducted at a township in the Eastern Cape, South Africa. Thus, future studies should be undertaken in geographical areas other than the Eastern Cape province. This study adhered to ethical considerations by ensuring that all participants provided informed consent, which was obtained through a thorough briefing on the study's purpose, scope, and voluntary nature of their involvement. The issue of morality was highly upheld through the principles of informed consent, confidentiality, and the use of pseudonyms, ensuring that the participants' identities were not disclosed. The study ensured participants' privacy by excluding personal identifiers from the data and guaranteeing the anonymity and confidentiality of the participants. The information gathered was stored securely and used only for academic purposes. Cultural and community sensitivity was upheld throughout the research process, and all attempts were made to minimise the harm or discomfort to the subjects.

5. Results

This section presents the study's findings, organised thematically. Themes include operational efficiency, market access, financial inclusion, governance, and barriers to the adoption of AI.

5.1 The Potential of AI in Enhancing Operational Efficiency, Market Access, and Financial Inclusion

Township entrepreneurs were aware of the opportunities offered by AI-enabled tools to enhance efficiency and customer engagement; however, their understanding of these applications was limited. Entrepreneurs often raised the possibility of platforms assisting with record-keeping, stock management, and customer access. As an example, Mildred said: *"Assuming that there was an app to monitor my stock, I would save time and not lose sales when the stock is over. Sometimes, I only realise I am out of stock when a customer asks, and it is too late. An app would help me keep track and alert me before I run out"*.

Others emphasised the importance of expanding markets online, as provided in Thabo's excerpts: *"I have heard of people who sell on Facebook Marketplace, and they get customers miles away; I would have done the same thing. In my opinion, it is possible to do the same thing. I do not know how to start, but I believe it can help me reach more people than just those who walk past my shop"*.

Nevertheless, the concept of financial inclusion, utilising AI tools such as mobile banking, was not fully leveraged. One of the participants replied that they do not like e-wallets because they are afraid of losing their money, but it can help them receive payments faster. This potential was reflected in the comments of stakeholders, who noted that AI can be utilised to conduct risk assessments of microloans and digital payments. This implies that AI has the potential for transformation when presented in simple and accessible formats. The institutional and community voices ensured that AI had the potential to open financial and market opportunities, but cautioned about the dangers of being outflanked. This is reflected in Thimna's view: *"AI will assist township traders reach larger markets; however, they will be left behind once more without skills. If we do not learn how to use it, others will benefit while we stay behind. It is like giving someone a car, but they do not know how to drive"*. A similar view is also shared by Justice, whose extracts are shared: *"We want AI to assist township small businesses, not turn them more reliant on the outsiders. If we depend too much on people who build the tools, we cannot grow on our own. We need to be taught how to use it ourselves"*.

It was noted that efficiency and increased access would only become a reality when the township entrepreneurs are confident in the AI tools and can apply them autonomously. Therefore, township entrepreneurs need to have speed and minimise human error. This was expressed by Sima, who mentioned: *"Since I sometimes lose track of my expenses, an app can remind me. I forget what I spent money on, especially when it is busy. I would be more*

organised if I had something that records it automatically". Nevertheless, the overall mood was one of reserved optimism, and the loopholes in preparedness threatened to undermine benefits. AI was thus perceived as a possible facilitator of inclusion, but only to the extent that it is based on local realities.

5.2 The role of community governance structures in supporting sustainable business practices

Township players stressed on several occasions that they were instrumental in closing the gap between policies and township entrepreneurs. They regarded themselves as reliable mediators who could help develop confidence in new technologies, such as AI tools. As one of the members of the ward committee, Gabriel stated, *"Explaining to the people how AI works would make them believe in us more than outsiders. People here trust those they know. If I, as someone they see every day, tell them how this technology can help their businesses, they will be more open to trying it"*.

Trust was found to be core to the adoption, as most township entrepreneurs were more inclined to interpersonal reassurance. For example, Henrietta expressed her view: *"People will listen to leaders they are familiar with; when these leaders say that this app is safe, then they will use it. It is not just about the app being good but about who tells them it is good. If someone from the community says it works, they will believe it more than if a stranger does"*. This emphasised the social embeddedness of the business decisions in a township setting. Actors of governance also emphasised the fact that they could ensure the advantages of AI were distributed equally among communities. This perspective suggests that adopting AI is both technically challenging and has significant implications. Township entrepreneurs also recognised that the assistance of the community leaders would help make AI-based tools acceptable, as expressed by Martin in the excerpts: *"Where our councillor brings training, many people will attend, but where outsiders attend by themselves, we do not. We feel more comfortable when someone we know is involved. It shows that the program is meant for us and not just dropped here without understanding our needs"*.

This implies that the community organisations assist in mobilising trust and engagement in programs. This sentiment was reflected in the perspective of stakeholders who had noted governance actors as cultural translators capable of orienting AI solutions to local practice. Nonetheless, other players in the township were also concerned with being marginalised in the implementation. This was expressed by Amos, who put forward: *"Sometimes the government undertakes projects without consulting us, and they fail. They bring things that do not fit our reality. If they talked to us first, we could guide them to what works here"*.

This dynamic suggests that long-term inclusion in governance must be adopted. Hence, community governance systems will continue to underpin sustainable and community-based business practices that combine AI.

5.3 Integration of AI technologies with local governance mechanisms

The township entrepreneurs emphasised that adopting AI must be organised in line with the local governance process and not imposed on them. Equally, the township leaders demanded participatory planning when introducing AI. This is expressed: *"I should combine AI with township planning; otherwise, it will be isolated. Bringing AI without linking it to what we already do in our community will not make sense to people. It must be part of our development plans"* (Themba). *"When we use our local meetings, people will see it as a part of their development. If it comes through our own platforms, like ward meetings or imbizos, then people will trust it more"* (Lindiwe). Entrepreneurs also wanted to be on par with one another, as depicted by Anele: *"I would rather learn in workshops, not only in my community hall. Sometimes those halls are used for political meetings, and I prefer neutral spaces where I can focus and ask questions freely"*.

Such revelations imply that AI can be normalised as an aspect of normal development, rather than an alien input, by linking it to governance systems. Another aspect that the institutional actors regarded as valuable was the integration of AI in municipalities and collaborative efforts. Among the participants, Justice stated: *"We can use*

AI to connect township businesses with city services such as permits and garbage collection. Suppose AI can help us track when the garbage truck is coming or when our permits are due. In that case, it will make our lives easier". This was buttressed by the voices on the ground, which associated AI with transparency, as noted by Gift: *"When AI can assist us in overseeing our budgets, we will trust the government more. If we can see how money is spent and where it goes, then we will feel part of the process"*.

Business owners were willing to utilise technologies to communicate with local regulators, particularly regarding compliance issues. This was expressed: *"When I can renew my trading permit on my phone, it would save me time. I will not have to close my shop or travel to town just to stand in a queue"*. Administrative convenience and participatory legitimacy were thus reflected in integration with governance. Such alignment is essential in ensuring that AI is relevant in township businesses.

5.4 Barriers and enablers of AI adoption among township entrepreneurs

The study revealed a nuanced mix of barriers and enablers affecting AI adoption among township entrepreneurs in South Africa. Four key impediments emerged: AI illiteracy, poor infrastructure, high data costs, and mistrust of AI systems. Entrepreneurs often lacked confidence in using AI tools beyond basic apps, as Varaidzo noted, *"I know how to use WhatsApp, but I do not know how to use apps to sell. I see others doing it, but I do not know where to start. It feels like a world of technology I am not part of, and I do not know who to ask for help"*. This highlights a gap between everyday smartphone use and the skills needed for AI-driven commerce. Infrastructure issues, particularly unreliable network connectivity, disrupted transactions and eroded trust. Lindiwe shared: *"Sometimes the network just stops halfway through a transaction. You are left wondering if the money went through or not. It is frustrating because you cannot run a business when you are constantly unsure if your customer paid or received your order"*.

High data costs limit digital engagement. Regererai explained: *"Data is too expensive, and I only use my phone when necessary. I have to choose between buying data or buying stock for my business. Most of the time, I just wait until I really need to go online"*.

For small businesses, this economic barrier restricts access to online platforms and AI tools. Mistrust of online systems was widespread, with fears of scams discouraging the use of digital payments and AI. This psychological barrier, often rooted in experience narratives, undermines confidence in AI. Despite these challenges, several enabling factors were identified: youth engagement, community-based education, and institutional collaboration. Youth were seen as AI intermediaries. Rutendo remarked, *"When she is not at home, I do not even know how to post on Facebook Marketplace because her son does it for her. He knows all the tricks — how to take good pictures, write descriptions, and respond quickly. Without him, I would not be able to sell online"*.

These generational dynamic positions younger individuals as potential ambassadors for AI. Community workshops were viewed as effective for building AI literacy. Kuzivakwashe stated, *"When we train at the community level, more people get involved. It is easier to learn when you see others like you doing it. It gives you confidence, and you do not feel like you are the only one struggling"*.

Institutional stakeholders emphasised the need for affordable data and partnerships with network providers. Wilfred stressed: *"Network companies should sit down with us. Without cheap data, all our training will be in vain. We can teach people how to use AI, but it is pointless if they cannot afford to stay connected"*. Together, these enablers suggest that with targeted support and inclusive interventions, township businesses can overcome barriers and begin to harness AI for sustainable growth.

5.5 A Policy Framework for AI Innovation and Participatory Governance

Participants emphasised that the successful integration of AI into township businesses must be underpinned by inclusive policy frameworks that reflect the socio-economic realities of these communities. Policymakers acknowledged existing disconnects in policy formulation, with Varaidzo noting: *“Policies are often drafted in offices without consulting those directly affected. This results in strategies that overlook township entrepreneurs’ practical challenges”*. Entrepreneurs expressed a strong preference for actionable support over abstract discussions. As one participant stated: *“We want less talking, more doing things like affordable data and hands-on training. Discussions alone will not help us grow our businesses”* (Anna). They also cautioned against top-down approaches, emphasising the importance of community structures engagement: *“Projects fail when the government does not talk to us. If we are not part of the conversation, the solutions will not work”* (Gift).

These perspectives underscore the need for participatory policymaking that is responsive and grounded in context. Stakeholders proposed policy frameworks that integrate AI innovation with local governance mechanisms. One policy actor suggested that financial institutions and fintech companies should simplify their platforms to accommodate entrepreneurs with limited AI literacy: *“Banks need to make their systems more accessible. Township players are not always tech-savvy, and complex platforms exclude them from AI opportunities”* (Amos).

Township actors also highlighted the role of AI in enhancing transparency and accountability. One participant remarked: *“If AI can help us monitor how budgets are spent, people will trust it more. It should not only be about business but also help us hold institutions accountable”* (Kuzivakwashe).

Inclusivity remained a central concern. Entrepreneurs stressed that AI should benefit all businesses, not just large enterprises. The insights collectively suggest the need for a policy framework that combines AI with community governance to promote inclusive, transparent, and resilient township economies.

6. Discussion

The study results indicate that AI can become an efficient way of operating in the township economy, expanding markets, and increasing financial access. However, its uptake is subject to institutional and socio-cultural moderation. This can be explained using the Institutional Theory (Scott, 2014), which demonstrates the interaction between regulative, normative, and cultural-cognitive factors. Township entrepreneurs raised concerns about mistrust and low AI literacy, which are related to cultural and cognitive barriers. In contrast, stakeholders raised concerns with policy design gaps, an example of regulative constraints. This is consistent with Rogerson (2019), who discovered that township economies are integrated within an intricate institutional setting that determines entrepreneurship behaviour. Simultaneously, the efficiency of AI and its ability to change access align with the World Bank's (2021) focus on digital transformation as a source of financial inclusion in new markets. The results suggest that township entrepreneurs may not fully benefit from the advantages of AI unless the issue of institutional misalignment is addressed.

The normative aspect of institutional Theory was that local governance was a key facilitator of legitimacy and trust in getting into gadgets. Businessmen often said they could only trust AI tools when recommended by their local institutions. This is similar to Khosa et al (2017), who believe that social networks and informal practices are key to township entrepreneurship. This is supported by SLF, which highlights the impact of social capital on livelihood outcomes. Township actors become intermediaries that may bring technological solutions to culturally relevant practices.

Nevertheless, the omission of these actors during the policy development process can lead to a degradation of adoption (Mhlanga, 2021). Thus, cautioning against the application of technocratic strategies that overlook the

role of local governance. Hence, the results highlight the need to integrate AI into participatory governance models to achieve sustainable development of townships.

Combining AI and the local governance system brings up potential and conflict. On the one hand, there was a potential in connecting AI with municipal services, trading permits, and market regulation, which can be related to the processes of institutional adaptation, as explained by Powell and DiMaggio (2023). Conversely, the participants cautioned that without inclusionary mechanisms, inequality would only be strengthened, a point echoed by Wiid & Cant (2021), who noted that township economies remained susceptible to systemic disregard. The SLF is helpful in this case because integration enhances financial and human capital through the use of digital finance and training. However, the inadequacy of infrastructure restricts the use of physical capital. This dichotomy is indicative of the broader discussions on AI economies in Africa, where technology can both facilitate and divide, depending on the institutional setup (UNDP, 2023).

Furthermore, the identified barriers and enablers, including AI literacy, affordability, and trust, suggest that the implementation of AI depends on both institutional preparedness and household-based capabilities. The grief of the entrepreneurs concerning the expenses of the data and the fear of being scammed are indicators of limitations in financial and social capital. This aligns with the research by Moloi et al. (2022), which highlights infrastructure and a lack of trust as fundamental obstacles to the evolution of townships. Simultaneously, initiatives such as youth engagement and community training demonstrate a way to reinforce human and social capital, which aligns with the framework elaborated by Scoones (2015). These results suggest the need for a participatory policy regime that connects institutional frameworks to livelihood assets. In this way, the findings add to the discussions on inclusive development, demonstrating that AI can only become transformative when connected to governance and livelihood realities.

7. Conclusions and Recommendations

This paper explored the nexus between AI and township governance in creating sustainable township economies in South Africa. The results demonstrate that AI holds immense promise for enhancing operational efficiency, expanding market reach, and promoting financial inclusion. Nevertheless, these factors are limited by institutional obstacles. The researchers also found that local governance players have a significant role in legitimising the adoption of AI technology and participation mobilisation. Theoretically, the results confirm institutional Theory by demonstrating the interaction of the regulative, normative, and cultural-cognitive dimensions to determine technology adoption in township economies. Similarly, the SLF highlighted how AI impacts various types of capital, including financial inclusion through digital platforms and the empowerment of social capital through collective learning. In practice, the research suggests an AI policy that combines participatory governance with the integration of AI technologies. This form of integration is crucial in ensuring that the integration of AI helps townships become more inclusive and resilient. The research, therefore, contributes to the body of literature on AI transformation in marginalised economies and provides policy implications of sustainable development.

In response to the findings, several recommendations are made to guarantee the effective implementation of AI in township economies. Policymakers should focus on capacity building through the development of AI literacy programs tailored to the township context, based on the specific needs of the community and utilising local languages and community-based learning methods. In addition, infrastructural investment is also essential, and the government, with the help of partners in the private sector, should develop affordable data, stable electricity, and localised internet for townships. Furthermore, trust-building initiatives such as open-AI platforms, fraud prevention tools, and co-design initiatives that engage the communities in developing the system should be introduced. Additionally, there should be active policies that acknowledge and embrace the involvement of township governance players as stakeholders in introducing AI, which involves ensuring that these stakeholders are consulted and capacitated. More inclusive financing schemes, such as AI-based microcredit systems, must be

encouraged to enable even the most marginalised entrepreneurs to access them. The institutionalisation of hybrid governance systems is necessary to blend municipal control with communal legitimacy, thereby enhancing accountability and trust. The study further recommends establishing a system for constant monitoring and evaluation to track the adoption of AI and identify gaps as needed.

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GOVERNANCE AND ENTREPRENEURSHIP: A CROSS-NATIONAL STUDY OF BUSINESS START-UP INTENTIONS

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Received 20 August 2025; accepted 13 November 2025; published 30 December 2025

Abstract. The research explores how governance quality affects business start-up intentions across 43 countries. Drawing on institutional theory, it examines how governance dimensions, compared to national income and geographic region, influence entrepreneurial intentions. A hierarchical regression analysis was conducted on a sample of 43 countries using secondary data from the Global Entrepreneurship Monitor (GEM) and the World Bank's Worldwide Governance Indicators (WGI). The regression analysis revealed that national income and regions significantly influence start-ups ($R^2=0.697$), and governance dimensions contribute significantly to explaining start-ups ($\Delta R^2=0.151$). Among six governance dimensions (regulatory quality, government effectiveness, political stability, control of corruption, rule of law, and voice and accountability) tested, government effectiveness and regulatory quality were the most potent predictors of start-ups. These results raise questions about traditional assumptions about income-driven entrepreneurship and highlight specific institutional mechanisms that policymakers may leverage to encourage entrepreneurship. The results contribute to a more nuanced understanding of governance and entrepreneurial dynamics in a variety of economic contexts.

Keywords: entrepreneurial intentions; governance quality; institutional theory; hierarchical regression; national income; regional differences; start-up activity

Reference to this paper should be made as follows: Ndofirepi, T., N., Steyn, R. 2025. Governance and entrepreneurship: a cross-national study of business start-up intentions. *Insights into Regional Development*, 7(4), 130-144. <http://doi.org/10.70132/f9598282679>

JEL Classifications: JEL, M13

1. Introduction

Productive entrepreneurship contributes significantly to positive economic outcomes such as innovation, job creation, poverty reduction and economic development (Pittaki, 2018; Si et al., 2019; Urbano et al., 2024; Mirvis, 2024). However, the prevalence of entrepreneurial activity varies markedly within and between countries (Nikolaev et al., 2018; Sayed & Abedelrahim, 2024a). Still, it is not only geography that influences entrepreneurial activity; the unique circumstances within a country also have an impact (Demirdag & Eraydin, 2022). While many of these disparities are driven by marked spatial differences, institutional frameworks also affect entrepreneurial activity (Su et al., 2017; Garmroudesfandari et al., 2025). Recent research focusing on institutional frameworks highlights the quality of governance, a dimension of the institutional environment, as an important determinant of entrepreneurial intentions and behavior (Méndez-Picazo et al., 2012; Mahmalat & Sumpf, 2020; Abegaz et al., 2023; Kromidha et al., 2024; Ogbuabor et al., 2024).

Clarifying how different aspects of governance influence entrepreneurial intentions and actions might serve to enrich institutional and entrepreneurship theories. Insights into governance dimensions, such as regulatory quality, rule of law and government effectiveness, are particularly valuable for understanding how institutions shape entrepreneurial behavior (North, 1990; Bruton et al., 2010). Identifying which governance factors have the strongest influence on entrepreneurship is crucial for policymakers seeking to create environments that foster

entrepreneurial activity. This need is especially pressing in contexts where governance deficiencies may suppress entrepreneurial aspirations and limit broader economic potential (Acs et al., 2015).

Prior studies have established preliminary connections between governance environments and entrepreneurial activity. For instance, Munemo (2021) demonstrates how unfavourable regulations constrain export entrepreneurship, while Méndez-Picazo et al. (2012) underscore the positive nexus between governance, entrepreneurship, and economic growth. Similarly, Goltz et al. (2020) found that the combination of women's political empowerment and a robust rule of law in a country enhances women's participation in entrepreneurship. Nonetheless, much of the extant literature has either examined governance dimensions in isolation (Chen & Cheng, 2019; Angulo-Guerrero et al., 2024) or aggregated them into broad governance indices without unpacking the differential effects of specific dimensions (Méndez-Picazo et al., 2012). In addition, much of the existing literature remains geographically skewed towards high-income countries, such as those within the Organisation for Economic Co-operation and Development, with relatively limited systematic investigations across broader income contexts. Moreover, prior studies have often prioritised observable entrepreneurial actions such as new firm formation/venture creation (Dove, 2017; Goltz et al., 2020) over the antecedent stage of entrepreneurial intention, which is a precursor to action. Against this background, several gaps remain despite the important advances already made in the field.

This study addresses these gaps by (i) testing/affirming the differential effects of the geographical area of a country and country income on entrepreneurial aspirations, (ii) linking governance quality and six dimensions thereof to individual entrepreneurial intentions and (iii) demonstrating the contribution of governance to entrepreneurial activity, controlling for regional and national income levels, to isolate its distinct influence. The study is also (iv) broad in scope, utilising cross-national samples drawn from the Global Entrepreneurship Monitor (2022) survey data, matched with macro-level governance indicators from the World Bank.

2. Literature review

The review discusses institutional theory and its impact on entrepreneurial activity. It then examines the study's three main variables, i.e., geographical region, national income and governance, and their roles in shaping entrepreneurial activity. These prior works provide the foundation upon which this research is built.

Institutional theory and entrepreneurial activity

Institutional theory, proposed by North (1990), explains how institutions are crucial determinants of economic performance and change. In other words, it explains how formal and informal institutions shape economic issues such as entrepreneurial opportunities and challenges. The theory underscores entrepreneurial success factors beyond organisational resources. Bruton et al. (2010) characterise institutions as formal rules, agreements, shared interaction sequences and assumptions. Many studies confirm the influence of formal institutions, such as government regulations and policies, financial institutions, and national culture, on entrepreneurial activities (Gimenez-Jimenez et al., 2020; Omri, 2020; Brzozowski et al., 2021; Menshikov et al., 2024). Some studies (e.g., Williams & Kosta, 2019; Nguyen, 2021; Shava & Chinyamurindi, 2022) underscore the critical role of normative and cultural factors, as informal institutions, in shaping expectations and defining 'acceptable' actions for organisations and individuals.

Institutional theory encompasses a range of dimensions and applications. Bruton et al. (2010) identify three major research streams in the field: how macro-level governance enables or hinders entrepreneurship; how entrepreneurs gain social acceptance in environments lacking formal structures; and how actors reshape or modernise institutions. These themes highlight the intricate and pervasive connection between institutional theory and entrepreneurship. Institutional theory provides a foundation for this study by explaining how formal governance structures systematically shape entrepreneurial intentions. As entrepreneurship is embedded in broader socio-

political and economic systems (North, 1990), this perspective sheds light on how institutional elements influence risk perception, resource availability, and opportunity recognition, ultimately determining the likelihood of entrepreneurial engagement.

Regions and entrepreneurship

Fawn (2009) describes a region as a geographically defined area that is examined for its specific characteristics. There are, however, definitional inconsistencies in the literature regarding the concept of region. The GLOBE (Global Leadership and Organizational Behavior Effectiveness) study defines 10 regions based on cultural and leadership similarities across nations (House et al., 2004), while the World Bank divides countries into six primary geographical regions more strictly based on geographic and economic factors. The regions include East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, South Asia, and Sub-Saharan Africa (World Bank, 2024), which will be used in this study.

Regional classification facilitates the comparisons, some of which demonstrate that entrepreneurial activity varies across regions due to a complex interplay of regional institutional, cultural, economic and social factors (Si et al., 2019; Demirdag & Eraydin, 2022). Fernández-Serrano and Liñán (2014) found that cultural values, economic development, education systems and institutional support vary by region and influence individuals' entrepreneurial propensity. More specifically, the Global Entrepreneurship Monitor (GEM, 2022) reports that Sub-Saharan Africa has some of the highest rates of entrepreneurial activity, often driven by necessity rather than opportunity. The same report highlights that North America and Western Europe have more opportunity-driven entrepreneurship because of stronger innovation ecosystems and institutions. The Global Entrepreneurship Monitor - GEM (2022) notes that opportunity-driven entrepreneurship thrives in dynamic economies with expanding markets, substantial resources and robust innovation ecosystems. This demonstrates that regional dynamics significantly influence the motivations and patterns of entrepreneurial activity across the globe.

National incomes and entrepreneurship

National incomes, entrepreneurial aspirations, and activities have been extensively studied in various contexts to understand the processes of economic development. Results from such studies suggest that income affects entrepreneurship in distinct ways, depending on the level of analysis (individual versus macro-level income) and the motivation for entrepreneurship (necessity compared to opportunity-driven) (Doran et al., 2018; Dvouletý & Orel, 2019; Mostaghel et al., 2022; Zarkua et al., 2025).

Individual and household research yields two different perspectives regarding the income level-entrepreneurship nexus. Reduced personal or household income is associated with heightened necessity-driven entrepreneurial intentions and activities. Individuals lacking stable wage employment or job opportunities often resort to self-employment for survival or income generation, driven by various factors. However, extremely low-income levels can impede opportunity-driven entrepreneurship because of insufficient start-up capital, the absence of financial safety nets, a lack of relevant networks, and inadequate education. In contrast, increased individual income or wealth correlates with opportunity-driven entrepreneurial intentions and the potential for business growth in start-ups (Evans & Jovanovic, 1989). This is linked to the presence of personal savings as initial capital, a financial safety net, and improved access to formal financing and influential networks.

The literature focusing on a macro-level analysis of income (i.e., such as GDP per capita) reveals varying predominant forms of entrepreneurship in countries at different stages of development. Generally, lower-income economies exhibit elevated levels of entrepreneurial activity. However, this activity is predominantly necessity-driven and frequently comprises small, low-growth informal sector enterprises (GEM, 2022). With an increase in national income, a decline in necessity-driven entrepreneurship and a rise in opportunity-driven entrepreneurship are observed (Wennekers et al., 2007). High-income economies exhibit lower rates of entrepreneurial activity

compared to numerous developing economies; however, their enterprises tend to be more innovative, growth-oriented and effective in job creation (GEM, 2022).

Another research stream challenges the assumption of a linear relationship between income and entrepreneurship, arguing instead for a more complex and non-linear relationship. Even necessity-driven entrepreneurship at very low-income levels is hindered by systemic barriers, including a lack of capital, education, and market access. This creates a paradoxical situation where people are pushed into entrepreneurship but are structurally excluded from participating meaningfully due to deep-seated poverty. Consequently, scholars propose a non-linear, potentially U-shaped or inverted U-shaped relationship between national income and total entrepreneurial activity rates, reflecting the interaction of necessity and opportunity dynamics.

Existing evidence indicates that while higher income levels generally foster opportunity entrepreneurship, the broader relationship remains highly context-dependent. More context-specific and intersectional analyses are needed, particularly in low- and middle-income countries where informal entrepreneurship is prevalent and institutional voids may distort traditional theoretical expectations.

Governance quality and entrepreneurship

In national and cross-national research, a precise definition of governance has proved elusive, with some scholars using it in overlapping ways with related concepts such as "business environment" and "ecosystem". While business environments broadly include regulatory frameworks, social and macro-economic conditions, among other factors, ecosystems extend this view to emphasise interdependence between actors that together enable or constrain entrepreneurial activity. Governance, in turn, relates to institutional quality and processes by which authority is exercised, laws are enforced, and accountability is ensured. Governance thus impacts both the business environment and the functionality of an entrepreneurial ecosystem.

For Kaufmann et al. (2010), the term subsumes qualities such as the rule of law, regulatory effectiveness, corruption control, political stability and government accountability. These indicators provide a standardised metric for cross-national comparisons, but they are perception-based and therefore potentially biased. Furthermore, the aggregate nature of the WGI may obscure subtle differences. Nonetheless, they remain a popular and practical operationalisation of this complex concept. The quality of governance can either enable or constrain entrepreneurial behaviour, thus potentially influencing the decision to start a business or its ability to survive.

Scholars have, over the years, expanded this line of research by demonstrating how governance quality affects various entrepreneurial outcomes in diverse settings. For instance, Ullah et al. (2024) demonstrate strong longitudinal links between governance and entrepreneurship-driven growth. In contrast, Gaies et al. (2025) show that institutional quality has a disproportionate influence on opportunity entrepreneurship in OECD countries. Similarly, Gawel and Toikko (2023) identify governance and welfare generosity as institutional predictors of entrepreneurship in Europe. In developing countries, governance interacts with political processes and ecosystem structures to shape entrepreneurial opportunities (Kromidha et al., 2024; Abdulai & Hussain, 2024). Furthermore, new evidence suggests that technology can mediate the governance-entrepreneurship link, particularly in instances of corruption and weak democratic institutions (Avnimelech & Zelekha, 2025).

Stronger governance contributes to a stable institutional environment due to the resultant lower transaction costs, increased trust, and protection guarantees for entrepreneurial endeavours (North, 1990). Thus, empirical evidence suggests that opportunity-driven entrepreneurship is more prevalent in countries with strong governance institutions (Phillips & Tracey, 2007; Nikolaev et al., 2018). In contrast, weak governance entrenches higher barriers to entry, widespread informality and limited access to resources (Omri, 2020). Such an environment has the effect of suppressing entrepreneurial intentions or shifting them towards necessity-based or informal

entrepreneurship, as was observed by Pittaki (2018) in the study of the entrepreneurship-institutions linkage in post-Second World War Greece.

The preceding analysis suggests a scholarly consensus that government effectiveness and regulatory quality play a crucial role in determining the ease and cost of starting and operating a business. The studies suggest that regions with efficient bureaucracies and streamlined regulations have a lower barrier to entry for new firms, which promotes entrepreneurial activity.

Similarly, perceived ease of doing business, which is strongly related to regulatory quality, has been shown to positively influence entrepreneurial intentions, as individuals are more likely to pursue a venture if they believe the administrative burden is manageable. Political stability is also crucial, as instability increases perceived risks (Kromidha et al., 2024; Sayed & Abedelrahim, 2024a, 2024b). Other studies highlight the deterrent effects of corruption and bureaucracy on firm creation, as well as their impact on distorting market competition and innovation dynamics (Andrews et al., 2019; Chen & Cheng, 2019; Bawole & Langnel, 2021).

However, the relationship between governance and other contextual factors exhibits mixed effects. For instance, the relative importance of different governance dimensions may vary depending on the specific stage of economic development or the prevailing institutional environment (Liu et al., 2018; Ogbuabor et al., 2024). Also, some studies suggest that informal governance elements (like social trust or informal networks) can interact with or partially substitute for formal governance, particularly in contexts where formal institutions are weak (Rottig, 2016; Gërkhani & Cichocki, 2023). This highlights the need for a nuanced understanding of governance that includes both formal and informal institutional dimensions.

Notwithstanding the insights from the literature, some knowledge gaps remain. Firstly, some scholars still treat governance as a single monolithic variable, which clouds the differential effects of its constituent elements on the critical antecedent stage of entrepreneurial intention. Furthermore, most of these studies focus on business creation, leaving the nuanced effects on formative intentions unexplored. Secondly, the extent to which these governance effects persist after controlling for confounding influences such as national income and, more importantly, geographical region, a proxy for deep-seated cultural and historical institutional differences, has received insufficient attention. As a result, it is unclear whether governance quality has a distinct impact on start-up intentions at various levels of economic development and in different regions. Addressing these gaps requires a comparative, cross-national investigation that disentangles the effects of governance dimensions while controlling for country income and regional variation. This study responds to that need.

3. Research design and methodology

Target population

This quantitative study uses secondary data from the World Bank (2020), specifically the governance indicators (Kaufmann et al., 2011), and data from the 2020 GEM Adult Population Survey, aggregated to the country level. The World Bank data provides information on governance quality and national income levels, while the GEM data provides information on business start-up intentions.

The target population comprised all countries. Countries were included based on data availability across all selected variables (i.e., governance indicators, start-up intentions and income/region classifications). In total, 43 countries were included. This approach of selecting all available cases is well-established in cross-national institutional research and is considered acceptable given the data constraints typical of such studies. Regarding respondent profiles, the study used aggregated country-level data; thus, individual respondent characteristics were not analysed. Countries were selected based on data availability for all key variables (i.e., governance indicators, start-up intentions, income/region classifications). The sample comprises 43 countries classified by the World

Bank into low-, middle- and high-income groups, and covers four geographic regions according to the Global Entrepreneurship Monitor, namely, the Middle East and Africa, Central and East Asia, Latin America and the Caribbean, Europe and North America.

Measures

GEM (Global Entrepreneurship Monitor) measures entrepreneurial or business start-up intentions using the variable coded Futsup20, which serves as the dependent variable in this study. It represents the percentage of adults planning to start a business within the next three years. This GEM measure is widely used in entrepreneurship research and provides a standardised metric that is comparable across nations (Bosma & Kelley, 2019).

World Bank's Worldwide Governance Indicators (WGI) (Kaufmann et al., 2011) provided the governance measures used as independent variables in this study. These included regulatory quality, government effectiveness, political stability, control of corruption, rule of law, and voice and accountability. The WGI indicators are widely regarded as the gold standard for objective governance metrics, having been empirically validated and extensively cited in governance and development research (Arndt & Oman, 2006; Langbein & Knack, 2010; Thomas, 2010).

National income and region were measured using World Bank income groups and geographic regions. World Bank income groups are low, middle and high. Regions were categorised broadly as per Global Entrepreneurship Monitor standards, i.e., Africa and the Middle East, Asia and Oceania, Europe, and North and South America. This approach was preferred as it allowed for the identification of global entrepreneurial trends without complicating comparisons.

Ethical considerations

This desk research involved no human participants, utilising publicly available secondary data. However, ethical clearance was granted by the authors' institution of affiliation, with GSBL CRERC - 2022_SBL_AC_001_SD.

Data analysis

One-way ANOVA (Welch's) was used to assess whether national income or region affects start-up intentions. ANOVA was chosen as the standard statistical method for comparing group means. At the same time, Welch's variant was applied because it could adjust for unequal variances (Field, 2018), which were believed to be present in this dataset. Post hoc comparisons using Tukey's HSD will be conducted following the analyses to identify specific group differences.

Hierarchical multiple regression was used to assess the contribution of national income, world region and governance to variations in start-up intentions. Variables were entered in blocks to evaluate the incremental explanatory power of each predictor set. This method was chosen for its ability to control for potential confounding variables. The analyses were conducted using Jamovi 2.4.14 statistical software. To ensure the validity of the regression models, diagnostic checks were performed to assess key assumptions, including normality, homoscedasticity, autocorrelation and multicollinearity. All statistical tests were conducted at the $\alpha=0.05$ significance level.

To ensure the appropriateness of linear regression, standard diagnostic criteria were applied: normality was evaluated using the Shapiro-Wilk ($p > .05$) and Kolmogorov-Smirnov ($p > .05$); homoscedasticity was assessed using the Breusch-Pagan ($p > .05$); independence of errors was verified using the Durbin-Watson test (values between 1.5 and 2.5 were considered acceptable); and multicollinearity was examined using the variance inflation factor (VIF), with values below 5 indicating no concern (Hair et al., 2019).

4. Results

Results are presented under two headings: (1) the relationship between national income, geographical region and business start-up intentions, and (2) the combined influence of income, region and governance on start-up intentions.

The relationship between national income (low, middle, high) and region (East Asia and the Pacific, Europe and Central Asia, Latin America and the Caribbean, the Middle East and North Africa, South Asia and Sub-Saharan Africa), and business start-up intentions (Futsup20)

Descriptive statistics showed that low-income countries had the highest mean start-up intention scores ($M=52.9$, $SD=19.5$), followed by middle-income countries ($M=38.6$, $SD=18.0$) and then high-income countries ($M=24.3$, $SD=17.4$). The ANOVA revealed a statistically significant difference in mean business start-up intentions between at least two of the income groups, $F(2, 29.63)=6.13$, $p=0.019$ (See Table 1).

Descriptive statistics indicated the following mean start-up intentions for each region: the Middle East and Africa ($M=48.9$, $SD=17.3$), Central and East Asia ($M=32.9$, $SD=17.8$), Latin America and the Caribbean ($M=48.3$, $SD=6.9$), and Europe and North America ($M=13.8$, $SD=6.7$). The results revealed a statistically significant difference in mean business start-up intentions between at least two of the world regions, $F(3, 11.1)=43.83$, $p<0.001$ (see Table 1).

Table 1. Combined Welch's ANOVA Results for National Income and Region vs. Business Start-Up Intentions

Factor	Group	N	Mean	SD	SE	Welch's F (df1, df2), p
National Income	Low income	6	52.9	19.5	7.95	$F=6.13(2, 9.63)$, $p=0.019$
	Middle income	7	38.6	18.0	6.79	
	High income	30	24.3	17.4	3.17	
Region	Middle East & Africa	12	48.9	17.32	5.00	$F=43.8(3, 11.1)$, $p<0.001$
	Central & East Asia	5	32.9	17.79	7.96	
	Latin America & Caribbean	6	48.3	6.89	2.81	
	Europe & North America	20	13.8	6.67	1.49	

Source: Authors' own work

The results above suggest that, in general, significant differences exist between income levels and the levels of start-up intentions, as well as that geographical regions differ in start-up intentions. Reflected in Table 2 there is Tukey's post hoc comparisons test, which indicates which variables differ from each other.

Table 2. Post Hoc Comparisons (Tukey HSD)

	Comparison	Mean Difference	p-value
Income	Low vs. Middle income	14.4	0.324
	Low vs. High income	28.6	0.002
	Middle vs. High income	14.3	0.148
Region	Middle East & Africa vs. Central & East Asia	16.0	0.075
	Middle East & Africa vs. Europe & North America	35.1	<0.001
	Central & East Asia vs. Europe & North America	19.1	0.015
	Latin America & Caribbean vs. Europe & North America	34.5	<0.001

Source: Author's own work

Post hoc comparisons using Tukey's HSD test indicated a statistically significant difference in start-up intentions between low-income and high-income countries ($p=0.002$) (see Table 2). Low-income countries reported significantly higher start-up intentions than high-income countries. Business start-up intentions were significantly

higher in the Middle East and Africa compared to Europe and North America ($p < 0.001$). Start-up intentions were also significantly higher in Central and East Asia compared to Europe and North America ($p=0.015$). Similarly, start-up intentions were significantly higher in Latin America and the Caribbean compared to Europe and North America ($p < 0.001$).

The relationship between national income and business start-up intentions: Income classification (low, middle, high) and business start-up intentions (Futsup20)

A multiple linear regression analysis was conducted to examine the relationship between region and income classification (which we indicated above has differential relationships with start-ups), as well as elements of governance (regulatory quality, government effectiveness, political stability, control of corruption, rule of law, voice and accountability), and their effects on business start-up intentions (Futsup20). Two models were tested. Model 1 uses region and income level as predictors. Model 2 expanded upon Model 1 by adding governance measures. The results of the analysis are summarised in Table 3.

Table 3. Hierarchical linear regression predicting business start-up intentions

Predictor	Model 1 R=0.835, R ² =0.697, F(5, 37)=17.1, p<.001					Model 2 R=0.921, R ² =0.849, ΔR ² =0.151, F(11, 31)=15.8, p<.001.				
	B	SE	t	p	β	B	SE	t	p	β
Intercept	55.27	4.97	11.13	<.001	—	58.69	5.83	10.07	<.001	—
Central & East Asia ^a	-14.03	6.63	-2.12	.041	-0.693	5.50	8.21	0.67	.508	0.272
Latin America & Caribbean ^a	3.48	6.72	0.52	.608	0.172	15.55	8.65	1.80	.082	0.768
Europe & North America ^a	-30.43	5.08	-5.99	<.001	-1.503	-12.82	7.76	-1.65	.109	-0.633
Middle income ^b	-9.82	7.58	-1.30	.203	-0.485	-20.37	6.90	-2.95	.006	-1.006
High income ^b	-11.08	6.28	-1.77	.086	-0.547	-18.11	7.45	-2.43	.021	-0.895
Control	—	—	—	—	—	-0.26	0.22	-1.19	.245	-0.333
Government Effectiveness	—	—	—	—	—	-0.89	0.26	-3.41	.002	-1.067
Political Stability	—	—	—	—	—	0.32	0.12	2.76	.010	0.397
Regulatory Quality	—	—	—	—	—	0.82	0.28	2.94	.006	0.934
Rule of Law	—	—	—	—	—	0.22	0.28	0.77	.446	0.274
Voice and Accountability	—	—	—	—	—	-0.34	0.12	-2.72	.011	-0.513

^aReference: Middle East & Africa ^bReference: Low income

Source: Authors' own work

Model 1 met normality assumptions with non-significant results on the Shapiro-Wilk test ($W=0.956$, $p=.097$) and Kolmogorov-Smirnov test ($D=0.101$, $p=0.737$). The Breusch-Pagan ($\chi^2=11.6$, $p=0.040$) and Harrison-McCabe tests ($F=0.238$, $p=0.011$) all revealed heteroskedasticity. There was no significant autocorrelation (Durbin-Watson=2.35, $p=0.436$). Multicollinearity was not a concern, with VIF values for predictors (Region=1.10; Income level=1.16) well below the conventional threshold of 10 and tolerances greater than 0.2.

The overall model was statistically significant, $F(7, 35)=17.15$, $p<0.001$, explaining 69.7% of the variance in business start-up intentions ($R^2=0.697$). Being located in Europe and North America was significant with lower business start-up intentions compared to the Middle East and Africa ($\beta=-1.503$, $p<.001$). Similarly, respondents from Central and East Asia reported significantly lower intentions ($\beta=-0.693$, $p=.041$). High-income countries ($\beta=-0.547$, $p=.086$) and middle-income countries ($\beta=-0.485$, $p=.203$) reported lower intentions than low-income countries, but these effects were not statistically significant in Model 1.

In Model 2, normality tests yielded non-significant results, i.e., Shapiro-Wilk $W=0.971$, $p=.348$ and Kolmogorov-Smirnov $D=0.122$, $p=0.509$. The Breusch-Pagan and Harrison-McCabe tests were not ($p>.05$) significant. There was no indication of autocorrelation (Durbin-Watson=2.34, $p=0.542$). Collinearity diagnostics revealed moderate

multicollinearity for some governance indicators, with VIFs ranging from 1.52 (Region) to 5.09 (Rule of Law), and tolerance values still above the minimum acceptable level of 0.1.

The overall model was statistically significant, $F(13, 29)=15.81$, $p<.001$, explaining 84.9% of the variance in business start-up intentions ($R^2=0.849$). The inclusion of these variables significantly improved the model, $\Delta R^2=.151$, $F(6,31)=5.17$, $p<.001$. Government effectiveness ($\beta=-1.067$, $p=.002$), regulatory quality ($\beta=0.934$, $p=.006$), political stability ($\beta=0.397$, $p=.010$), and voice and accountability ($\beta=-0.513$, $p=.011$) emerged as significant predictors. Control of corruption and rule of law were not significant. Interestingly, the direction of the effect for Central and East Asia reversed and became non-significant, suggesting suppression or mediation by the newly added governance variables. Similarly, the coefficients for income level became stronger and statistically significant, with both high-income ($\beta=-0.895$, $p=.021$) and middle-income ($\beta=-1.006$, $p=.006$) countries showing significantly lower start-up intentions compared to low-income countries. These results suggest that, beyond regional and income differences, perceptions of governance quality (particularly effectiveness, regulatory quality, and voice and accountability) play a significant role in shaping entrepreneurial intentions.

5. Discussion

Prior research often links economic development to entrepreneurial opportunity (Obschonka & Audretsch, 2019; Urbano et al., 2020). Based on incomes, countries differed significantly in their adoption of start-ups ($F=6.13(2, 9.63)$, $p=0.019$), but not in the manner expected. The study reveals that low-income countries exhibit significantly higher start-up intentions ($M=52.9$) than high-income countries ($M=24.3$). This challenges the assumption that higher-income economies naturally foster greater entrepreneurial activity (Schott et al., 2015). This suggests that necessity-driven entrepreneurship may be the primary driver of start-ups (in less developed contexts), rather than in developed or high-income countries, resulting in significantly fewer start-up intentions.

Another important finding relates to regional disparities in individual entrepreneurial intentions beyond GDP. Specifically, the results reveal regional clustering of entrepreneurial intentions independent of income levels. For instance, the Middle East and Africa ($M=48.9$), and Latin America ($M=48.3$) show similar entrepreneurial intentions despite differing income profiles. Similarly, Europe and North America ($M=13.8$) lag significantly, even though they include high-income nations. Unlike some cross-national studies that emphasise the role of GDP (Dvouletý & Orel, 2019; Mostaghel et al., 2022), these findings underscore possible region-specific cultural and/or institutional factors, such as social norms and risk tolerance, that may override economic explanations of entrepreneurial intentions. The results of this study also emphasise governance quality as a differentiator in terms of the regional distribution of entrepreneurial intentions.

The study also managed to isolate specific governance indicators, not just broad institutional quality, which matter most for entrepreneurship intentions. Specifically, it demonstrates that government effectiveness and regulatory quality are the strongest predictors. Contrary to common assumptions (Goltz et al., 2020; Bawole & Langnel, 2021), control of corruption and rule of law were non-significant. Some prior work often treats governance as monolithic. This study views governance as multidimensional, therefore allowing for a more focused approach to increasing start-ups. This strategy allowed recommendations such as that policymakers should prioritise, for instance, streamlining regulations over anti-corruption campaigns.

Theoretical contribution of the study

The results of this study offer a nuanced perspective on the contributions of institutional theory to our understanding of entrepreneurial activity, demonstrating that not all governance dimensions equally influence entrepreneurship. Institutional theory proposes that formal rules shape economic behaviour (North, 1990), but it does not specify which rules matter most for entrepreneurship. Based on the data used in this study, the influence of governance effectiveness and regulatory quality outweighs that of corruption control and the rule of law,

contrary to common assumptions. This suggests the idea of hierarchical institutional effects (where governance effectiveness and regulatory quality are first-order effects directly impacting entrepreneurial intentions and entry, while corruption control and rule of law are second-level effects where they may affect later stages of the entrepreneurship life cycle but matter less for start-up intentions).

In line with institutional theory, the results also underscore regional institutional logics, rather than national incomes, as underlying the emergence and thriving of entrepreneurship across various world regions. The evidence from the study suggests that regional differences in entrepreneurial intentions persist beyond income differences, as shown by the Latin America and Middle East regions having similar start-up rates despite differing income levels. Moreover, Europe and North America lag, suggesting cultural or institutional path dependencies. Given this, region-specific norms, such as collectivism in Latin America (House et al., 2004) and risk aversion in Europe (e.g., Wennekers et al., 2007), may influence how governance impacts entrepreneurship intentions and activity. However, this was not empirically tested in this study and could be an area of interest for future research.

Another key contribution of the study is its methodological advancements. Many prior studies rely on subjective surveys or aggregate governance indices. This study combines objective institutional data (World Bank metrics) with entrepreneurial intent data from GEM using robust statistical controls (i.e., Welch's Anova for heteroscedasticity and multiple regression models). This strengthens causal inferences on the impact of governance.

Policy implications

This study has implications for policy and practice, especially for developing and high-income countries. Given the findings on the importance of government effectiveness and regulatory quality, governments in low- and middle-income countries should prioritise reducing bureaucratic barriers through measures such as digitising permits and simplifying tax compliance, rather than solely investing in anti-corruption campaigns. High-income countries, on the other hand, need to reassess red tape to encourage opportunity-driven entrepreneurship, given that they have lower entrepreneurial intentions despite having strong institutions. Furthermore, because start-up intentions vary significantly by region, there is a need to tailor regional development programs to address possible context-specific barriers. The study found that political stability increased start-up intentions, while increased voice and accountability had a negative effect. To address this, nations need to balance democratic participation with efficient decision-making to avoid policy paralysis. Lastly, it is essential to note that the high start-up intentions in low-income countries reflect a form of survivalist entrepreneurship. Hence, there is a need to provide microloans, vocational training (McKenzie & Woodruff, 2014) and informal sector protections to enhance the sustainability of such activities.

Conclusions

The results of this study complicate simplistic narratives about institutions and entrepreneurship by disaggregating the effects of governance, testing the regional versus income effects, and unravelling the corruption paradox. Against this background, the study offers researchers and policymakers a deeper understanding of the various relationships examined. More specifically, it emphasises that not all governance aspects are equally impactful, regional context can override income effects, and corruption effects are context-specific.

A key limitation of the study lies in the reliance on the worldwide indicators, which, despite their widespread use, have been critiqued for potential misuse and oversimplification. Arndt and Oman (2006) caution that governance indicators, including the WGI, may be applied inappropriately in policy contexts without sufficient attention to their methodological constraints. Additionally, as Thomas (2010) highlights, interpreting causal

relationships between governance and development outcomes using WGI data can be complex, given the subjective nature of perception-based measures and the challenge of disentangling correlation from causation.

Future researchers, while building on contextual factors included in this study, should address key limitations that remain. These include complementing WGI data with qualitative insights, using multiple governance measures, applying more rigorous methods to establish causality, accounting more fully for country-specific contexts and critically engaging with the methodological constraints of perception-based indicators.

This study raises new questions for future research. For example, why does corruption seem less of a deterrent to entrepreneurship in low-income countries? Could informal networks offset weak governance? Are regional differences in start-up intentions stemming from cultural norms or government policy? Lastly, longitudinal research should examine whether governance effectiveness and regulatory quality drive entrepreneurship or simply reflect underlying endogeneity.

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Author Contributions: Conceptualisation: TMN; methodology: TMN, RS; data analysis: TMN, RS, writing—original draft preparation: TMN, RS, writing; review and editing: TMN, RS; visualisation: RS. 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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FRONTIERS OF ENTREPRENEURSHIP EDUCATION: INTERDISCIPLINARITY NEED REVEALED BY A CASE STUDY

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Received 18 August 2025; accepted 13 November 2025; published 30 December 2025

Abstract. In light of the global recognition of the importance of entrepreneurship, research is crucial for examining various aspects of the role of entrepreneurial education. This study considers education as an essential driver of entrepreneurial behaviour and looks into emerging frontiers for strengthening entrepreneurship curricula. The study aims to outline the future frontiers of entrepreneurship education development. The study employed a qualitative research approach, collecting data through a focus group discussion with academics at a selected university in the Western Cape. The authors found that entrepreneurship education is shifting from a narrow focus to one that spans multiple disciplines. It was revealed that the interdisciplinary perspective of entrepreneurship is growing, and all students in institutions of higher education, including those in the arts and engineering disciplines, benefit from entrepreneurship education. The authors recommend an interdisciplinary perspective and encourage all higher education specialities to include entrepreneurship studies.

Keywords: entrepreneurship; education; university; self-employment; interdisciplinary perspective

Reference to this paper should be made as follows: Mefi, N. P., Asoba, S. N. 2025. Frontiers of entrepreneurship education: interdisciplinarity need revealed by a case study. *Insights into Regional Development*, 7(4), 145-153. <http://doi.org/10.70132/x2738566794>

JEL Classifications: L26

1. Introduction

Solving the problem of scarcity of goods and services is an enduring economic problem that has attracted consideration across diverse fields globally. Goods and services are the essential components of life and can be exchanged through trade, thereby resulting in the accumulation of wealth and forming a basis for economic development.

This study takes the perspective that education as a basic function of society aims to facilitate better, adequate or improved provision of goods and services through the creation, sharing and distribution of critical knowledge, skills, attitudes, competencies and capabilities for production (Obaje, 2023; Qwabe, Ngibe & Bingwa, 2025). Labour has always been identified as an essential factor of production. As a factor for production, labour implies the availability of people with the proper knowledge and skills to contribute to the production of goods and services which are needed and wanted by society. Within these arguments, entrepreneurship education offers a rich perspective that highlights the need to ensure that people possess the exceptional capability to recognise opportunities, capitalise on situations, and create enterprises to meet the needs and wants of society (Najera-Sanchez et al., 2023). Entrepreneurship education is recognised as relevant across various disciplines, and the demand- and supply-side dimensions of entrepreneurship can be distinguished (Najera-Sanchez et al., 2023; Qwabe et al., 2025). The purpose of this paper is to explore entrepreneurship practices in higher education institutions and assess their multidimensionality. A specific question was: What are the trends in the development

of entrepreneurship education? Entrepreneurship has become a central economic activity in many economies worldwide, and entrepreneurship education is primarily viewed as a key driver and enabler of successful business doing (Mahmudin, 2023; Jardim & Sousa, 2023). Research has shown that entrepreneurship education can help individuals assess and unlock their entrepreneurial potential, enabling them to make informed decisions and take initiatives that promote entrepreneurial behaviour (Bogdea et al., 2024). A review of the development of entrepreneurship education reveals that the phenomenon originated in the United States of America before spreading to the United Kingdom (UK), and subsequently to Europe and the rest of the world (Jardim & Sousa, 2023; Liguori et al., 2024). Major entrepreneurial inventions have fueled revolutions throughout history. For instance, the steam engine was a key component of the Industrial Revolution in the UK, while the computer has been central to the present technological revolution. Entrepreneurship fundamentals should be offered to a broad range of scientists and practitioners across different disciplines, enabling their findings to be commercialised (Yermachenko et al., 2023; Taib et al., 2025).

2. Literature review

2.1. The concept of entrepreneurship

Entrepreneurship as a discipline emerged from observations that some individuals, who manage to identify and exploit opportunities, satisfy human needs profitably. Entrepreneurship is defined as the recognition and identification of an idea that can add value to society and effectively turn this idea into value-adding actions (Ojogbo, Idemobi & Ngige, 2016; Obaje, 2023). Tegtmeier (2023) emphasised that the success of entrepreneurial thought has been dynamic, depending on the context. The concept of entrepreneurship was initially perceived in terms of recognising opportunities and capitalising on them to start and manage an enterprise successfully. There is now growing recognition that entrepreneurship is a multidisciplinary field (Niebuhr, Tegtmeier & Brem, 2017).

2.2. Entrepreneurship education

Despite being perceived in many ways, entrepreneurial education can be defined as the process of deliberately stimulating and facilitating the development of entrepreneurial activity (Ojogbo et al., 2016). Early in the development of entrepreneurial education, entrepreneurial students were considered to be exceptionally talented; later, it was agreed that entrepreneurial education can lead to the development of entrepreneurial intentions (Ojogbo et al., 2016; Tegtmeier, 2023). The personality and cognitive disposition of an individual, as considered within the social environment, form a starting point for this perspective and can be the foundation for appreciating the role of higher education in entrepreneurship development (Rakib et al., 2020; Stam & Van de Ven, 2021; Jeet, 2023).

The strength of personality and cognitive disposition, as opposed to the social environment, raises the question: What is more significant in entrepreneurial development —human cognitive strength, the environment, or genetics? Essentially, it is about inborn personal traits or the environment. In this study, the focus is on entrepreneurship education as a tool for developing businesspeople. Entrepreneurship has been a fundamental engine for economic growth, creating employment, promoting economic development, and reducing socio-economic inequalities in our societies over the years (Ncanywa & Dyantyi, 2022; Neethling, 2024; Manchidi, 2025).

In recognition of this, higher educational institutions have found it necessary to initiate entrepreneurship courses. Still, despite these initiatives from universities as well as various other actions from the government and key stakeholders, the level of entrepreneurship in South Africa and many other nations remains unsatisfactory (Nieuwenhuizen et al., 2016). In South Africa, youth unemployment remains high, and entrepreneurship ventures continue to experience a high rate of failure within the first few years of operating (Mabungela & Davids, 2024). The focus of this study is on institutions of higher education and their role in addressing this problem.

Previous studies (for instance, Omoniyi & Bongani, 2022) have emphasised the need for new approaches in entrepreneurship education, focusing on strengthening students' practical exposure. It has also been suggested that more funding and learning infrastructure need to be secured, and entrepreneurship education should shift from conventional approaches to more creative learner-centred models (Ojogbo et al., 2016; Tegtmeier, 2023). Entrepreneurship education is shifting ideologically. Hoffman (2020) pointed out that there is a need for new approaches to the teaching and learning of entrepreneurship to better realise the desired entrepreneurial outcomes. Supporting entrepreneurship has evolved into the act of creating an environment that inspires entrepreneurship through measures that stimulate cognitive, emotional, physical, and psychosocial desire and motivation to unlock and ignite the entrepreneurial potential of individuals (Ndofirepi, 2020; Lose & Cheteni, 2024). Where entrepreneurial, inborn characteristics can be part of an individual, unlocking them to actual activity may be a function of the university. It has been observed that many institutions of higher education have established departments of entrepreneurship and have started offering entrepreneurship modules (Dlamini, 2024). This is in sharp contrast to the apartheid era, when knowledge to start and grow enterprises was reserved for the whites only (Hoffman, 2020). Contemporary strategies in entrepreneurship education are becoming increasingly critical these days (Olutuase, Brijlal, & Yan, 2023). Despite the rise in entrepreneurship education, the need to achieve the required levels of actual entrepreneurial activity remains an unachieved goal (Gazi et al., 2024). New dimensions to teaching and learning entrepreneurship are emerging. They are necessary, given that students with entrepreneurial education require a holistic approach that considers the emotional intelligence, physical strength, desire, and empowerment needed to become entrepreneurs (Dlamini, 2024; Olutuase et al., 2023). Essentially, the university environment may need to be transformed to facilitate the realisation of entrepreneurial activity (Lose & Cheteni, 2024; Omodan, 2024). While attempts have been made to promote entrepreneurship, the need remains for more targeted actions that truly unleash an individual's entrepreneurial potential, creating an appreciation of trends in the growth of entrepreneurship essential (Omodan, 2024). The current situation in universities is quite effective in fostering an appreciation for entrepreneurship and a sensitivity to the need for entrepreneurial thinking (Dlamini, 2024). Mu and Zhao (2024) and Mugunzva and Manchidi (2024) argue that technological revolutions also have new implications for transforming the nature of entrepreneurial education in the era of emerging phenomena such as artificial intelligence. Despite numerous studies in the area, there remains a need to anticipate the future frontiers of entrepreneurship education development.

Objectives of the study and research purpose

In view of the above arguments, the purpose of this study was to explore the research question: What are the emerging trends in entrepreneurship education development that allow for the accomplishment of current practices in education?

3. Methodology

This study followed the qualitative research approach within the constructive paradigm to explore the views of entrepreneurship lecturers and academics on trends in entrepreneurship education at the university. Qualitative data were collected from the perspective that reality is found in the experiences of people and how they perceive it (Busetto, Wick, & Gumbinger, 2024). Qualitative research provides in-depth data on a phenomenon. It is based on the belief that knowledge is subjective and is inherent in the minds of people. Participants in the focus group discussion were deemed to be senior entrepreneurship lecturers in the Department of Business and Economic Management Sciences with more than ten (10) years of teaching entrepreneurship. The Head of the Department (HOD) of Business and Economic Sciences was contacted, and a discussion was held regarding the nature of the study. The HOD welcomed the study, indicating that the department was in the process of transforming its entrepreneurship course and conducting a situational analysis. His presence added to the study's importance, as he guides the transformation of the department. The HOD committed to full cooperation in aiding the study. A focus group observer guide was prepared for use by the HOD. The observation guide was provided for recording notes and non-verbal communication cues that indicate the emphasis of points discussed in the study. The HOD

emphasised the need to ensure that the study was conducted at a time and place that was suitable for the personal and professional needs of the participants. In view of this requirement, there was consensus to hold the focus group discussion during lunchtime at the mini-university conference room. The participants were provided with refreshments and lunch by the university after authorities realised that research was of interest to the Entrepreneurship Department.

The fifty-minute focus group discussion was moderated and facilitated by a senior lecturer in the department, with the researcher serving as the recorder. To ensure that data was effectively collected, the moderator was coached by research experts at the university to conduct the facilitation role expertly. Written notes were made by the researcher on the responses to the research questions. At the same time, the observer recorded the nature of group interactions and the non-verbal cues during the data collection process. Every participant was first required to give responses to the research question before further discussions were made on key responses. The process was completed once the key responses were clear and the final results were unanimous. The collection of data respected the concept of thematic data saturation, which occurs when no new emerging ideas are identified (Hancock et al., 2016). The demographic details of the respondents are provided in Table 1.

Table 1. Biographical information of the respondents

	Gender	Racial group	Age range	Title
1	Male	African	20-25	HOD
2	Female	African	25-30	Senior lecturer
3	Female	African	20-30	Lecturer
4	Female	Asian	30-35	Researcher
5	Male	Coloured	25-30	Senior lecturer
6	Male	Coloured	25-30	Lecturer
7	Male	White	20-50	Senior lecturer
8	Male	African	20-25	Lecturers

As shown in Table 1, most of the participants, the respondents, were male and African. The majority were Senior Researchers in the Department of Business and Economic Sciences

4. Data analysis

The data notes that were written during the focus group discussions were analysed using the method of constant comparison. This method involves an initial stage of open coding where data is reduced to small units and each unit is coded. This is followed by axial coding, where codes are grouped into categories, and the final stage involves developing themes for the codes. During open coding, data which was deemed necessary was identified and quoted before a code was assigned. Table 2 presents the analysis schema observed in this study.

Table 2. Responses to the focus group question: What are the trends in entrepreneurship education development that could facilitate the rising quality of present-day entrepreneurship education transformation?

	Quote	Non-verbal cues	Open coding	Axial coding	Theme
R1	Entrepreneurship was once a less favoured subject; the mindsets of learners were more aligned with being employed rather than pursuing self-employment or starting their own business. Over the years, registration for the course has increased, and changes in attitudes have been noted.	Leaning back on the chair and changing the tone of voice at the beginning of each sentence	Student mindset shift	Psychological	Acceptance
R2	Despite having been poorly accepted for study, the value of entrepreneurship is growing. Initially, entrepreneurship was viewed as a field primarily for business majors, and our current entrepreneurship curriculum is designed for business students only. Currently, there is a growing need for entrepreneurship among non-business majors.	Raising of voice and emphasis, along with hands and body gestures, were evident. Clapping of hands from other participants	From narrow to broad appreciation	Wide relevance	Interdisciplinary perspective

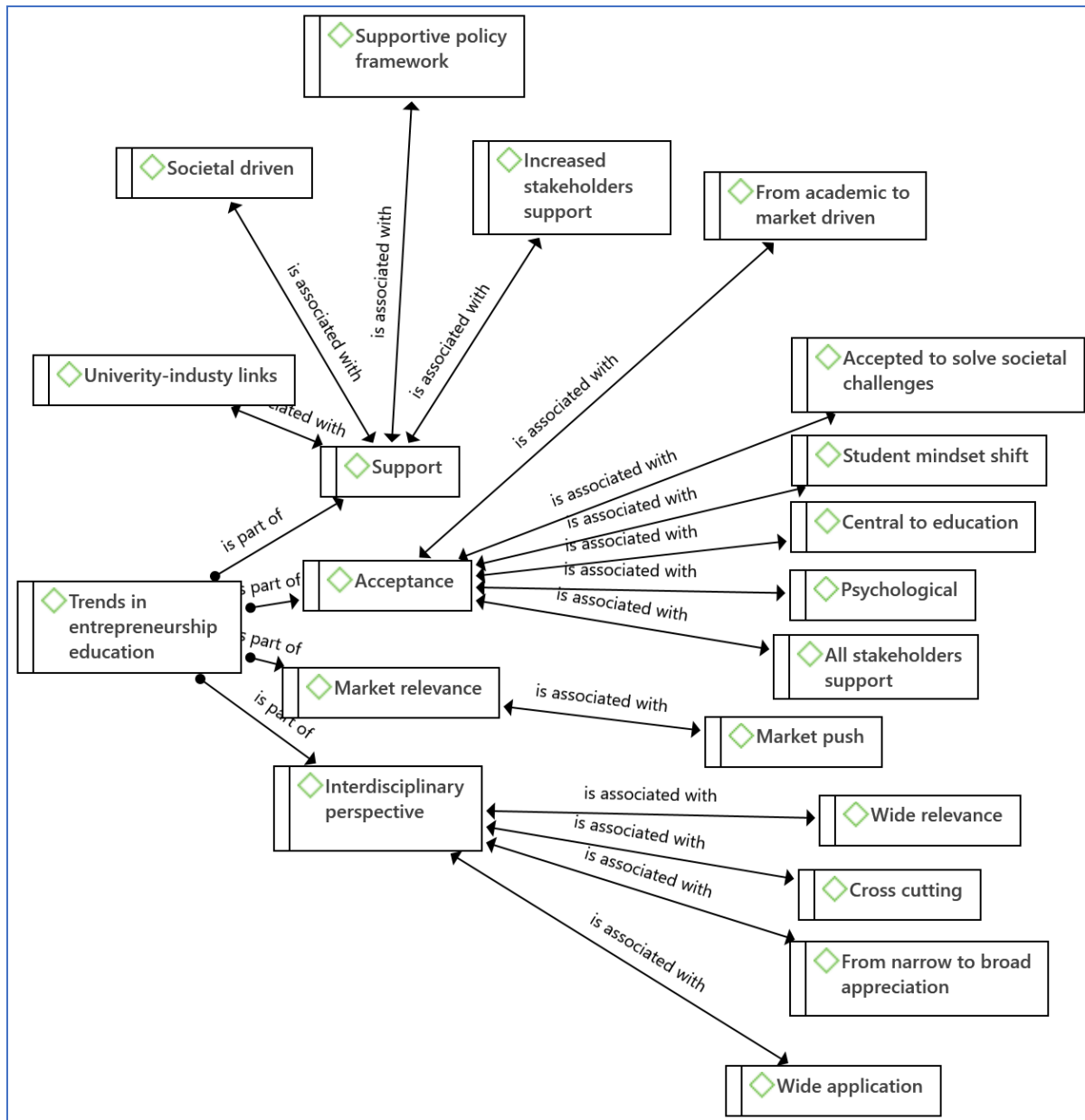
R3	When entrepreneurship was introduced, it was welcomed by those who knew they were not strong in academic subjects and believed they could only benefit from hands-on entrepreneurship. At that time, the unemployment rate was not as high as it is now, so everyone thought entry into the job market would be easy. As unemployment continues to rise, entrepreneurship is gaining relevance.	Nodding of heads. Hand clapping	Accepted to solve societal challenges	Market push	Acceptance
R4	In recent years, a new question has emerged in entrepreneurship education: Do lawyers need entrepreneurship education? What about engineers? Do they need entrepreneurship education? What about labour nurses and so on? This question shows the growing recognition that entrepreneurship education is for all, no matter their discipline of focus."	Clapping of hands	Wide application	Market relevance	Interdisciplinary
R5	The business incubation phenomenon should be inspired by individuals across various disciplines, not just entrepreneurs, and government efforts to strengthen entrepreneurial activities should benefit all individuals across these disciplines. The multidisciplinary perspective of growing entrepreneurship is a phenomenon that has emerged in recent years, not previously existing.	Applause and nodding of heads	Cross cutting	Central to education	Interdisciplinary
R6	Entrepreneurship education was initially developed primarily from the perspective of academics, rather than addressing the need to solve societal problems. Over the years, this perception has shifted; people in society now view entrepreneurship as a key to solving their problems.	Applause from all participants was heard, with clapping of hands and side conversations increasing. There was evidence of high support.	From academic to market-driven		Societal driven
R7	The realisation at the beginning that entrepreneurship as a course is being poorly taken led to the need to advance measures to improve it, such as creating university-industry links	Applause and nodding of heads	University-industry links	Supportive policy framework	Support
R8	Currently, being a successful entrepreneur is highly admired, and technological advancements have made it easier to facilitate entrepreneurial activity compared to the early days of entrepreneurship. Additionally, government policies in support of entrepreneurship education and entrepreneurial practices have increased, making it more favourable to be an entrepreneur.	Applause from all participants was heard, with clapping of hands and side conversations increasing. There was evidence of high support.	Increased stakeholders support	All stakeholders support	Support

Table 2 illustrates the findings in this study. It has been established that entrepreneurship has undergone shifts and exhibits notable dynamism over the years. It emerged as a poorly supported discipline, reserved for academically weak students who may be more oriented towards practical and hands-on activities. Now the situation has changed, and there is now significant acceptance of the essence and role of entrepreneurship.

This trend signifies an ideological change which promotes entrepreneurship. The study also shows that there has been a shift from entrepreneurship as a discipline within the business faculty to its broader acceptance, which is relevant across disciplines. This interdisciplinary approach involves introducing entrepreneurship education across various disciplines, fields, and faculties. Entrepreneurship is rapidly becoming a discipline of study for all. The results, which support the strengthening of an interdisciplinary perspective, are found in Omodan (2024). The author advocates for the growing relevance and adoption of interdisciplinary approaches in management sciences. Firos and Aziz (2020) state that entrepreneurship education has become compulsory in higher education institutions in Malaysia, and the results of this study support the adoption of such a policy in the South African context. Similarly, Rankhumise, Letsoalo and Nguza-Mduba (2020) recommend making entrepreneurship education available to all undergraduate students. The study also observes a shift from being university-driven to market-driven, as societal pressure for increased entrepreneurial activity grows. Multiple stakeholders from society, industry, and government have contributed to the development of improved stakeholder networks and links, fostering successful entrepreneurial education. Support for entrepreneurship has also taken a significant stride, with various government, industry, and societal initiatives providing incubation support through a

supportive framework, as well as through structures such as incubators and supportive government policies in both educational and non-educational systems. As a result, funding and infrastructure for entrepreneurial development have increased. Figure 1 summarises the results of the study.

Figure 1. Trend in entrepreneurship education at a university in the Western Cape



Source: the authors

Figure 1 illustrates the growing trends of increased support and acceptance, as well as the increasing interdisciplinarity in entrepreneurship education. Entrepreneurship education is increasingly becoming a part of the entire higher education curriculum.

Conclusion

This study was conducted to investigate emerging trends in entrepreneurship education at a university in South Africa. It is essential to inform policymakers and educational institutions nationwide about the new and emerging frontiers for entrepreneurship education in South Africa. The study found an increased perspective on the interdisciplinarity of education, whereby the relevance of entrepreneurial education is being recognised as necessary across all educational faculties and disciplines. This indicates a shift from the narrow focus of entrepreneurial education in the Faculty of Management Sciences to all faculties, including the arts, engineering, and others. In essence, the study found that everyone needs entrepreneurship education across all disciplines. The study recommends the adoption of entrepreneurship across all systems. This study makes a unique contribution to the field of entrepreneurship practice, whereby the entrepreneurship course is considered a distinct field and its interlinkage with various disciplines is overlooked. The results strengthen the view of an interdisciplinary paradigm for entrepreneurship education. Few studies have conducted a detailed and focused examination of the multidisciplinary entrepreneurship paradigm, as advanced in the present study. This study employed a case study approach, which may limit the generalizability of the results to the specific case analysed. The study lays a foundation for more cross-sectional research and provides directions for future studies. Other universities may find this study helpful, given that universities in South Africa generally operate within the same legal, policy, and socio-economic context, which makes the conditions at the analysed university similar to those of other universities.

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Author Contributions: Conceptualisation: *Nteboheng Patricia Mefi*; methodology: *Nteboheng Patricia Mefi*; data analysis: *Samson Nambei Asoba*, writing—original draft preparation: *Samson Nambei Asoba*, writing; review and editing: *Samson Nambei Asoba*; visualisation: *Nteboheng Patricia Mefi* and *Samson Nambei Asoba*. The authors have read and agreed to the published version of the manuscript.

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INCLUSIVE ADOPTION OF CIRCULAR ECONOMY IN EGYPT: COMMUNICATION AND STAKEHOLDER ENGAGEMENT AMONG LOW- AND MIDDLE-INCOME COMMUNITIES**Leonardo Piccinetti¹, Maghraby Khalil Elseify², Donatella Santoro³, Anna Piccinetti⁴, Anas Khasawneh⁵, Mohamed Ramadan A. Rezk⁶**^{1,2,3,5} Sustainable Innovation Technology Services Ltd, Ducart Suite, Castletroy, Ireland² REDINN, Italy⁴ Europe for Business EFB, United Kingdom⁶ Academy of Scientific Research and Technology (ASRT), 11516, Cairo, EgyptE-mails: ¹leonardo@sinnovations.org; ²maghraby.sites@gmail.com; ³annapiccinetti.efb@gmail.com; ⁵anas.efb@gmail.com; ⁶donatella@sinnovations.org; ⁸mramadan79@gmail.com

Received 23 August 2025; accepted 15 November 2025; published 30 December 2025

Abstract. This paper explores the adoption of circular economy (CE) practices in Egypt, with a particular focus on communication and stakeholder engagement strategies for middle- and low-income communities. While Egypt has shown growing policy interest in CE through national waste management reforms and international partnerships, the spread of adoption so far has been more visible in urban centers and within the formal sector. The study employs a mixed-methods design, combining the SALSA methodology (Search, Appraisal, Synthesis, and Analysis) to systematically review academic literature, policy documents, corporate initiatives, and NGO programs from 2018–2025, with an expert consultation survey of 20 specialists in CE and community communication. Quantitative survey items were processed through descriptive statistics, while qualitative responses were thematically coded using ATLAS.ti, ensuring transparency, rigor, and contextual depth. Although recycling and green entrepreneurship are expanding, most awareness campaigns still emphasize ecological benefits. For many communities in Egypt, however, the appeal of CE is more tangible when framed in terms of livelihood opportunities, income stability, and social fairness. The analysis highlights the informal sector, particularly informal waste collectors, as playing a pivotal role with exceptionally high recovery rates, indicating the potential benefits of stronger integration within formal systems. Evidence further demonstrates that localized, participatory communication channels and grassroots initiatives outperform centralized awareness campaigns in driving behavioral change. Building on these insights, the paper proposes a framework for inclusive CE dissemination structured around three pillars: grassroots empowerment through education, multi-stakeholder economic integration, and adaptive, data-driven communication. Policy recommendations include reframing CE as an economic opportunity, institutionalizing bottom-up engagement, and embedding informal sector contributions within national strategies. By emphasizing equity and inclusivity, the study argues that CE can evolve from isolated initiatives into a nationwide driver of sustainable development, poverty reduction, and social justice in Egypt.

Keywords: circular economy; stakeholders; low- and middle-income countries

Reference to this paper should be made as follows: Piccinetti, L., Elseify, M. K., Santoro, D., Piccinetti, A., Khasawneh, A., Rezk, M. R. A. 2025. Inclusive adoption of circular economy in Egypt: communication and stakeholder engagement among low- and middle-income communities. *Insights into Regional Development*, 7(4), 154-175. <http://doi.org/10.70132/a8272892652>

JEL Classifications: O1, O2, O3**1. Introduction**

The Circular Economy (CE) is an innovative approach aims to convert the traditional linear economic models into more regenerative and sustainable systems by keeping materials and resources in use for as long as feasible is the main objective of CE to minimize waste and the impact on the environment (Geissdoerfer et al., 2016; Abdirahman et al., 2025; Rezk et al., 2023). By 2050, the world's population is projected to rise to between 9.4

and 10.2 billion, a demographic shift that will intensify global environmental pressures (Siankwilimba et al., 2025). Rapid industrial growth alongside this population increase has already contributed significantly to environmental degradation and pollution (Malkawi & Kapiel, 2024). Rising demand for natural resources threatens ecological stability, driving deforestation, biodiversity loss, and accelerating climate change, while increasing greenhouse gas emissions, particularly carbon dioxide (Malkawi & Kapiel, 2024). The strain on natural systems is further reflected in waste production trends, with global municipal solid waste generation projected to surge from 2.01 billion metric tons in 2016 to an estimated 3.4 billion metric tons by 2050, a trajectory linked to unsustainable consumption and inefficient resource extraction practices (Çelik et al., 2024). Addressing these challenges requires a paradigm shift away from the prevailing linear economy characterized by extractive, single-use, and disposal-oriented models toward a Circular Economy (CE) framework that prioritizes resource efficiency, regenerative design, and waste prevention (Kirchherr et al., 2017). The circular economy (CE) offers a systematic framework for rethinking production and consumption cycles by emphasizing recovery, reuse, and innovation to reduce environmental burdens (Silva & Morais, 2021; Aslan et al., 2025). Beyond ecological benefits, CE provides mechanisms to operationalize sustainability by redesigning systems to minimize waste, recover resources, and create regenerative cycles (Wen & Zhang, 2024). By embedding these principles into economic models, CE supports social justice through improved access to resources and opportunities, particularly for vulnerable groups (Estoque & Wu, 2023; Kuwornu et al., 2022). Realizing these outcomes, however, requires structured, sector-wide strategies and cross-sector collaboration, making CE a practical and measurable pathway toward long-term environmental, economic, and social resilience (Eelager et al., 2025).

Many nations continue to place disproportionate emphasis on the environmental dimension of sustainability, often overlooking its economic potential. This imbalance has resulted in policies and initiatives that focus primarily on resource conservation and pollution mitigation but fail to integrate comprehensive strategies that generate economic value, create green jobs, and enhance resource efficiency. The Circular Economy (CE) addresses this gap by serving as a cornerstone of global sustainability efforts, offering innovative solutions that combine environmental protection with economic growth. CE principles are increasingly recognized for their ability to tackle resource scarcity, waste management challenges, and environmental degradation while simultaneously creating opportunities for economic development. The global CE market is expanding rapidly, growing by nearly 12% in just one year to reach an estimated \$518 billion in 2025 (The Business Research Company, 2025). This acceleration is fueled by urban mining initiatives, corporate social responsibility programs, the expansion of e-commerce, greater adoption of circular business models, and the rise of smart cities, reflecting the growing global shift toward sustainable and resilient economic systems. The CE market is projected to continue its strong trajectory, reaching \$798.3 billion by 2029 with a forecast compound annual growth rate (CAGR) of 11.4%. Growth is expected to be driven by mounting pressure on landfill capacity (Figure 1), rising global population, expansion of digital resale platforms, demand for resilient supply chains, increased R&D investments, and heightened environmental awareness. Notable trends shaping the future of the CE market include technological breakthroughs in recycling, eco-design innovations, blockchain-based traceability solutions, and the wider integration of digital technologies. These factors underscore the CE market's pivotal role in advancing a resource-efficient, low-carbon economy that aligns with global sustainability goals.

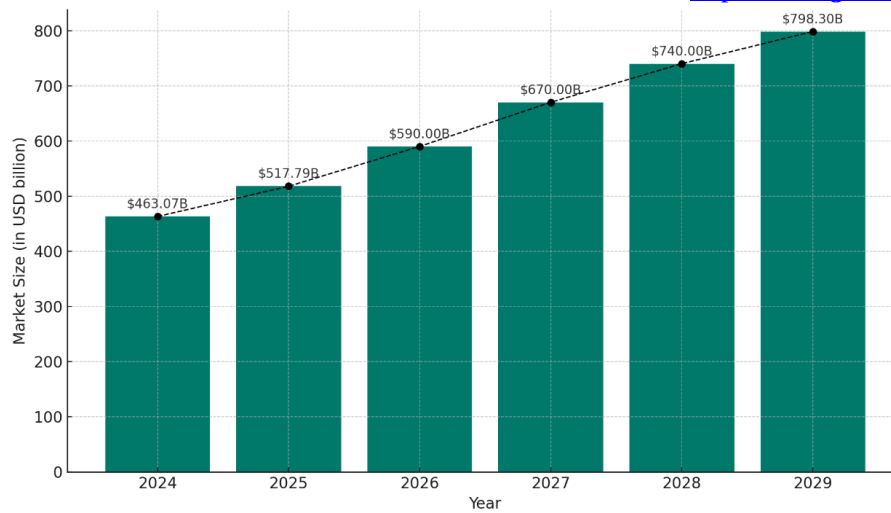


Figure 1. Circular Economy Global Market Size Forecast (2024–2029)

Source: The Business Research Company, 2025

Achieving a fully circular economy requires unprecedented collaboration among stakeholders at every level of society, with citizens and businesses playing a pivotal role in driving systemic change (European Commission, 2020; Carbonell-Alcocer et al., 2025). Stakeholder engagement serves as the foundation for this transition, as it fosters collaboration between government agencies, private enterprises, NGOs, and informal sector actors, while ensuring that policies are responsive to diverse community needs. Yet, research highlights that stakeholders' understanding of circular principles varies widely by sector, region, and organizational size, creating barriers to policy implementation and societal uptake (Van Langen et al., 2021). This variation underscores the importance of strategic communication as a tool to align stakeholder priorities and motivate participation. Existing literature tends to examine individual actors in isolation, such as consumer attitudes toward green purchasing, circular packaging, and remanufactured products (Muranko et al., 2019; Testa et al., 2020), or their preferences for products with different end-of-life scenarios (Atlason et al., 2017). However, the transition to a circular economy requires integrated, multi-actor approaches that emphasize collaboration across the entire value chain. Studies show that well-designed communication strategies can positively shape consumer perceptions and encourage resource-efficient and sustainable behaviors, including the purchase of green and remanufactured products (Warren et al., 2016; Kong & Zhang, 2012). Therefore, combining inclusive stakeholder engagement with targeted, culturally relevant communication frameworks is essential for scaling CE adoption and ensuring long-term behavioral change.

Egypt faces critical environmental challenges, including severe water scarcity, worsening air quality, and an escalating solid waste burden, with annual waste generation estimated at over 90 million tons, of which only about 60% is collected and a minimal share formally recycled (Yoshijima et al., 2024). In response, the country's policy framework has begun aligning with Circular Economy (CE) objectives. Notable initiatives include the Waste Management Law of 2020 (UNEP, 2020), the National Solid Waste Management Programme supported by GIZ and KfW, and partnerships with the European Union (EU) and UNIDO to develop eco-industrial parks and promote sustainable production practices. These efforts complement Egypt Vision 2030, which prioritizes resource efficiency, renewable energy, and green industrialization as drivers of long-term development. Despite such advances, CE adoption remains at an early stage, constrained by institutional capacity gaps, limited stakeholder engagement, and insufficient infrastructure, while adoption is still most visible in urban centers and the formal sector (Rezk et al., 2023). Egypt has recently introduced a range of circular economy (CE) initiatives, yet their adoption remains limited and uneven, particularly among middle- and low-income communities that represent the majority of the population. Media narratives in both the public and private sectors largely frame

CE through an environmental perspective, emphasizing climate action and ecological preservation while underplaying its economic potential to increase household income, stimulate economic growth, and address urgent socio-economic issues such as poverty, unemployment, and resource scarcity in a resource-constrained context. Between 2020 and 2024, an estimated 320 events dedicated to sustainability and CE were organized in Egypt, supported by at least three dedicated media channels and 28 specialized programs and series, including podcasts, radio broadcasts, and awareness campaigns (WUF12, 2025; IEREK, 2025; CWW, 2025; DCarbon Egypt, 2025; GeoCycle Egypt, 2025). However, the absence of publicly available performance metrics makes it difficult to evaluate their reach or effectiveness, particularly in engaging target groups. As a result, CE discourse remains concentrated within a limited network of policymakers, entrepreneurs, and startups, a scope that does not reflect the country's scale, capacities, or pressing development needs. This narrow framing of CE restricts public participation and undermines its potential to deliver comprehensive environmental, social, and economic benefits. Achieving a successful circular economy (CE) transition in Egypt demands localized communication strategies, an economic-first narrative, and robust cross-sectoral collaboration. Global evidence demonstrates that framing CE initiatives in terms of economic opportunities significantly boosts public engagement (Abasli & Mukhtarov, 2024), while decentralized implementation enhances participation among low- and middle-income communities (Chineme et al., 2022). Policymakers should establish clear regulatory standards, provide incentives such as tax relief, subsidies, and green procurement policies, and formally integrate the informal sector, drawing on examples from Colombia and Brazil where waste picker cooperatives have improved recycling efficiency and livelihoods (Fuss et al., 2018). Businesses can strengthen SME participation by developing local production hubs and repair networks based on EU CE models, while civil society organizations should lead training and financing initiatives, similar to India's community-led repair programs (Kumar et al., 2024). Coordinated action among government agencies, academia, NGOs, and financial institutions is crucial to ensure inclusive and scalable CE adoption.

This study aims to develop targeted communication and dissemination strategies that reflect Egypt's diverse socio-economic realities, with a particular focus on low-income communities. It seeks to examine the roles, motivations, and influence of key stakeholders including government agencies, non-governmental organizations, informal sector actors, and private enterprises in advancing the adoption of circular economy (CE) practices. Additionally, the research will identify and analyze barriers to community engagement, such as cultural attitudes, trust deficits, and technological constraints. Building on these insights, the study will propose an inclusive framework for communication and stakeholder engagement designed to enhance CE awareness, encourage meaningful participation, and drive long-term behavioral change.

2. Methodology

This research relies on a methodology that integrates both systematic secondary data analysis through the SALSA framework (Search, Appraisal, Synthesis, and Analysis) and a targeted expert opinion survey. The choice of methodology reflects the multidimensional nature of the circular economy (CE) in Egypt across policy, industry, grassroots initiatives, and communication domains (2018–2025). The literature review is structured around the SALSA methodology (Search, Appraisal, Synthesis, Analysis), ensuring transparency, rigor, and replicability in systematically identifying relevant academic studies and associated sources (Booth et al., 2022). At the same time, and to complement the limitations of relying exclusively on documentary sources, the study integrates an expert opinion survey conducted with 20 specialists whose professional roles focus on community communication, awareness-raising, and circular economy practices. This dual approach strengthens the robustness of findings: while SALSA provides a comprehensive and evidence-based mapping of available knowledge, the expert survey grounds these insights in practical, context-specific experience, thereby producing a nuanced understanding of how CE communication and engagement strategies can be adapted to Egypt's socio-economic realities.

2.1 Secondary Data (SALSA Framework)

The collection of secondary data in this study followed the SALSA framework (Search, Appraisal, Synthesis, and Analysis), which ensured a structured and transparent process for reviewing evidence on circular economy (CE) practices in Egypt. Data were drawn primarily from documents and secondary sources selected for their relevance to the research objectives. Academic studies provided both theoretical perspectives and empirical evidence, while government publications, such as the Waste Management Law (2020) and Egypt Vision 2030, outlined Egypt's key sustainability policy directions. Reports from international organizations, including UNDP, UNIDO, the European Union, and the World Bank, supplied comparative insights and programmatic experiences. At the corporate level, sustainability initiatives in Egypt were assessed through company reports from Coca-Cola HBC, CIB, Orascom, Juhayna, and emerging startups such as Plastale, highlighting the role of business actors in advancing CE adoption. At the community level, documentation of the Zabbaleen and NGO reports captured grassroots contributions to waste management and recycling. In parallel, Egyptian digital media sources including online news articles, social media campaigns, and podcasts provided insights into the state of public communication around CE.

In line with the search stage of SALSA, databases including Scopus, Web of Science, Google Scholar, and the Egyptian Knowledge Bank were systematically queried, alongside repositories of major international organizations (UNIDO, OECD, EU, World Bank). For the appraisal stage, only credible and Egypt-specific sources published between 2018 and 2025 were included, provided they addressed CE, sustainability, or communication; purely technical studies without social or communicative dimensions were excluded. During the synthesis stage, the evidence was clustered into thematic domains aligned with the study's objectives, including communication strategies, stakeholder roles, barriers to engagement, and framework models. Finally, the analysis stage applied thematic and comparative methods to identify recurring patterns, extract lessons, and highlight structural gaps in CE communication and engagement.

Table 1. Summary of Sampled Evidence and Analytical Focus

Category	Approx. Sample Size	Representative Examples	Analytical Focus
Academic Publications	~120	Cairo University, Ain Shams University	Theoretical foundations and empirical evidence
Events & Seminars	~320	National CE workshops, international conferences	Evidence of awareness-raising, knowledge exchange, and networking
Corporate Initiatives	23+	Coca-Cola HBC, CIB, Orascom, Juhayna	Private sector sustainability programs and CSR strategies
Circular Startups	~45	Plastale, Green Co., SwitchMed	Innovation, entrepreneurship, and women-led initiatives
Policy & Government Reports	15+	Waste Management Law (2020), Egypt Vision 2030	Regulatory frameworks and institutional strategies
International Organization Reports	20+	UNDP, UNIDO, EU, World Bank	Comparative perspectives and global programmatic approaches
NGOs & Community Sources	10+	Zabbaleen records, local NGOs	Grassroots contributions and informal sector practices
Media Outputs	30+	News articles, TV broadcasts, podcasts	Public awareness, campaigns, and communication outreach

Source: Authors

The breadth and focus of the evidence base are summarized in Table 1, which illustrates the diversity of sources and their analytical application within the study.

2.2. Expert Consultation Survey

To complement the secondary data analysis, an expert survey was carried out with a purposive sample of 20 professionals engaged in community-level communication, awareness programs, and Circular Economy (CE) initiatives in Egypt. Data collection relied on a structured questionnaire, delivered both online and in person, combining Likert-scale items—used to assess the effectiveness of communication channels, stakeholder

influence, and community barriers—with open-ended questions that captured cultural perceptions, trust dynamics, and local practices. Quantitative responses were analyzed through descriptive statistics to reveal key trends, while qualitative inputs were thematically coded in ATLAS.ti to identify recurring patterns and actionable recommendations. This approach served to validate and enrich the literature-based findings, thereby enhancing the robustness of the study's conclusions.

2.3 Limitations, Justification and Ethical Considerations

The study minimized ethical concerns by relying primarily on secondary data from peer-reviewed publications, official reports, and credible institutional sources. Academic integrity was maintained through systematic appraisal, transparent citation, and acknowledgment of evidence gaps. For the expert consultation survey, participants received clear information about the study's purpose, and their informed consent was obtained. All responses were anonymized and treated confidentially, ensuring that expert insights were reported collectively without linking them to specific individuals or organizations. The use of ATLAS.ti for coding enhanced the rigor and transparency of the qualitative analysis.

Nonetheless, some limitations must be acknowledged. Secondary evidence in Egypt remains fragmented, donor-driven, and disproportionately concentrated in urban centers, reducing the generalizability of findings to rural settings. The expert consultation survey, while providing valuable depth, was limited to 20 participants, which narrows the range of perspectives despite purposive sampling for diversity. Household-level surveys were deliberately excluded, as limited awareness of CE among middle- and low-income groups would have undermined reliability. This absence, however, is itself an empirical finding that highlights structural communication and engagement gaps. Overall, the combined use of SALSA and expert consultation was justified as the most appropriate strategy, balancing feasibility, contextual relevance, and methodological rigor for developing an inclusive CE framework in Egypt.

3. Results and Discussion

3.1. Current Practices and Initiatives in Egypt's Circular Economy

Egypt's circular economy (CE) landscape has experienced significant development in recent years, shaped by governmental policies, academic research, private sector initiatives, and grassroots entrepreneurship. Mapping these dynamics is essential for assessing their contribution to sustainable development and for identifying persisting gaps in inclusivity, particularly in relation to middle- and low-income communities. Building on this objective, the present analysis is grounded in a systematic review conducted using the SALSA methodology (Search, Appraisal, Synthesis, and Analysis). In the Search phase, sources were identified through targeted keyword searches across multiple domains, with the search timeframe spanning 2018 to 2025:

- Egyptian governmental portals: Ministry of Environment (MoE), Ministry of Higher Education (MoHE), Waste Management Regulatory Authority (WMRA), and the Academy of Scientific Research and Technology (ASRT).
- University repositories: Cairo University, Ain Shams University, and the National Research Centre.
- International organizations: United Nation Industrial Development Organization (UNIDO- Egypt), SwitchMed, the European Union, UN-Habitat, the World Bank, the OECD, and ESCWA.
- Corporate social responsibility (CSR) reports: Elsewedy Electric, Commercial International Bank (CIB), PepsiCo, Coca-Cola, Orascom, Juhayna, Orange, and AlexBank.
- Startup directories: ENSUN, F6S, and Tracxn.
- Event platforms: IEREK, Cairo Water Week (CWW, 2025), and DCarbon Egypt.

During the Appraisal phase, inclusion criteria prioritized peer-reviewed publications, Egypt-specific grey literature, official reports from ministries and international organizations, corporate documents containing verifiable CE commitments, and program evaluations such as those from SwitchMed and UNIDO. Sources considered anecdotal or unverified, including blogs, informal counts, and social media claims, were excluded. To ensure the robustness of the evidence base, triangulation was applied wherever datasets overlapped, particularly in the case of startup repositories.

In the Synthesis phase, the review of evidence highlights that Egypt's circular economy ecosystem is both vibrant and fragmented, reflecting a multiplicity of actors and initiatives but with uneven documentation and coordination. Academic research has shown steady growth, with approximately 120 publications affiliated with Egyptian institutions between 2018 and 2025, underscoring an expanding interest across universities and the Academy of Scientific Research and Technology. Stakeholder engagement has also been considerable, as more than 320 CE- and sustainability-related events were documented between 2020 and 2024, organized by ministries, NGOs, and international partners; however, their reach beyond professional networks remains uncertain. Media and communication activities have proliferated, including at least three Egypt-based channels such as Green Light Podcast, GeoCycle Sustainability Show, and UN Voices of Impact, alongside 28 programs and campaigns active between 2020 and 2024, yet their societal impact is difficult to evaluate due to the absence of reliable audience metrics. Corporate initiatives have been diverse, with at least 23 distinct CE and CSR programs implemented since 2018 by leading companies and banks. Examples include Elsewedy Electric with 15 community projects, PepsiCo's Recycle for Tomorrow, Coca-Cola's CanBank, CIB's youth empowerment initiatives, Orascom's scholarship schemes, Juhayna's farmer capacity-building projects, and Orange's digital skills training. While these initiatives demonstrate breadth, they remain fragmented and largely undocumented at the national scale. (see Table 2 for a consolidated overview of the current CE initiatives in Egypt, 2018–2025).

In the Analysis phase, these findings collectively suggest that Egypt's CE landscape during 2018–2025 is characterized by considerable activity yet persistent fragmentation. Research output is increasing but remains dispersed across institutions. Stakeholder engagement through events is frequent, though its societal impact beyond professional circles is unclear. Media channels and campaigns exist but lack measurable outreach indicators. Corporate initiatives are numerous and diverse, yet many remain CSR-driven pilots without national scale-up. Entrepreneurship demonstrates promise, especially among youth and women, supported by international programs that provide training and incubation opportunities. Meanwhile, the informal sector continues to be central to waste recovery, yet it remains insufficiently integrated into formal CE policy frameworks.

While the breadth of initiatives illustrates Egypt's commitment to sustainability, their fragmented documentation and weak monitoring mechanisms constrain collective visibility and impact. Strengthening evaluation frameworks, ensuring transparent data collection, and systematically integrating informal actors and grassroots startups into national CE strategies could accelerate societal adoption.

More importantly, future policies should move beyond fragmented pilot projects to establish scalable, inclusive CE models that directly serve low- and middle-income communities. By embedding local voices and grassroots innovations within national policy design, Egypt could position itself not only as a regional leader in CE but also as a model of socially inclusive sustainability.

Table 2. Current Landscape of Circular Economy Initiatives in Egypt (2018–2025)

Domain	Key Evidence	Strengths / Achievements	Weaknesses / Gaps	Implications for Middle- & Low-Income Groups
Academia and Research	~120 CE/sustainability publications (2018–2025) across Cairo Univ., Ain Shams, NRC, ASRT	Growing academic base; integration into higher education	Fragmented, limited governorate-level coverage	Research often disconnected from local community needs
Events and Conferences	~320 CE-related events (ministries, NGOs, UN, EU)	High visibility, international collaboration	Weak follow-up; limited penetration beyond experts	Events concentrated in Cairo/Alexandria; rural voices missing
Media and Communication	3 dedicated channels (e.g., Green Light Podcast) + ~28 programs (radio, podcasts, NGO campaigns)	Awareness platforms emerging	No performance/audience metrics	Hard to assess reach to low-literacy & rural audiences
Corporate and CSR Initiatives	23+ programs (Elsewedy, CIB, PepsiCo, Coca-Cola, Orascom, Juhayna, Orange)	Strong private-sector role; funding capacity	Mostly CSR-driven, not systemic; no unified reporting	Projects localized, often not scaled to governorates
Entrepreneurship and Startups	45+ startups (Plastale, Egyptian Green Co., Bekia, Tilestic); 20 service-model SMEs	Grassroots innovation; 47–48% women in SwitchMed training; youth engagement	Small-scale, survival-stage enterprises	Potentially inclusive, but fragile without finance & policy support
Informal Sector (Zabbaleen)	Up to 80% recovery rates in localized case studies	World-leading recycling capacity	Marginalized from national CE frameworks	Central for inclusion; livelihoods at risk if excluded
International and NGO Programs	UNIDO, SwitchMed, EU, FAO, ESCWA pilots; ~2,200 trained entrepreneurs regionally	Capacity building, women/youth engagement	Often donor-driven, time-limited	Supportive but not institutionalized nationally
Domain	Key Evidence	Strengths / Achievements	Weaknesses / Gaps	Implications for Middle- & Low-Income Groups
Academia and Research	~120 CE/sustainability publications (2018–2025) across Cairo Univ., Ain Shams, NRC, ASRT	Growing academic base; integration into higher education	Fragmented, limited governorate-level coverage	Research often disconnected from local community needs

Source: Authors

3.2. Results from SALSA Analysis

3.2.1 Decentralized Stakeholder Engagement for Circular Economy Adoption in Egypt

Stakeholder engagement is vital for the effective adoption of circular economy (CE) principles, embedding trust, cooperation, accountability, and sustainability into stakeholder relationships (Zorpas, 2024). It facilitates collaboration, co-creation, and knowledge sharing, helping startups and businesses develop Circular Economy Business Models (CEBMs), drive innovation, and advance areas like waste management (Provensi et al. 2024). Actively involving stakeholders also aligns business goals with broader interests, improving competitiveness and financial outcomes (Kahupi et al., 2024). Collaborative strategies are particularly vital for designing and testing circular products, implementing innovative solutions, and facilitating the adoption of new technologies (Henry et al., 2022). Furthermore, multinational corporations and government agencies play a critical role by implementing educational initiatives that develop new competencies, strengthen stakeholder empowerment, and promote engagement in circular practices (Oyinlola et al., 2021).

The review conducted using the SALSA methodology highlights the effectiveness of decentralized, community-driven approaches in promoting circular economy (CE) practices in Egypt. The search process, guided by targeted keywords such as “Egypt decentralized environmental communication,” “local governance sustainability Egypt,” and “community-based circular economy awareness MENA,” examined a broad range of sources, including UNDP Egypt’s local governance evaluations, GIZ/EEAA waste management pilots, World Bank rural development reports, FAO Egypt’s community engagement initiatives, ESCWA case studies, and peer-reviewed environmental communication studies from the MENA region. The appraisal phase prioritized documented initiatives that reported measurable outcomes such as changes in awareness, participation rates, waste diversion, and job creation. Particular emphasis was placed on interventions targeting middle- and low-income communities and on the role of informal sector actors

The synthesis of evidence reveals that bottom-up, decentralized engagement consistently outperforms top-down, centrally managed approaches in driving CE-related behavioral change. The UNDP/Government of Egypt Local Development Program (2019–2023) raised household waste-sorting participation in Qena and Sohag from less than 5% to 22% in just 18 months. This success was driven by face-to-face consultations and the involvement of trusted local leaders. Likewise, the GIZ/EEAA Solid Waste Management Programme (2016–2023) in Kafr El-Sheikh reached 45,000 residents and achieved twice the compliance rates for household waste separation compared to centrally managed areas (Frisch & Pautrat, 2021). The FAO Farmer Field Schools model (2018–2022) further highlighted the power of peer-to-peer learning, increasing adoption of composting and sustainable farming practices by 30% over ministry-driven campaigns. ESCWA’s comparative study (2021) in Tunisia and Morocco also emphasized the value of culturally adapted messaging delivered by respected community leaders, while the World Bank Egypt Rural Sanitation Project (2018–2021) documented a 37% reduction in open dumping in targeted villages over two years. Collectively, these findings highlight the importance of culturally resonant, trust-based communication frameworks in achieving sustainable participation and scaling CE adoption in Egypt.

These findings confirm that trust-building, cultural familiarity, and local ownership are decisive factors in fostering participation in circular economy (CE) initiatives. Projects that incorporated local facilitators, employed context-specific messaging, and actively integrated informal sector actors consistently demonstrated wider reach and stronger behavioral impact compared to centralized communication strategies. Four interrelated mechanisms emerged as critical drivers of success: trust and cultural resonance achieved through face-to-face engagement, capacity development within local institutions and community-based organizations, accessibility supported by language and literacy adaptation for diverse socio-economic groups, and formal recognition of informal sector actors as legitimate contributors to CE systems (Table 3).

Table 3. Evidence of Decentralized Communication and Participation Outcomes

Program / Initiative	Location	Communication Approach	Population Reached	Participation Outcome
Local Development Program (2019–2023)	Qena & Sohag	Face-to-face workshops, engagement of trusted local leaders	~ Households in targeted districts	Household waste-sorting increased from <5% to 22% within 18 months
Solid Waste Management Programme (2021)	Kafr El-Sheikh	Community-level outreach, local facilitators	>45,000 residents	Household compliance in waste separation doubled in pilot districts compared to centrally managed areas
Farmer Field Schools Model (2018–2022)	Various villages	Peer-to-peer facilitation, village-level ownership	Farming communities	Composting and sustainable farming adoption increased by 30% compared to ministry-led announcements

Source: Authors

Together, these insights underscore the importance of institutionalizing governorate- and village-level communication models within Egypt’s national CE policy framework. Embedding decentralized engagement platforms, alongside participatory monitoring and evaluation systems, is essential to ensuring equitable benefit distribution, enhancing inclusivity, and fostering long-term community commitment to CE adoption.

3.2.2 Key Communication Channels for adoption of circular economy

The successful implementation of circular economy principles is closely tied to well-structured communication strategies that facilitate the exchange of knowledge, promote stakeholder collaboration, and ensure coherence in policy development across diverse sectors (Onukwulu et al., 2025). Research highlights the importance of organized communication mechanisms such as multi-stakeholder dialogues, intergovernmental meetings, and sector-focused forums in spreading regulations, sharing technical knowledge, and fostering collective innovation (Savga et al., 2023).

Results from the SALSA review emphasize that communication strategies framed around tangible livelihood benefits including job creation, cost savings, and agricultural productivity gains are significantly more effective in engaging middle and low-income communities than approaches centered solely on environmental protection or technical sustainability narratives. In Egypt, particularly among marginalized urban and rural populations, messaging that links CE adoption to household-level economic security and practical outcomes resonates strongly. These groups often prioritize immediate survival and income stability over abstract environmental goals, underscoring the need for messaging that connects CE to direct social and financial value. According to the ESCWA report, accelerating circular economy (CE) adoption in the Arab region depends on communication strategies that are inclusive, cross-sectoral, and sensitive to cultural contexts (UN-ESCWA, 2023). The report also highlights the importance of awareness campaigns, educational initiatives, and capacity-building efforts in fostering a common understanding of CE principles. Multi-stakeholder platforms connect governments, businesses, academia, and civil society, while regional initiatives like SwitchMed and the African Circular Economy Network facilitate knowledge-sharing and technical support. Digital platforms and localized messaging delivered through trusted community figures and local languages are essential for engaging vulnerable groups and informal sectors. Coordinated media campaigns and cross-border collaboration further amplify CE visibility and attract investment. To operationalize these findings, a Coordinated Communication and Dissemination Plan has been developed and is summarized in Figure 2. This figure visually maps out the multi-level ecosystem of CE engagement, demonstrating how communication strategies intersect with education systems, civil society, industry actors, SMEs, government policy, and media. By placing these elements in a single framework, the figure emphasizes interconnectivity and feedback loops: for example, school-based awareness programs feed innovation hubs at universities, while grassroots initiatives inform policymaking and provide local proof-of-concept for CE solutions. Media and dissemination channels act as multipliers, amplifying stories of economic empowerment to encourage nationwide participation. The visual also highlights how each domain reinforces the others from policy incentives driving industry innovation to grassroots entrepreneurship feeding back into local economic resilience.

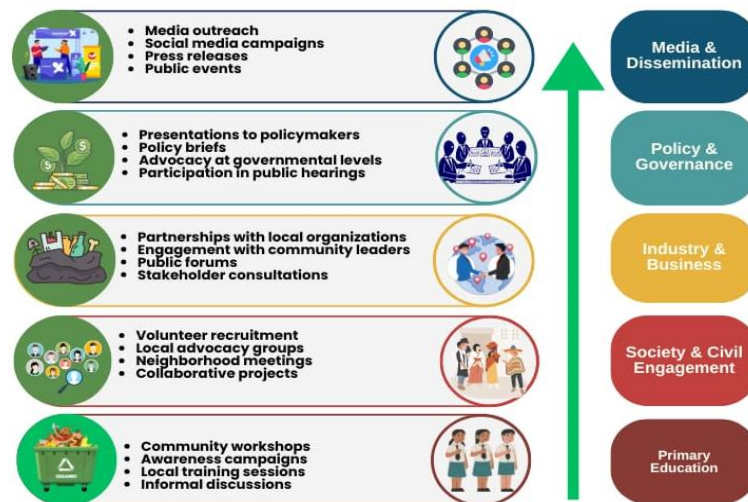


Figure 2. Multi-Level Strategic Channels for CE Communication and Engagement

Source: Authors

3.2.3 Evidence-Based Insights for Inclusive Circular Economy (CE) Adoption

Findings from the SALSA review, supported by evidence from regional surveys, peer-reviewed studies, and national reports, provide a strong foundation for strategies aimed at advancing inclusive circular economy (CE) adoption in Egypt. The review underscores that localized communication approaches such as in-person workshops, school-based initiatives, and university programs are consistently more effective in encouraging recycling and waste reduction behaviors than broad media campaigns alone. Digital platforms also prove impactful but are most effective when complemented by community-driven engagement, emphasizing the importance of hybrid outreach models. Message framing is another decisive factor, as clear, actionable guidance on recycling practices, accessible collection points, and explicit financial incentives consistently outperform abstract sustainability messaging. Additionally, campaigns that emphasize collective action and reinforce social norms have been shown to foster pro-environmental behavior, underscoring the need to align CE initiatives with cultural values and daily practices (see Table 4).

Table 4. Evidence-Based Insights for Inclusive CE Adoption

Dimension	Evidence-Based Finding	Strategic Implication
Communication Channels	Local workshops, schools, and universities outperform broadcast media	Prioritize community-based and hybrid outreach approaches
Message Formats	Practical guidance and financial incentives outperform abstract sustainability appeals	Focus on actionable, livelihood-oriented messaging
Trust and Cultural Context	Informal networks thrive where institutional trust is low	Formalize partnerships with informal actors to enhance system integration
Socio-Economic Constraints	Income disparities and poor service access limit engagement	Provide affordable, convenient, and accessible solutions
Stakeholder Collaboration	Multi-actor initiatives yield measurable results	Scale inclusive pilot models nationally
Incentives and Program Design	Deposit-refund and buy-back programs drive participation	Institutionalize economic incentives in CE policies
Evidence Gaps	Lack of national surveys; reliance on sectoral/local data	Commission nationwide CE perception and participation studies

Source: Authors

Trust and cultural context also significantly shape adoption. In contexts where institutional trust is low, informal networks, such as the Zabbaleen waste collectors, play a critical role in sustaining high rates of material recovery. Formalizing their role through training programs, contractual arrangements, and equitable partnerships could substantially increase system-wide impact. However, socio-economic constraints, particularly low household income and inadequate access to municipal services remain major barriers. Families frequently cite cost, convenience, and limited awareness as key obstacles, pointing to the need for CE messaging and initiatives that directly improve household livelihoods. Stakeholder collaboration stands out as a success factor. Multi-actor pilot projects involving universities, municipalities, and NGOs have demonstrated measurable success when technical solutions are paired with targeted awareness campaigns, offering scalable models for national adoption. Additionally, economic incentives and program design including deposit-refund schemes, buy-back initiatives, and widely accessible collection points are proven drivers of participation, reducing waste leakage and reinforcing circular practices.

A notable evidence gap remains, as Egypt does not yet have nationally representative household surveys on circular economy (CE) practices and perceptions, with most existing insights derived from localized or sector-specific studies. While opinion polls reflect considerable public awareness and concern for environmental issues, they also suggest that economic priorities often take precedence. This indicates an opportunity to strengthen communication strategies by placing greater emphasis on tangible financial benefits alongside sustainability objectives.

3.2.4 Addressing Barriers to Circular Economy Adoption

The SALSA review, drawing on peer-reviewed studies, national reports, and sectoral analyses, identifies a series of financial, structural, and social barriers that must be addressed to achieve large-scale circular economy (CE) adoption in Egypt (Table 5 and Figure 3). One key challenge is ensuring sustainable funding, which requires a diversified mix of government allocations, private sector contributions, and international partnerships. Government investments from education and green transformation budgets provide a foundation for national commitment, while private sector engagement through corporate social responsibility (CSR) mechanisms and modest levies reinforces the principle of extended producer responsibility. Strategic sectors such as technology facing e-waste and supply chain pressures and real estate, which can integrate circular design in mega-projects, are well-positioned to drive systemic change.

The review also highlights the role of domestic financial institutions and the Egyptian Sovereign Wealth Fund in supporting CE initiatives through direct investment, sustainability-linked loans, and preferential funding, strengthening local ownership. International cooperation remains vital, with entities such as the European Investment Bank and INTERREG NEXT MED providing both financial capital and technical expertise, ensuring alignment with global standards.

Table 5. Barriers and Strategies for Inclusive CE Adoption in Egypt

Barrier	Key Challenge	Strategic Response
Funding and Resources	Limited and unsustainable financing	Government allocation, CSR levies, sovereign fund support, and international partnerships
Public Awareness	CE perceived mainly as an environmental issue	Reframe as an economic opportunity; use trusted, accessible communication channels
Financial Accessibility	SMEs and low-income households lack access to finance	Expand green microfinance, preferential loans, and targeted incentives
Infrastructure Gaps	Limited collection, repair services, and product access	Establish community collection points, support repair economies, and local business models
Cultural and Social Norms	Resistance to behavioral change	Sustained education, role models, and engagement of local leaders

Source: Authors

Societal and behavioral barriers are equally significant. Evidence shows that CE is often seen as abstract environmental rhetoric rather than a tool for economic empowerment, emphasizing the need for accessible messaging delivered through trusted channels. SMEs and low-income households face financial constraints due to limited access to green financing, requiring microfinance expansion and clear communication of cost-saving benefits. Inadequate waste and recycling infrastructure, limited repair services, and lack of affordable circular products also hinder adoption, highlighting the need for community-based collection hubs, support for repair economies, and expanded circular marketplaces. Finally, cultural and social resistance requires sustained education, role models, and community leader engagement to establish new norms.

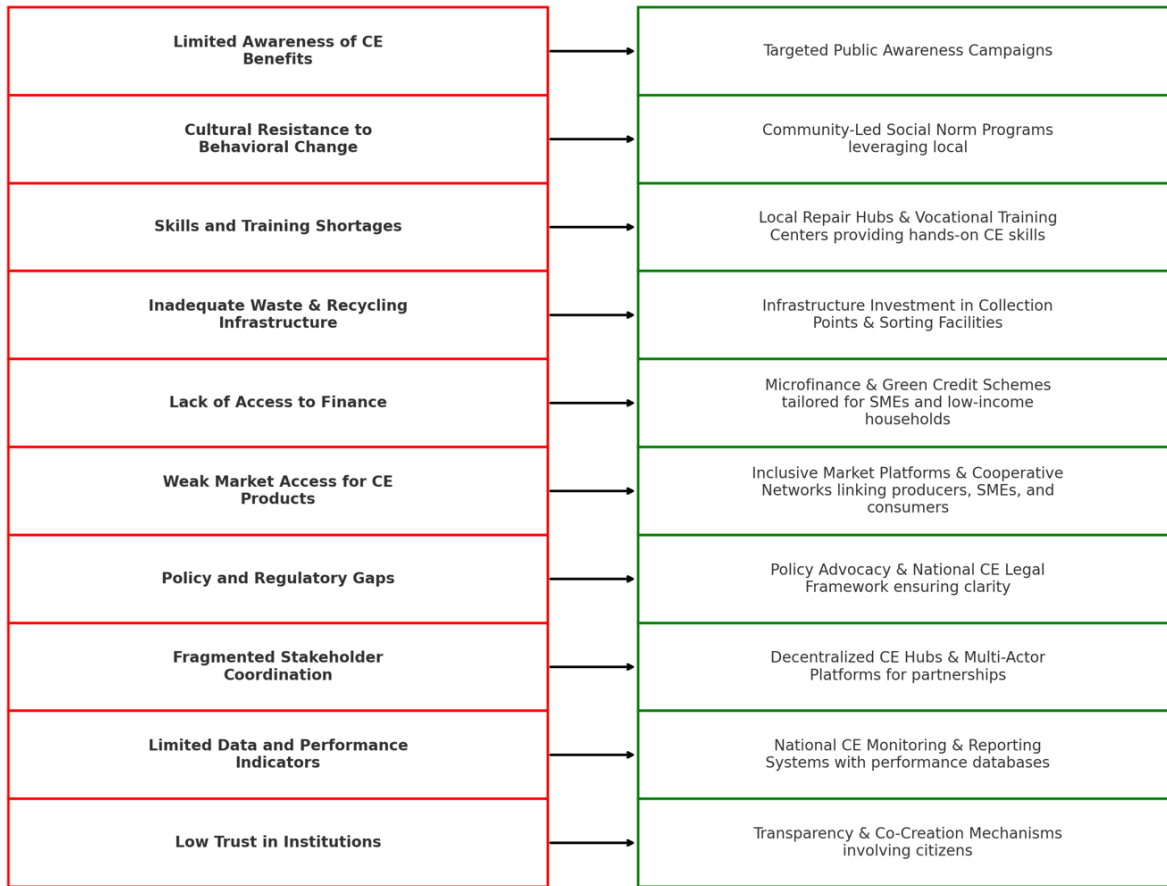


Figure 3. Visual Mapping of CE Adoption Barriers and Recommended Interventions in Egypt

Source: Authors

3.3 Results from Expert Consultation Survey

3.3.1 Communication Channels and Trust

Findings from the expert consultation survey highlight that the effectiveness of CE communication in Egypt is closely tied to the level of trust communities place in the channels used. Experts unanimously agreed that community-based channels such as local workshops, schools, NGOs, and religious institutions are more effective in building credibility and generating behavioral change than centralized or top-down media campaigns. National television and press campaigns were seen as useful for visibility and agenda-setting but were regarded as insufficient for sustained engagement, particularly in middle- and low-income communities. Digital platforms such as Facebook and WhatsApp were identified as promising tools for outreach, yet their influence remains constrained by inequalities in access to the internet, device ownership, and digital literacy. Importantly, experts emphasized that the identity of the messenger is often as significant as the content of the message: communication delivered by trusted local leaders, educators, or community figures was far more likely to resonate with households than generic messages from central authorities. These findings underscore that trust, cultural familiarity, and local ownership are decisive elements in shaping the success of CE communication strategies.

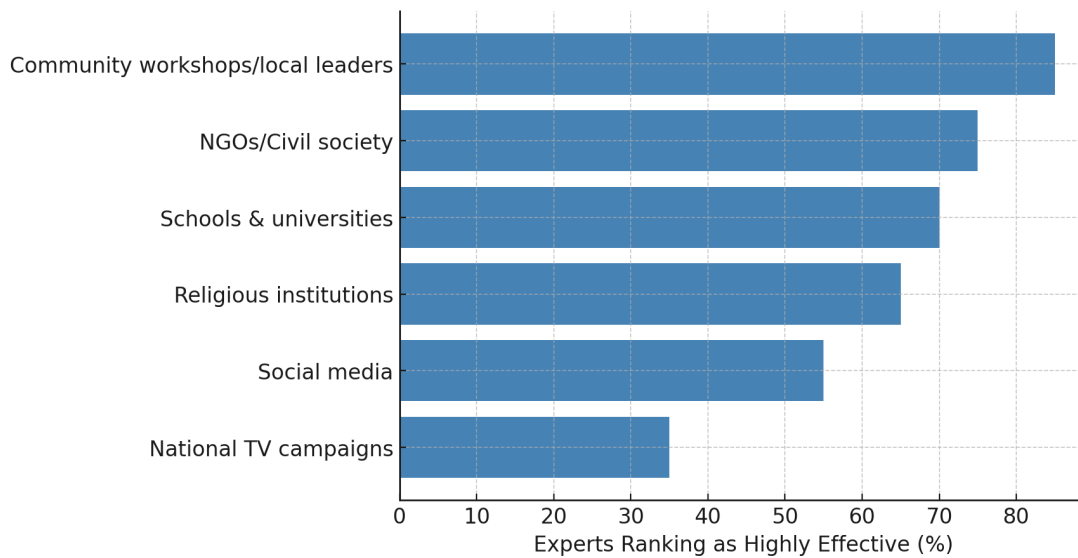


Figure 4. Expert Assessment of Communication Channels

Source: Authors

3.3.2 Socio-Economic Framing and Inclusive Engagement in CE

The expert consultation survey emphasized that accelerating circular economy (CE) adoption in Egypt requires reframing CE as a direct socio-economic opportunity rather than an abstract environmental obligation. Experts highlighted that households are more likely to engage when CE initiatives are presented in terms of income generation, job creation, cost savings, and livelihood security. For example, recycling programs that emphasize potential earnings from sorted waste or composting projects that demonstrate improved agricultural productivity were perceived as more compelling than messages focused solely on climate change or long-term ecological benefits. This framing reflects the immediate livelihood realities of vulnerable groups, where economic survival often outweighs environmental priorities. Linking CE to social equity objectives, such as women's empowerment, youth employment, and community health improvements, further enhances its relevance and resonance.

The integration of the informal sector and the active engagement of youth constitute strategic pillars of inclusive CE adoption, with experts stressing that informal actors, particularly the Zabbaleen and small-scale waste collectors, are already responsible for most recycling and material recovery in Egypt, often achieving efficiencies far exceeding those of formal systems. Despite their contributions, these actors remain marginalized and unrecognized in official policies. Formal integration through contracts, training, and equitable partnerships would strengthen recovery rates while improving working conditions, social protection, and sector legitimacy. Meanwhile, youth engagement emerged as a critical factor, with young people uniquely positioned to bridge institutional policies and community level practices due to their digital literacy, social networks, and capacity for innovation. Experts recommended mobilizing youth as local champions and peer educators through schools, universities, NGOs, and grassroots initiatives to foster long-term ownership and cultural acceptance of CE principles. The findings highlight that reframing CE in socio-economic terms, recognizing informal sector contributions, and empowering youth are mutually reinforcing strategies essential for building an inclusive, community-driven CE transition in Egypt.

3.3.3 Barriers and Proposed Solutions

The expert consultation survey revealed several critical barriers that continue to undermine inclusive circular economy (CE) adoption in Egypt. First, trust deficits were repeatedly highlighted, with experts noting that many communities remain skeptical of government-led initiatives due to a history of fragmented projects and unfulfilled promises. Second, cultural perceptions surrounding waste-related activities act as a major constraint; recycling

and waste collection are often stigmatized as low-status work, deterring wider community participation. Third, financial limitations particularly for SMEs and low-income households restrict the ability to invest in recycling infrastructure, sustainable practices, or green entrepreneurship, leaving CE innovations concentrated among better-resourced actors. Fourth, experts pointed to coordination failures among ministries, local authorities, NGOs, and private companies, which often operate in silos without a unified national strategy. This lack of institutional alignment results in overlapping projects, resource inefficiencies, and limited scalability.

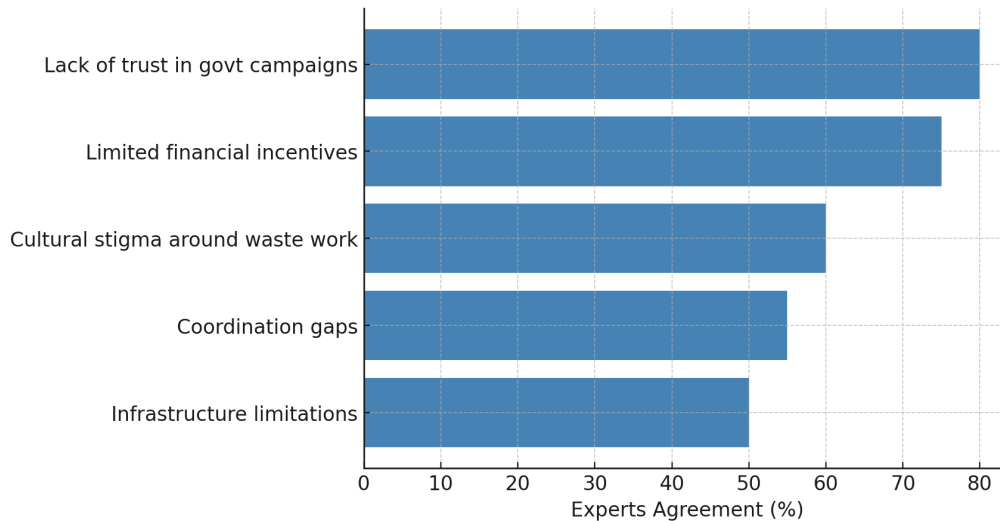


Figure 5. Barriers Identified by Experts

Source: Authors

Experts highlighted the challenge of limited incentives for households and businesses to engage in continuing education practices. Without mechanisms such as deposit refund programs, financial support, and market access for recycled products, engagement remains sporadic and short-lived. Finally, experts noted the absence of long-term monitoring and evaluation systems, making it difficult to assess impact or build accountability. Together, these barriers reflect many of the gaps identified in the SALSA review, but the experts' analysis adds depth by emphasizing the centrality of trust, cultural context, and incentive structures in shaping grassroots continuing education adoption.

3.3.4 Thematic Patterns from ATLAS.ti Coding

The qualitative analysis of expert responses conducted using ATLAS.ti, revealed four recurrent thematic clusters that provide deeper insights into the dynamics of CE adoption in Egypt. The first theme, Trust and Transparency, underscored that communities are more likely to participate when communication is credible, transparent, and delivered by trusted intermediaries such as local leaders, NGOs, or educators. The second theme, Economic Empowerment, highlighted the strong link between CE participation and perceived livelihood benefits; experts consistently stressed that households are motivated when CE practices are framed as opportunities for income generation, cost reduction, or job creation.

The third theme, Community Ownership, reflected the view that long-term engagement requires empowering local groups to take leadership in designing and implementing CE initiatives. Experts emphasized that bottom-up models foster legitimacy, accountability, and sustainability more effectively than top-down directives. The fourth theme, Education and Awareness, pointed to the importance of embedding CE concepts in formal education systems and non-formal community training. Schools, universities, and local workshops were cited as crucial platforms for building generational awareness and sustaining behavioral change, these themes highlight that trust, economic relevance, grassroots ownership, and education are the foundational pillars of effective CE engagement. They also align closely with the evidence derived from the SALSA review, reinforcing the conclusion that

inclusive CE adoption in Egypt requires a shift toward localized, economically relevant, and participatory communication models.

Table 6. Thematic Patterns from Qualitative Analysis

Theme	Description	Implication for CE Adoption
Trust and Transparency	Credibility of messengers central to success	Communication must rely on trusted local actors
Economic Empowerment	Engagement rises when CE linked to livelihoods	Reframe CE as jobs, income, and savings
Community Ownership	Grassroots leadership fosters legitimacy	Build participatory, bottom-up platforms
Education and Awareness	Schools & NGOs essential for long-term change	Institutionalize CE education across levels

Source: Authors

3.3.5 Integrated Insights from the SALSA Review and Expert Consultation Survey

The combined analysis of findings from the SALSA review and the expert consultation survey highlights both areas of strong alignment and key differences that shape the future of circular economy (CE) adoption in Egypt. Both evidence streams converge on the importance of decentralized, community-driven communication, which consistently proves more effective than top-down campaigns in influencing behavior. They also agree that positioning CE as an economic and social opportunity focusing on employment generation, household savings, and livelihood security is far more persuasive for middle- and low-income communities than abstract environmental messaging. Another point of consensus is the critical yet underrecognized role of the informal sector, which remains the most effective actor in waste recovery despite its institutional marginalization and persistent social stigma. However, differences arise in how barriers are interpreted, policy documents and international reports tend to emphasize structural and technical challenges, such as the absence of centralized data, limited impact evaluation, and fragmented governance systems. In contrast, experts place greater emphasis on social and cultural obstacles, including trust deficits, the stigma surrounding waste-related work, and the absence of practical incentives for households and SMEs to adopt CE practices. This contrast underscores a gap between top-down policy frameworks and bottom-up community realities.

The integrated analysis suggests that achieving inclusive CE adoption in Egypt requires bridging these perspectives. Structural reforms such as establishing a national CE roadmap, enhancing data transparency, and developing robust monitoring systems must be complemented by localized, trust-based engagement strategies that empower communities, integrate informal actors, and address economic needs directly. Without this dual approach, CE adoption risks remaining fragmented and accessible only to elite groups, undermining its potential for widespread, sustainable transformation.

3.4 Proposed Framework for Inclusive CE Dissemination in Egypt

Building on the integrated findings of the SALSA review and the expert consultation survey, this study proposes a comprehensive, three-pillar framework to guide the inclusive dissemination of circular economy (CE) practices in Egypt. The framework is designed to address structural gaps while responding to community-level realities, ensuring that CE adoption is not only environmentally sustainable but also socially equitable and economically viable. The first dimension of the framework emphasizes grassroots empowerment through education, positioning local knowledge and skills as the foundation of long-term CE adoption. Integrating CE concepts into formal school curricula through practical workshops and innovation-driven activities will foster early awareness, while universities can serve as hubs for interdisciplinary research and applied solutions. Beyond formal education, civil society initiatives including community workshops, summer programs, and hands-on training in repair skills, composting, and recycling can further strengthen local ownership, providing both economic opportunities and pathways for sustainable living.

The second dimension focuses on multi-stakeholder economic integration, stressing the importance of aligning government agencies, corporations, SMEs, startups, NGOs, and the informal sector within a unified national strategy. Achieving this requires creating inclusive governance platforms where responsibilities are clearly

defined, resources are equitably distributed, and local ownership is prioritized. Industry must embed CE principles in operations through extended producer responsibility and circular design, while SMEs and startups should be supported with training, financing options, and access to scale-up platforms. Recognizing and formalizing the informal sector through contracts, capacity-building programs, and institutional acknowledgment will enhance recovery rates and ensure both equity and legitimacy. The third-dimension underscores adaptive, data-driven communication, advocating for a reframing of CE discourse to highlight its economic and social relevance rather than presenting it solely as an environmental obligation. Dissemination efforts should center around trusted local channels—such as community leaders, religious institutions, NGOs, and schools—to deliver messages tailored to the needs of diverse audiences. These messages must clearly demonstrate tangible benefits, including job creation, cost savings, and resource security. In parallel, a robust monitoring and evaluation system should be established to measure communication effectiveness, track participation levels, and monitor behavioral change. This evidence base will enable greater accountability and the ongoing refinement of CE strategies to maximize impact. By combining education, stakeholder alignment, and evidence-based communication, the framework provides clear guidance for expanding CE adoption across diverse communities. By embedding circular practices into daily community life, empowering economic actors across both formal and informal sectors, and connecting CE initiatives directly to livelihoods, Egypt can shift from fragmented, small-scale projects toward a cohesive, nationwide, equity-centered circular economy model.

4. Conclusion and Recommendations

4.1. Recommendations for Policymakers

A key priority is to establish and institutionalize a comprehensive national plan for communication, outreach, and stakeholder engagement on circular economy (CE) adoption, emphasizing decentralization beyond Cairo and Alexandria to include governorates, districts, and villages as central hubs for capacity building and community mobilization. Communication efforts should shift from abstract environmental messaging to a practical, economic, and livelihood-oriented narrative that highlights tangible benefits such as job creation, income generation, and household savings, fostering inclusivity and leveraging the potential of local communities and informal actors. This strategy must be supported by clear regulatory standards tailored to CE practices to ensure legal certainty, policy coherence, and investor confidence, along with targeted incentives such as tax exemptions, subsidies, and green procurement policies to encourage private sector participation and innovation. Additionally, the formal integration of informal waste workers and small-scale enterprises is essential, with programs guaranteeing fair wages, occupational safety, and social protection, recognizing their proven efficiency in material recovery.

Table 7. Policy Recommendations for Inclusive CE Adoption

Strategic Focus	Recommendation	Intended Impact	Key Actors
Decentralized Communication & Engagement	Develop a national CE communication and engagement plan with bottom-up, localized approaches for low- and middle-income groups	Broad inclusion, economic empowerment, localized capacity building	Ministries of Environment, Education, Higher education, Information; Local Authorities
Regulatory Frameworks	Introduce CE-specific standards and embed CE in development strategies	Policy coherence, legal clarity, investor confidence	Ministries of Industry, Environment, Planning
Incentives & Finance	Apply tax exemptions, targeted subsidies, and green procurement policies	Stimulate private sector innovation and adoption	Ministry of Finance, Investment Authority
Informal Sector Integration	Recognize and formalize waste pickers and small recyclers, providing fair wages and social protection	Social equity, improved recovery rates, livelihoods	WMRA, Local Councils, NGOs
Sectoral Mainstreaming	Integrate CE into agriculture, plastics, textiles, construction, and tourism sectors	Sustainable growth, resource efficiency	Cross-ministerial coordination

Source: Authors

4.2. Recommendations for Businesses and Innovators

Businesses can decentralize their operations by creating local production hubs and repair networks to serve underserved regions. Circular solutions must highlight cost savings and durability to gain adoption among middle- and low-income households. Collaboration with cooperatives, informal recyclers, and local supply chains is needed to create inclusive business ecosystems. Regional innovation centers and incubators will foster solutions tailored to local needs and strengthen Egypt's competitive advantage. Regional innovation centers and incubators will foster solutions tailored to local needs and strengthen Egypt's competitive advantage.

Table 8. Business and Innovation Pathways for CE Adoption

Strategic Focus	Decentralized Approach	Economic-First Messaging	Expected Impact
Circular Products & Services	Build local hubs and repair services in rural and secondary cities	Emphasize affordability and household savings	Greater access for underserved groups; reduced waste
Inclusive Business Models	Partner with cooperatives and informal actors	Frame buy-back/take-back as income opportunities	Community participation; improved livelihoods
Innovation & R&D	Set up regional incubators, R&D centers, and university collaborations	Showcase innovation as a driver of competitiveness	Locally relevant solutions; stronger innovation ecosystem
Market Expansion	Extend CE efforts to industrial zones and smaller cities	Present CE as a source of revenue and new markets	SME engagement; diversified growth

Source: Authors

4.3. Recommendations for Civil Society and NGOs

NGOs and civil society organizations should go beyond awareness campaigns to skill-building programs in composting, repair, and recycling. They must advocate for marginalized communities in policy spaces, ensuring inclusive strategy design. They should also bridge financing gaps by connecting communities with microfinance and cooperative funding. Establishing monitoring mechanisms led by civil society will provide policymakers with real-time data for better decision-making.

Table 9. Civil Society's Role in CE Dissemination

Function	Decentralized Approach	Economic-First Messaging	Expected Outcomes
Awareness & Training	Deliver localized workshops and hubs for women and youth	Position CE as a path to job creation and savings	Adoption of CE as a livelihood strategy
Advocacy & Representation	Elevate voices of rural and informal actors in CE policymaking	Advocate CE for poverty reduction and equity	Inclusive, community-driven policy design
Financing Facilitation	Connect communities to microfinance, cooperatives, SME funds	Promote CE entrepreneurship and affordable solutions	Growth of community enterprises
Monitoring & Evaluation	Civil society-led review systems for events and programs	Demonstrate participation, benefits, and cost-effectiveness	Evidence-based decisions; stronger accountability

Source: Authors

4.4. Cross-Sectoral Collaboration

Circular economy adoption requires multi-level collaboration between ministries, academia, financial institutions, civil society, and private actors. Education and vocational programs should integrate CE concepts to build a skilled workforce. Local banks and cooperatives can provide accessible green financing. Media outlets, especially regional ones, should focus on economic messaging to promote trust and participation.

Table 10. Cross-Sector Collaboration Framework

Sector / Actor	Decentralized Role	Communication Approach	Expected Outcomes
Government & Ministries	Align CE strategies with local policies and training initiatives	Use regional platforms to highlight CE's value	Stronger policy alignment; local ownership
Education & Universities	Introduce CE-focused curricula and applied research	Emphasize skills and entrepreneurship opportunities	Skilled workforce; innovation beyond Cairo
Financial Institutions	Provide accessible green finance via local channels	Show CE as a profitable household/SME opportunity	Increased grassroots funding
Civil Society & NGOs	Facilitate workshops and engagement networks	Build trust and maintain community feedback	Continuous stakeholder engagement
Private Sector	Expand CE efforts to underserved regions	Stress cost reduction, competitiveness, and jobs	Wider market inclusivity
Media Channels	Use local and social platforms for awareness campaigns	Frame CE as economic empowerment and security	Broad participation and adoption

Source: Authors

Conclusion

This study offers a comprehensive examination of the opportunities and challenges associated with **inclusive circular economy (CE) adoption in Egypt**, emphasizing the role of communication and stakeholder engagement in reaching low- and middle-income communities. Through a mixed method design integrating a SALSA literature review and an expert consultation survey, the research captures structural trends alongside lived realities in Egypt's CE ecosystem. The findings reveal that Egypt has made important strides through policy reforms such as the Waste Management Law of 2020, international partnerships, and the growth of sustainability-focused entrepreneurship. However, CE initiatives remain largely fragmented, donor-driven, and concentrated in urban hubs, which limits their capacity to achieve national-scale transformation... The **evidence mapping** conducted through SALSA highlights significant gaps in awareness campaigns, policy integration, and grassroots participation. Academic research and corporate initiatives have expanded knowledge of CE concepts, but often lack alignment with local needs, while media campaigns and national awareness programs are seldom backed by measurable performance indicators. These findings underscore the need to **reframe CE messaging** to emphasize economic benefits such as job creation, cost savings, and resource security—rather than presenting CE solely as an environmental obligation.

Insights from the **expert consultation survey** strengthen this conclusion by demonstrating that **trust, cultural resonance, and local leadership** are decisive in building community participation. Experts stressed the importance of communication channels rooted in community institutions such as NGOs, schools, and religious organizations, as well as the pivotal role of informal waste collectors, who contribute substantially to material recovery, yet remain excluded from formal policy frameworks. Youth engagement also emerged as a powerful driver of change, with young people positioned to link institutional strategies with community-level action through innovation and digital platforms. The analysis of **barriers to CE adoption** reveals interconnected challenges, including underdeveloped infrastructure, limited access to financing for SMEs and low-income households, social stigma around waste management, and fragmented governance systems. These barriers highlight that **technical solutions alone are insufficient**; achieving large-scale CE transformation requires structural reforms that integrate grassroots voices, support informal sector contributions, and ensure accessible financing mechanisms.

To address these systemic gaps, the study proposes a **three-pillar framework**: grassroots empowerment through education, multi-stakeholder economic integration, and adaptive, evidence-based communication. This framework emphasizes that successful CE transformation hinges on embedding circular principles in education systems, recognizing informal sector contributions, and using culturally sensitive messaging, supported by data-driven monitoring and evaluation. Egypt stands at a **critical turning point** in its sustainability transition. The findings of this study underscore the urgent need to shift from fragmented, pilot-driven projects to **a nationally coordinated, equity-centered CE strategy** that connects top-down policies with bottom-up engagement. By empowering communities, leveraging trusted networks, and positioning CE as a pathway to social and economic empowerment, Egypt can establish a replicable model of circular innovation for the Global South. This research contributes a **holistic roadmap** for bridging policy ambitions with local realities, offering actionable insights for policymakers, educators, businesses, and civil society actors seeking to create a resilient and inclusive circular economy.

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STUDENT CRIMINAL VICTIMISATION: A CASE OF SOUTH AFRICA

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Abstract. The conventional perception of universities as tranquil spaces has been challenged by the recent increase in campus-related violence in South Africa. The rise in homicides, violent protests, and acts of self-directed violence has raised concerns among various stakeholders in higher education. The effectiveness of university policies and security measures has been the subject of numerous studies, as student safety and security remain ongoing concerns. This paper focuses on the role of security personnel in ensuring student safety at the University of South Africa. The study will be conducted using a secondary desktop study, employing PRISMA analysis. Routine Activity Theory will be used to analyse the research subject and provide insight into its current reality. This paper examines the role of security personnel in preventing students from becoming victims of crime. Utilising a systematic approach, this research seeks to enhance campus safety and security. The findings underscore that a combination of environmental, institutional, and behavioural factors influences Campus security. Poor infrastructure, including inadequate lighting and non-functional cameras, weakens safety. It is recommended that students refrain from using headphones, avoid walking alone at night, and move in groups to remain vigilant and reduce the risk of becoming targets. Additionally, the university community must work together to strengthen security measures and create a safer campus environment.

Keywords: campus violence; security personnel; Maslow's hierarchy of needs; Routine Activity Theory

Reference to this paper should be made as follows: Mabungela, A.B., Denver, D., Sixolile, N., Gwabeni, S., Musawenkosi, L. 2025. Student Criminal Victimisation: A Case of South Africa. *Insights into Regional Development*, 7(4), 176-188. <http://doi.org/10.70132/x5236984833>

JEL Classifications: H0

Additional disciplines: security, safety

1. Introduction

Globally on university campuses, there are a number of safety issues (Ivančík & Andrassy, 2023). Security is a fundamental requirement for the development of both individuals and society. It is essential for the stability, development, and well-being of any population. In general, the term "security" is defined as a protection against vulnerability, violence, distress, and want, which all impede a citizen's progress and existential well-being. The term is used in various contexts. The absence of anxiety implies safety and want in the hierarchy of human needs. Criminal victimisation on university campuses poses significant psychological, academic, and physical obstacles. Students experience substantial psychological, financial, and academic repercussions as a result of their interactions with criminality, which is consistent with Cognitive Behavioural Theory.

Victimisation is a traumatic experience that frequently leads to long-term distress and emotional suffering. Victimised students report a variety of consequences, including chronic anxiety and frustration, physical injuries, and property loss (McGarry & Walklate, 2015; Janssen et al., 2021; Moletsane, 2023). White (2019) further states that campuses have experienced a variety of incidents, such as burglary, larceny, physical and sexual assault, and the use of weapons. In response, students implement cognitive and behavioural coping strategies. These include refraining from donning headphones while walking, avoiding hazardous areas, and walking in groups (Sumi et al., 2021; Maffini & Dillard, 2022; Mwiti et al., 2023). They have also suggested that institutional safety be improved through the implementation of CCTV surveillance, increased patrolling, and more rapid response mechanisms by university security (Moult, 2019; Roberts et al., 2022; Caulfield et al., 2025). In conjunction with effective security officer interventions and law enforcement support, these protective behaviours can decrease the probability of victimisation. Student mobility is influenced by the dread of crime, resulting in learners' avoidance of specific locations or their restriction of movement during particular hours. In contrast, regions that are perceived as secure are more likely to encourage extended stays and engagement beyond academic pursuits. Students are unable to fully utilise campus facilities due to crime-related fears, despite universities being open and accessible spaces that promote intellectual, physical, and social development (Makhaye et al., 2023).

In South Africa, institutions of higher learning have experienced a substantial increase in illicit activities over the past two decades, which is a cause for concern (Kandala, 2018). Despite the expectation that universities would provide a more secure environment than other educational institutions, they continue to encounter criminal activity that is comparable to that of township high schools (Mugume, 2017). In some instances, students are killed by peers or intruders who unlawfully obtain access to the premises, and they are frequently victimised on campus and in their residences. Higher education institutions are susceptible to illicit activities due to the numerous hazards they encounter, such as bullying, robbery, burglary, and sexual harassment. Institutional responses to past criminality that may not always be rehabilitative are underscored by the exclusion or barriers to admission that students with criminal records face in some instances (Custer, 2018; Semple et al., 2021). However, institutional policies and the efficacy of campus security structures continue to bear the majority of the responsibility for safety. Consequently, institutional management must prioritise campus safety (Mugume, 2017), and security personnel are indispensable in this regard. Their visibility, responsiveness, training, and collaboration with students are essential for minimising threats and maintaining a conducive environment for personal development and learning on campus.

This systematic evaluation examines the role of security officers in addressing criminal victimisation among university students, with a specific focus on campuses in South Africa's Kwa Zulu Natal Province. The study aimed to examine the underlying factors contributing to the vulnerability of students and identify the prevalent forms of victimisation they experience. The results indicate that students are at an increased risk as a result of a combination of personal lifestyle choices, inadequate campus security infrastructure, minimal guardianship, and high crime rates in the adjacent areas. This review emphasises the importance of security officers in crime prevention. It emphasises the necessity of enhanced institutional strategies that facilitate their efforts to safeguard students and improve campus safety by synthesising the existing literature.

2. Problem Statement

On the KwaZulu-Natal University campus, several safety issues exist. The University of KwaZulu-Natal (UKZN) has implemented several security measures to reduce campus crime (Mkhize et al., 2022). Nevertheless, several criminal incidents have occurred, undermining the efforts of university security agencies and casting a negative light on the campus's reputation. These kinds of incidents not only make the university community members feel afraid, but they also damage the university's campus and South Africa's reputation (Mkhize et al., 2022). In recent years, police brutality and criminal victimisation have become urgent worldwide concerns, prompting demands for international initiatives to safeguard vulnerable people (Mensah et al., 2023). Academics argue that cultivating

a culture of human rights within law enforcement agencies may lead to enhanced policing efficacy and improved public safety outcomes (Champion, 2001; Annang et al., 2025). Nonetheless, higher education institutions have emerged as arenas of violence worldwide. This underscores the necessity of adopting a comprehensive strategy that fosters collaboration among many stakeholders to safeguard students against harassment within and surrounding university communities.

Makhaye et al. (2023) identified female students as victims of sexual assault at higher education institutions, citing inadequate security presence on the campuses examined. Participants in the survey indicated that private security firms infrequently performed patrols on campus (ibid). Students underscored the necessity for visible security staff, particularly during university activities and weekends, when occurrences of sexual offences apparently escalate. The same study participants criticised the university's security measures, arguing that despite the availability of resources such as contracted private security, psychology departments, and anti-harassment policies, these resources are not effectively implemented (ibid). The elevated levels of violence in South African universities signify a more extensive crisis within the education system, undermining the conventional global perception of universities as secure environments for learning and intellectual development (Hughes et al., 2019; Ajayi et al., 2021). Campus violence manifests in various ways, including as gender-based violence (GBV), self-harm, physical assault, and property damage, all of which detrimentally affect the educational atmosphere and jeopardise the safety of students and staff (Hamby, 2017; Griner et al., 2020; Mutongoza, 2023). The anxiety experienced by both students and instructors signifies a prevalent apprehension about campus safety. Despite numerous attempts to address these issues, their efficacy remains contentious (Scott & Hargreaves, 2015; Mootz et al., 2023; Jansen et al., 2024). Although violence on university campuses is a worldwide issue, South Africa faces particularly severe and understudied challenges in this domain (Burton & Guidry, 2021; Hannan & MacDonald, 2023). These challenges reflect broader socioeconomic issues, as South African communities contend with elevated crime and violence rates.

In instances of rape, arrest rates might be as low as 50%, and convictions are obtained in less than 10% of recorded cases. This widespread violence has resulted in its normalisation, fostering a culture in which violence is increasingly regarded as an acceptable mode of communication, especially in educational settings (Hamby, 2017). Despite universities implementing strengthened security measures, including improved lighting and stricter access control, violence continues to be a pervasive and entrenched problem. This persistence highlights the inadequacies of existing interventions (Davids & Waghid, 2016; Ajayi et al., 2021; Mutongoza, 2023; Mootz et al., 2023). Consequently, there have been persistent demands for enhancements, including the use of sophisticated security technologies such as fingerprint-controlled access (Singh & Ramutsheli, 2016; Mutongoza, 2023).

3. Literature Review

In the past, educational institutions were regarded as a haven for learning, free from criminal activity. However, the harsh reality is that they are no longer as secure as they were traditionally envisioned, due to the rising number of crimes committed there. Numerous studies have been conducted on the perception of crime and campus safety among university students (Jacobsen, 2017; Jennings et al., 2019). Although some studies have found a positive perception of campus safety, others have discovered a negative perception among university and college students. For example, a survey conducted by Merianos et al. (2017) on campus safety perception found that the majority of students reported feeling secure on campus. In contrast, about 16% of students reported feeling insecure on campus in a separate study (Jennings et al., 2019). The following crimes were of particular concern to students: larceny, stalking, physical violence, and sexual violence (Jennings et al., 2019).

Campus Crime in South Africa

The variances in the form and intensity of crimes committed on university campuses raise concerns regarding their impact on students and the broader university community. In South Africa, the effects of crime on university

campuses are also experienced by university security service providers, commonly known as Campus Protective Services (CPS). Despite offering analogous services on university campuses nationwide, the organisational name of these security service providers may vary from institution to institution. Irrespective of their operational methods and the services they provide, the security challenges they encounter may be similar (du Toit, 2019). Research indicates that crime has proliferated on university campuses in South Africa due to the rising number of students seeking and gaining admission annually (du Toit, 2019). The ratio of students to campus security personnel is markedly imbalanced. Inadequate security provisions exacerbate the disproportionate population ratio.

Specific campuses have malfunctioning or ineffective security apparatus, including defective Closed-Circuit Television (CCTV) systems and batons, which hinder the campus security personnel's ability to execute their responsibilities efficiently. Furthermore, students' inexperience or lack of understanding of the prevalence of crimes on university campuses has rendered many of them susceptible to criminal activities. The prevalent offences on university campuses include assaults, rapes, homicide, aggravated assault, robbery, kidnapping, sexual harassment, murder, and drug-related crimes. Others benefit from technological improvements and the impact of globalisation (Rothe & Friedrichs, 2014). These encompass cyberstalking, cybercrime, cyberbullying, and unlawful distribution of copyrighted materials (Makhaye et al., 2023).

Need for Physical Security on Campus

Studies have demonstrated that sentiments of insecurity in higher education correlate with elevated depression and diminished self-esteem (Maffin & Dillard, 2022). Regrettably, the majority of students, particularly the victims, frequently hesitate to report these offences to university officials due to apprehension (Dastile, 2020). Consequently, physical security is crucial in mitigating crime at the institution (Moerschell & Novak, 2020). It is essential to guarantee the protection of staff, students, security personnel, construction workers, and university administration from criminal activities within the institution. Physical security measures at a university encompass a wide array of strategies to discourage prospective invaders, including advancements and updates in alarm systems and surveillance footage. Effectively executed physical security safeguards the facility, assets, and equipment from theft, sexual assault, assault, homicide, vandalism, and robbery.

The Perception of Safety and Security on University Campuses and its Effects on Students

Even though the majority of universities utilised protection service companies to ensure the safety and security of their campuses and off-campus residences, this approach had minimal effect on the reduction of campus crime, as evidenced by the increase in reported incidents of rape, theft, robbery, assault, and murder among students (Crawford, 2017). Despite the university's efforts to prevent crime by hiring numerous security personnel, many students are still struggling to come to terms with the fact that crime is still on the rise on their campuses. There is a widespread belief that the proliferation of these crimes is due to the inadequate screening of visitors and intruders at the gate. Furthermore, there is the presumption that the university's crime rate has increased due to insufficient nighttime patrols for students attending lectures and library classes. There have been numerous complaints about the dim lighting at the university, as the majority of the area is quite dark, particularly when approaching specific university structures. Consequently, there is a perceived lack of safety on campuses (ibid). Additionally, there are no security cameras or security guards outside to patrol and monitor particular residences, and some of the roads leading to them are not equipped with functional streetlights (ibid). Reports indicate that the Protection Services Department received a report from a criminal justice researcher identifying the factors that contribute to crime within the university (ibid).

The university community's perceptions of safety and dread of crime are also heightened as a result of campus crimes. Personal factors (e.g., age, race, and sex) and contextual factors (e.g., neighbourhood or campus characteristics, location of residence, and time of day) are among the numerous variables that influence the commission of such offences. Criminal activities on campus not only degrade the character of the learning

environment but also diminish the positive activities of individuals affiliated with the institution (Makhaye et al. 2023). Prospective students may be discouraged from enrolling in specific universities due to high campus crime rates, and parents may be similarly discouraged from enrolling their children in institutions that may be suitable (Makhaye et al., 2023). The public's perception of official crime rates was reasonably accurate, as indicated by the perceptions of crime.

Nevertheless, the university administration generally does not prioritise the severity of these crimes and reported incidents. The dread of crime at universities is influenced by a variety of personal and contextual factors, including the adequacy of lights on campus and vulnerability. The fear of crime on campus is a result of the low prospect, lack of cameras, and a significant amount of soil, which can be used as a refuge and raping areas by criminals. Consequently, students will be more apprehensive about crime when there is a low prospect, such as a lack of a clear open view of the area.

Types of Criminal Victimization Among Students

The issue of victimisation on college campuses has been the subject of extensive research and has been classified as a crime by a variety of experts. Arson, murder, robbery, aggravated assault, burglary, weapon offences, substance misuse, sex offences, hate crimes, smoking, and alcohol use/abuse are among the most severe forms of campus crime that have been examined (Zheng, 2022). Nearly 28,500 criminal incidents were documented at postsecondary institutions in the United States in 2018. In 2021, the National Centre for Education Statistics reported that 12,300 forcible sex offences (43% of the total) occurred, as well as 9,600 burglaries (34%), 3,100 larceny (11%), 2,200 aggravated assaults (8%), and 800 robberies (3%). The frequency of sexual assaults on college campuses is alarmingly high. By the conclusion of their fourth year, 8.4% of males and 31.5% of females reported experiencing sexual assault, while approximately 30,000 college students were surveyed (Cantor et al., 2019). Scholars have long examined the factors that influence the formal reporting of victims' experiences, as they are associated with the prevalence of victimisation and non-reporting. Numerous factors contribute to the reluctance of victims to come forward, including a lack of faith in the police's ability to provide sufficient assistance, dependence on the offender, and feelings of guilt or fear (Daigle et al., 2016; Felix et al., 2021).

Students' Criminal Victimization: Contributing Factors

Global studies have identified the most robust correlation between criminal victimisation and alcohol and substance addiction on college campuses. Various forms of violence on campuses, such as larceny, vandalism, sexual assault, and battles, are the result of students' excessive alcohol consumption. These incidents are exacerbated by the perceived lack of self-control among intoxicated individuals, which in turn promotes such behaviour. Additionally, social factors contributing to sexual harassment, rape, and other forms of criminal victimisation on college campuses include inadequate monitoring, geographic isolation, and accessibility, as well as insufficient illumination, security, and campus-wide cameras (Dastile, 2020). The victim's relationship with the offender is another victim-related factor that can increase the likelihood of sexual harassment, burglary, and rape among female university students (Bohmer et al., 2021). The notion that strangers typically commit assaults is directly contradicted by the research conducted by Bohmer et al. (2021), which indicates that crimes on university campuses often involve familiar men and women (Bohmer et al., 2021).

4. Theoretical framework

The authors have selected routine activity theory to analyse criminal victimisation from a specific perspective. Routine activity theory offers a critical framework for interpreting and explaining the trends and contributing factors of criminal victimisation in South African universities. Initially developed by Felson & Cohen (1980), the theory elucidates the increase in aggregate predatory crime rates in the United States following World War II. The theory posits that criminal victimisation occurs when three essential elements are present: a motivated offender, an incompetent or absent guardian of property or individuals, and an appropriate target (White, 2019).

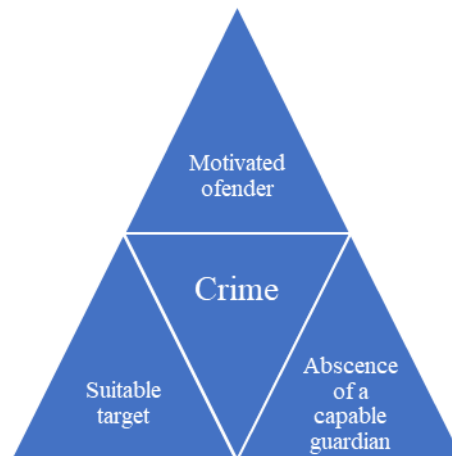


Figure 1. The Crime Triangle – Routine Activity Theory

Source: authors, based on reviewed literature

Motivated Offender

Motivated offenders are individuals who possess both the capacity and the motivation to engage in criminal activities (Felson & Lawrence, 1980). Motivated offenders are students who engage in excessive drinking at parties with the explicit intention of perpetrating crimes or whose cognitive abilities, such as self-control and intentions, are so significantly impaired by alcohol that they demonstrate a loss of control, according to this study.

Suitable Target

A suitable target may be a person or property that a motivated offender can easily identify and interact with to victimise. The offender's specific intention and the availability of opportunities may influence their decision to select one target over another. Burglary and theft can be committed against nonhuman objects, such as expensive cell phones or valuable necklaces, while a person possessing or wearing such items may attract the attention of a motivated offender. Nevertheless, the target's appropriateness is the primary factor in determining whether the offence will be committed.

Absence of Capable Guardians

Individuals or objects that are capable of deterring illicit behaviour through their mere presence in space and time may serve as capable guardians. Even when a motivated offender has selected a suitable target, this form of informal or formal guardianship can prevent malfeasance. For example, the proximity of a police officer may serve as an incentive for a potential criminal to reconsider initiating an assault. Security cameras, burglary alarms, fences, and walls are examples of nonhuman objects that can serve as guardians.

The present study connects with routine activity theory through an analysis of the interactions among three factors that contribute to criminal activity on campuses: motivated offenders, available targets, and the absence of guardians. It highlights how students can be victims of crime and suggests ways to make South Africa safer, such as encouraging anti-bullying initiatives and critical thinking skills. The research aims to assist universities in creating effective crime prevention plans by examining these variables on remote campuses. Ultimately, the theory provides a framework for understanding campus crime and vulnerabilities, helping universities develop effective crime prevention strategies.

5. Methodology

Search Strategy

A structured search was conducted using various academic databases and search engines, including ResearchGate, Google Scholar, and numerous Department of Higher Education and Training (DHET)-accredited journal platforms. The search strategy employed Boolean operators and keyword combinations to refine the results. The primary search criteria were "criminal victimisation," "university students," and "impact of security officers." To encompass a broader range of pertinent literature, the following terms were included: "safety," "security," "institutions of higher learning," "sexual harassment," "gender-based violence (GBV)," "robbery," "South African Police Service (SAPS)," and "community policing forums."

Studies were included if they met the following criteria: were published within the past decade; discussed one or more of the main concepts outlined above; and were focused on contexts within South Africa.

The following criteria were used to exclude studies: those originating outside of South Africa; those published more than 15 years ago; and those not aligning with the thematic focus of safety, security, or related victimisation issues within higher education institutions.

Screening and Selection Procedures

All publications that were identified were vetted in accordance with the PRISMA guidelines. Before conducting full-text assessments, titles and abstracts were evaluated for relevance. The PRISMA flow diagram was used to record the quantity of studies identified, screened, excluded, and subsequently incorporated for qualitative synthesis.

Data Analysis

A qualitative content analysis methodology was implemented. Qualitative research allows researchers to explore phenomena through the perspectives of participants in their natural settings, offering an in-depth understanding (Mabungela & Davids, 2024). This involved the iterative reading and coding of the included studies to identify recurring patterns, emergent themes, and gaps in the literature. Concurrent data collection and analysis were conducted to facilitate the real-time familiarisation with content and the refinement of emerging categories. Themes such as student vulnerability, institutional response, crime prevention measures, and campus security were identified, categorised, and grouped into broader concepts. A total of 55 articles were utilised after careful consideration and screening. The screening procedure, as outlined in the PRISMA 2020 flow diagram below (see Table 1 and Figure 1), served as a guide for this study. The screening process narrowed the data down to three themes, which are discussed below (see Figure 2).

Table 1. Documentary Matrix

Block 1	Block 2	Block 3
Security officers	Criminal victimisation	Lecturer Halls
Campus patrol	Theft	Students Residents
Surveillance systems	Assault	Recreational areas
	Substance abuse	
	Fear of crime	

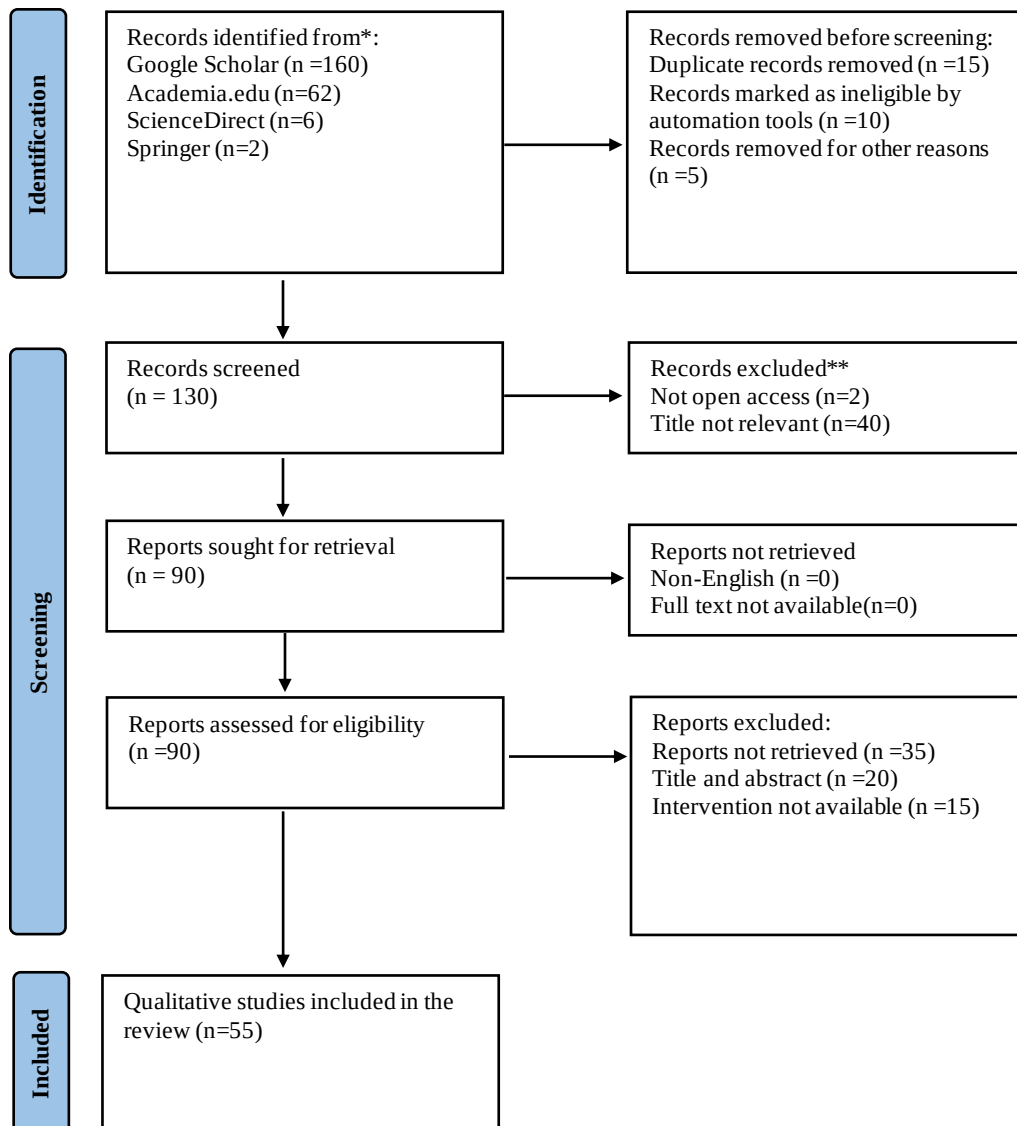


Figure 2. Prisma Diagram

6. Discussion

The systematic review indicates that criminal victimisation among university students is both pervasive and multifaceted, encompassing a variety of offences, including robbery, sexual harassment, assault, and rape (Fisher & Sloan, 2022). These crimes are not only prevalent but also significantly underreported, primarily as a result of students' lack of confidence in the capacity of campus authorities to respond effectively, as well as dread and shame (Daigle et al., 2016; Felix et al., 2021). The review also emphasises the increasing prevalence of cyber-related offences, such as cyberbullying, cyberstalking, and digital theft crimes that traditional campus security models are inadequately equipped to address (Rothe & Friedrichs, 2014). The operational and structural deficiencies of campus security systems are among the most noteworthy discoveries.

Numerous universities are plagued by inadequate student-to-security personnel ratios and inadequate physical infrastructure, including non-functional CCTV systems, dimly illuminated walkways, and unsecured access points (du Toit, 2019). These deficiencies compromise the security officers' capacity to detect and prevent crimes effectively. Students continue to report feeling insecure, particularly in isolated areas of campus and at night, despite efforts to outsource security services to private firms (Crawford, 2017). Students' susceptibility to crime was also identified as a significant factor, influenced by environmental risk factors such as the absence of street illumination, the lack of patrols, and the darkness of passageways. Moreover, substance abuse, particularly the misuse of alcohol and narcotics, was consistently associated with incidents of sexual misconduct, vandalism, and violence on campuses. These actions not only jeopardise the safety of the individuals involved but also jeopardise the safety of the broader campus community.

The review also observes that in numerous instances of sexual assault and harassment, the perpetrators are not strangers, but rather individuals who are familiar to the victims, frequently colleagues or acquaintances (Bohmer et al., 2021). This dynamic complicates the reporting and investigation processes, emphasising the necessity of security personnel receiving training in the management of sensitive interpersonal offences. Furthermore, the efficacy of any security system is compromised by students' general scepticism regarding the university's commitment to addressing criminal incidents, irrespective of its physical structure or staffing levels. Finally, it was determined that security officers frequently lack the institutional support, specialised training, and authority necessary to fulfil their responsibilities effectively. Numerous individuals are inadequately equipped to confront the psychological aspects of victimisation or to respond to intricate crimes, including cybercrime and sexual violence (Connell, 2016).

Recommendations

Efforts to address student victimisation are likely to remain fragmented and insufficient in the absence of a comprehensive institutional strategy that unites the efforts of security officers, student services, and university leadership. Suggestions: Universities should enhance and augment their security measures, including the use of CCTV cameras and increased patrols. Students must take self-protection measures, such as walking in groups or with peers, being more vigilant, and avoiding the use of headphones while walking. Collaboration among various stakeholders is impossible to overstate. The safety of the campus population must be ensured through cooperation between the HEI, private security companies, SAPS, community members, and other stakeholders. The HEI is committed to the strict implementation of its sexual harassment policy to safeguard its population, including those within its membership. While the majority of institutions are commended for devising the most effective policies to protect their members from violations, these policies are rendered impractical if they are not implemented.

Limitations of the study

Numerous constraints necessitate acknowledgement in this investigation. It is a systematic review that exclusively utilises secondary data from the existing literature, which may exhibit varying levels of methodological rigour, scope, and quality. The depth of contextual comprehension regarding operational challenges and lived experiences is restricted by the absence of primary empirical data, such as interviews or surveys with students, security officers, or university administrators. Furthermore, the review concentrates on literature from South Africa and specific international contexts, which may impact the generalisability of the results to universities in other regions or with varying institutional environments. It is also challenging to assess the long-term trends or the sustained impact of security interventions due to the scarcity of longitudinal studies. Additionally, despite the growing concern of cybercrime on campuses, there is a lack of research on the extent to which campus security personnel are prepared to address such crimes. Consequently, there is a lacuna in the evaluation of their evolving role in the digital era.

Conclusion

This paper concludes that campus security at South African universities, particularly at the University of KwaZulu-Natal, is undermined by a complex mix of environmental, institutional, and behavioural factors. Inadequate infrastructure, such as poor lighting and malfunctioning security systems, combined with insufficient patrols and weak policy enforcement, contributes to a heightened risk of student victimisation. Risky student behaviours, including late-night movement and substance use, further increase vulnerability, especially in areas lacking proper guardianship. The lack of coordination among stakeholders and the underreporting of crimes due to fear, shame, or mistrust in campus authorities conceals the accurate scale of the problem. Despite the presence of security measures, their limited effectiveness highlights the need for a more comprehensive, coordinated, and well-resourced approach to campus safety that addresses both physical and psychological dimensions of student well-being.

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Author Contributions: The authors contributed equally. All authors have read and agreed to the published version of the manuscript.

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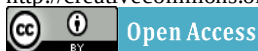
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**EXPLORING THE CHALLENGES AND COMPLEXITIES OF E-GOVERNMENT
OPERATIONALISATION IN LESOTHO****Alouis Chilunjika***University of Johannesburg, School of Public Management, Governance and Public Policy, Johannesburg, South Africa**E-mail: chilunjika@gmail.com**Received 28 August 2025; accepted 22 November 2025; published 30 December 2025*

Abstract. The Fourth Industrial Revolution (4IR) has transformed the way institutions and individuals interact and work in various settings. Technological innovations through e-government have paved the way for more accountable, transparent, effective, and efficient governance and service delivery in the Lesotho public sector. This study examines the challenges and complexities of operationalising e-government in Lesotho, utilising qualitative research methods to analyse the barriers and opportunities associated with its implementation. This study employed a systematic scoping review approach guided by the PRISMA 2020 framework. A comprehensive search was conducted across academic databases (Scopus, Web of Science, Google Scholar, and JSTOR), institutional repositories, and policy databases (World Bank, UNDP, and OECD reports). Additionally, government websites and grey literature (including laws, policy documents, and consultancy reports) were included to capture practice-based evidence. The study established that while Lesotho has made progress in digitising some public services, systemic inefficiencies, funding constraints, and weak regulatory frameworks, among others, hinder full-scale operationalisation. Ultimately, the study underscores the need for multi-stakeholder collaboration, capacity-building initiatives, and adaptive policy reforms to realise the transformative potential of e-government in improving public service delivery and governance transparency.

Keywords: Fourth Industrial Revolution; E-government; Challenges; Complexities; Operationalisation; Lesotho

Reference to this paper should be made as follows: Chilunjika, A. 2025. Exploring the challenges and complexities of E-government operationalisation in Lesotho. *Insights into Regional Development*, 7(4), 189-202. <http://doi.org/10.70132/m6293726784>

JEL Classifications: O33, O55, L86

1. Introduction

With the use of technology, modern citizens today demand more effective and transparent governance. With the advent of innovative services that enhance people's lives and operational efficiency, as well as inexpensive digital access, the Fourth Industrial Revolution (4IR) has revolutionised both the public and private sectors. Artificial intelligence (AI), the Internet of Things (IoT), and big data are among the technologies driving the adoption of e-government, enhancing human development and service delivery (Chilunjika et al, 2022; Mugunzva & Manchidi, 2024; Matlala et al., 2025). With a Human Development Index (HDI) of 0.514 (UNDP, 2021), Lesotho ranks 168th out of 191 nations, highlighting persistent disparities. Technology must be leveraged to enhance well-being, opportunities, and freedoms, thereby addressing these issues (Hunková & Havierníková, 2024). In Lesotho, 4IR's full potential remains unrealised due to a lack of infrastructure and skilled labour, despite offering tools to address developmental issues, including ineffective service delivery. By strategically implementing both disruptive and incremental technologies, these obstacles can be overcome, enhancing quality of life and promoting inclusive growth. By emphasising digital transformation, Lesotho can keep up with international developments and guarantee that its residents enjoy equitable development and simplified services.

The implementation of e-government through information and communication technologies (ICT) presents substantial opportunities for modernising and reforming the public sector (Komarova et al., 2024). Digital platforms enable direct citizen involvement, thereby strengthening governance principles (Kampira & Mukonza, 2025). One significant benefit is encouraging service delivery innovation, which changes the way governments deliver services by making them more sustainable, accessible, and efficient (Khawan, 2021). By fostering fair access to public services, research indicates that these advances are particularly beneficial for underserved areas (Suryapuspita, 2025). Systemic governance and administrative problems, including ineffective bureaucracy, a lack of competencies, corruption, and shaky institutional frameworks that jeopardise sustainable development and service delivery, have long plagued South Africa (Monyake, 2019; Vyas-Doorgapersad et al., 2024). These issues have persisted since independence and have led to uneven public services, such as erratic access to healthcare. Inequality is exacerbated by poor governance, which lowers living standards, traps populations in cycles of poverty, and diverts funds away from necessities such as housing, education, and food security (Mamokhere, 2025).

Through lowering corruption, monitoring public expenditures, and enhancing transparency, technology, especially e-government, offers a revolutionary answer (Chilunjika, 2024b; Chilunjika, 2024d; Haurovi & Chilunjika, 2024). Increasing accountability, service effectiveness, and resource allocation—all crucial components of fair development can be achieved through digitising governance procedures. Chilunjika and Chilunjika (2024) assert that a robust e-government framework can equip citizens with dependable access to services, increase institutional trust, and foster an environment of comprehensive progress where public resources lead to improvements in societal freedom and quality of life. Additionally, e-government can encourage innovation and the adoption of technology in Lesotho's public sector, thereby improving institutional outcomes, service delivery, and administration. E-government promotes citizen participation in decision-making through the use of new or enhanced techniques, which in turn fosters accountability, ownership, and responsible resource management (World Bank, 2018). It improves interoperability, fosters synergies among government initiatives, and synchronises investments with national objectives (UNDP, 2020). Standardised data flows and improved information sharing also foster public trust and enhance government agency collaboration, ensuring that services better serve the demands of businesses and citizens.

Lesotho faces significant obstacles typical of underdeveloped nations when implementing e-government, despite its potential (Schuppan, 2009). Significant infrastructural gaps, low levels of digital literacy, and inadequate policy frameworks hamper effective implementation. The ensuing digital divide primarily affects marginalised groups, exacerbating socioeconomic disparities as technological advancements outpace the capacity of residents with lower levels of education to adapt. Cybersecurity threats present further challenges; the public sector in Lesotho is susceptible to advanced threats, including ransomware attacks and data breaches (Chilunjika & Chilunjika, 2024; Chilunjika & Intauno, 2023:16; Kshetri, 2019). Strong legislative frameworks, sophisticated security systems, and extensive expenditures in worker capacity are necessary to address these complex concerns (Chilunjika & Chilunjika, 2024; Alzoubi & Mishra, 2025).

Lesotho presents a representative yet distinct case of a developing, landlocked African nation navigating the implementation of e-government amid complex structural and institutional challenges. Due to the high cost of infrastructure over hilly terrain, digital access is still concentrated in lowland urban centres, particularly Maseru, despite being connected to regional ICT networks (Lesotho National Human Development Report, 2024; Government of Lesotho, 2020). The low internet penetration rate (approximately 30% have mobile Internet) and high data charges (about 7% of monthly GNI) highlight ongoing challenges to affordability and availability (UNCTAD, 2018). Such circumstances reflect broader realities in the Global South, including unequal infrastructure, socioeconomic disparities, and low levels of digital literacy. Furthermore, Lesotho is a concentrated microcosm of e-government restrictions, with political unpredictability, financial limits, and limited institutional capability all coming together to impede progress (Matsieli & Sooryamoorthy, 2021a). While

changing political agendas disrupt continuity in digital programs, the limited ICT skills of citizens and public officials impede system adoption and maintenance (USF, 2017; Khethisa & Mphahama, 2022). Even though donor-funded infrastructure initiatives, such as fibre rollouts and e-government portals, have increased capacity, sustainability and trust are still threatened by reliance on outside assistance and inadequate cybersecurity and data protection frameworks. Due to its unique circumstances, Lesotho provides a valuable example for examining how capacity, governance, and geography impact digital transformation in resource-constrained environments (Lesotho Communications Authority (LCA), 2023). It is against this background that the study explores these barriers and complexities to the full operationalisation of e-government within Lesotho's unique development context.

2. Literature Review

2.1 Definition of E-government

E-government is a mean to enhance citizen access to government services and programs, as well as facilitate citizen-to-citizen information exchange. It entails utilising information and communication technologies (ICTs) to enhance service delivery and improve the efficiency of government operations. The majority of studies also associate e-government with ICT. Successful cases have demonstrated their capacity to reduce bureaucratic inefficiencies and advance participatory government globally (Alzoubi & Mishra, 2025). However, these successes frequently rely on robust ICT infrastructure and regulations that encourage use, which are currently absent in many Sub-Saharan African nations, including Lesotho.

2.2 The Stages of E-government

According to the United Nations e-government worldwide study (UN e-government survey, 2008), there are five stages of e-government. These phases consist of: Stage 1, known as Emerging Presence, in which a nation commits to become an actor in e-government. A few separate government websites that give users static organisational or political information contribute to the establishment of a formal but constrained online presence. Stage 2 - Enhanced Presence: In this stage, a nation's online visibility starts to expand as the number of official websites rises and provides more specialised and dynamic content that is regularly updated. The majority of interactions remain one-way, with citizens primarily receiving information from the government (Chilunjika, 2024d). Stage 3, known as the Interactive Presence, is characterised by a significant expansion of a nation's online presence as it adopts an interactive mode that provides access to a range of government services and institutions. Stage 4 - Transactional Presence: At this point, citizens and the government begin interacting in both directions. Stage 5 - Fully Integrated or Networked Presence - This phase denotes the most developed stage of online e-government projects. This level involves the integration of G2G, G2C, and C2G (and reverse) interactions (Chilunjika, 2024d). Through a two-way, open conversation with society, the government encourages participation and deliberative decision-making.

2.3 Challenges in E-Government Adoption

E-government projects in many developing nations encounter various obstacles that hinder their successful implementation (Chilunjika and Chilunjika, 2024). These obstacles include institutional, technological, sociocultural, and infrastructure-related ones. Lack of dependable infrastructure to enable digital services is a significant problem. This includes low internet usage (especially in rural and isolated locations), erratic electrical supplies, and insufficient hardware and software resources in government agencies (World Bank, 2022). These shortcomings lead to inefficiencies in service delivery and limit access to online services.

A persisting disparity in digital knowledge and skills exacerbates these infrastructure obstacles. Public employees and residents alike often lack the fundamental technical skills necessary to use e-government platforms effectively. Particular challenges are faced by underprivileged communities and older citizens, and a lack of training among government officials often causes the poor adoption and misuse of digital technologies.

Furthermore, bureaucratic organisations' reluctance to adapt keeps them dependent on antiquated paper-based procedures, which delays the shift to digital governance. These difficulties are exacerbated by the digital divide, which disproportionately affects underprivileged populations. Rural communities face challenges related to affordability and connectivity (UNDP, 2021), and low-income and female individuals often have limited access to technology. People with disabilities and non-native speakers are also prevented from fully utilising e-government services due to language difficulties and inaccessible platform designs.

The digitisation of government services raises serious issues about cybersecurity and data privacy. Sensitive citizen information is compromised by threats, including ransomware, phishing, and data breaches (Poshai et al., 2023; Kshetri, 2019), leaving systems insecure and eroding public trust due to a lack of data protection legislation and inadequate cybersecurity frameworks. E-government projects are vulnerable to abuse in the absence of strong protections, which deters public participation. Institutional and policy hurdles also hinder advancement. Critical ICT initiatives are hampered by fragmented policies, inadequate interagency collaboration, and a lack of funding (Chilunjika, 2024b; Government of Lesotho, 2020). Long-term digital transformation is thwarted and implementation is delayed by bureaucratic inefficiencies, such as conflicting mandates and a lack of political commitment (Dunleavy et al., 2006). Another challenge comes from behavioural and cultural opposition. People's mistrust of digital systems, often stemming from past experiences with inefficiency or corruption, leads them to prefer in-person services. Citizens' lack of familiarity with digital alternatives further diminishes engagement due to low knowledge of the advantages of e-government.

2.4 Theoretical Framework

Tornatzky and Fleischer (1990) developed the Technology-Organisation-Environment (TOE) framework, which provides a thorough lens through which to view the obstacles and uptake of e-government in Lesotho. It highlights how the application of innovations is influenced by three interconnected dimensions: organisational, technological, and environmental. ICT infrastructure and digital preparedness are the main topics of the technological background, which also highlights cybersecurity threats, mobile governance platforms, and internet penetration (Poshai et al., 2023; Barkóciová et al., 2023). Lesotho's financial and policy coherence issues make the organisational context, which prioritises institutional capacity, bureaucratic efficiency, governance frameworks, and resource allocation, crucial (Government of Lesotho, 2020).

In conclusion, the environmental context highlights enduring socioeconomic gaps and unequal access to digital services, incorporating broader external issues such as the digital divide, regulatory frameworks, and citizen trust (UNDP, 2021). The TOE framework is especially well-suited for this research, as it offers a comprehensive strategy that incorporates institutional, sociological, and technical aspects, ensuring that obstacles to e-government are not viewed in isolation. The identification of focused initiatives, such as investments in ICT infrastructure, fortification of cybersecurity regulations, and increased citizen participation, is what gives it policy relevance. To contribute to a structured pathway for advancing the implementation of e-government in the nation, this study applies TOE to the context of Lesotho. It does this by methodically analysing problems such as inadequate internet access, weak institutional capacity, and low public trust, and by suggesting solutions that align with each dimension.

3. Methodology

Following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) standards, this study used a systematic scoping review methodology (Page & Moher, 2017). This method was chosen to systematically map the range of available data, identify key ideas, and fill knowledge gaps in the literature regarding the organisational, technological, and environmental challenges associated with the operationalisation of e-government in Lesotho.

3.1 Information Sources and Search Strategy

To find published and grey literature, a thorough and methodical search was conducted. Major academic databases (Scopus, Web of Science, Google Scholar, and JSTOR), institutional repositories, and policy databases from critical international organisations (such as the World Bank, the African Union, the Organisation for Economic Cooperation and Development (OECD), and the United Nations Development Programme (UNDP)) were all included in the search. Government websites and grey literature, such as national laws, policy documents, and consulting reports, were also included to obtain practical, practice-based evidence. A combination of keywords and the following Boolean operators specific to the syntax of each database was used in the search approach: "e-government", "digital governance", "ICT", "public sector", "modernisation", "Lesotho", "Sub-Saharan Africa", and "TOE framework". To guarantee the findings' applicability to the current state of technology and policy, the search was restricted to publications released between January 2010 and May 2024.

3.2 Eligibility Criteria

The following predetermined criteria were used to select the studies:

- Population/Context: Research that specifically focuses on Lesotho or on nations in sub-Saharan Africa that have similar socioeconomic and political environments.
- Concept: According to the TOE framework, literature that discusses the organisational, technological, and/or environmental aspects of e-government acceptance, implementation, or difficulties.
- Source types include policy documents, conceptual papers, systematic reviews, and empirical research.
- Language and Time Frame: English-language publications published from 2010 to 2024.

Duplicate publications, research done outside of Africa, and sources lacking any pertinent emphasis on digitalisation, public governance, or ICT adoption were among the exclusion criteria.

3.3 Selection Process

The study selection procedure used a structured three-phase screening approach in accordance with the PRISMA 2020 flow diagram (Figure 1):

1. Identification: 356 records were identified in the initial search across all the sources mentioned.
2. Screening: 308 distinct records remained after 48 duplicates were eliminated both manually and automatically. 212 records that were unrelated to the study's subject were eliminated after their titles and abstracts were checked against the eligibility requirements.
3. Eligibility: A detailed evaluation of the full texts of the remaining 96 reports was conducted to determine their eligibility. 34 of these were disqualified for various reasons, chief among them being a lack of empirical emphasis, inadequate contextual information, or methodological flaws relating to the research objective.

A final total of **62 studies** were deemed eligible and formed the basis for the qualitative synthesis.

3.4 Data Extraction and Synthesis

A standardised template was used to gather data from the included studies. This template was created to capture essential details such as the author(s), year of publication, study design, geographic focus, primary findings, and particular relevance to the Technological, Organisational, and Environmental (TOE) framework dimensions—a method known as thematic synthesis was employed to analyse the retrieved data. A structured analysis was provided by mapping recurring themes, obstacles, and enablers about e-government in Lesotho onto the three main settings of the TOE framework.

3.5 PRISMA Flow Diagram

The study selection process is summarised in the PRISMA 2020 flow diagram below (Figure 1).

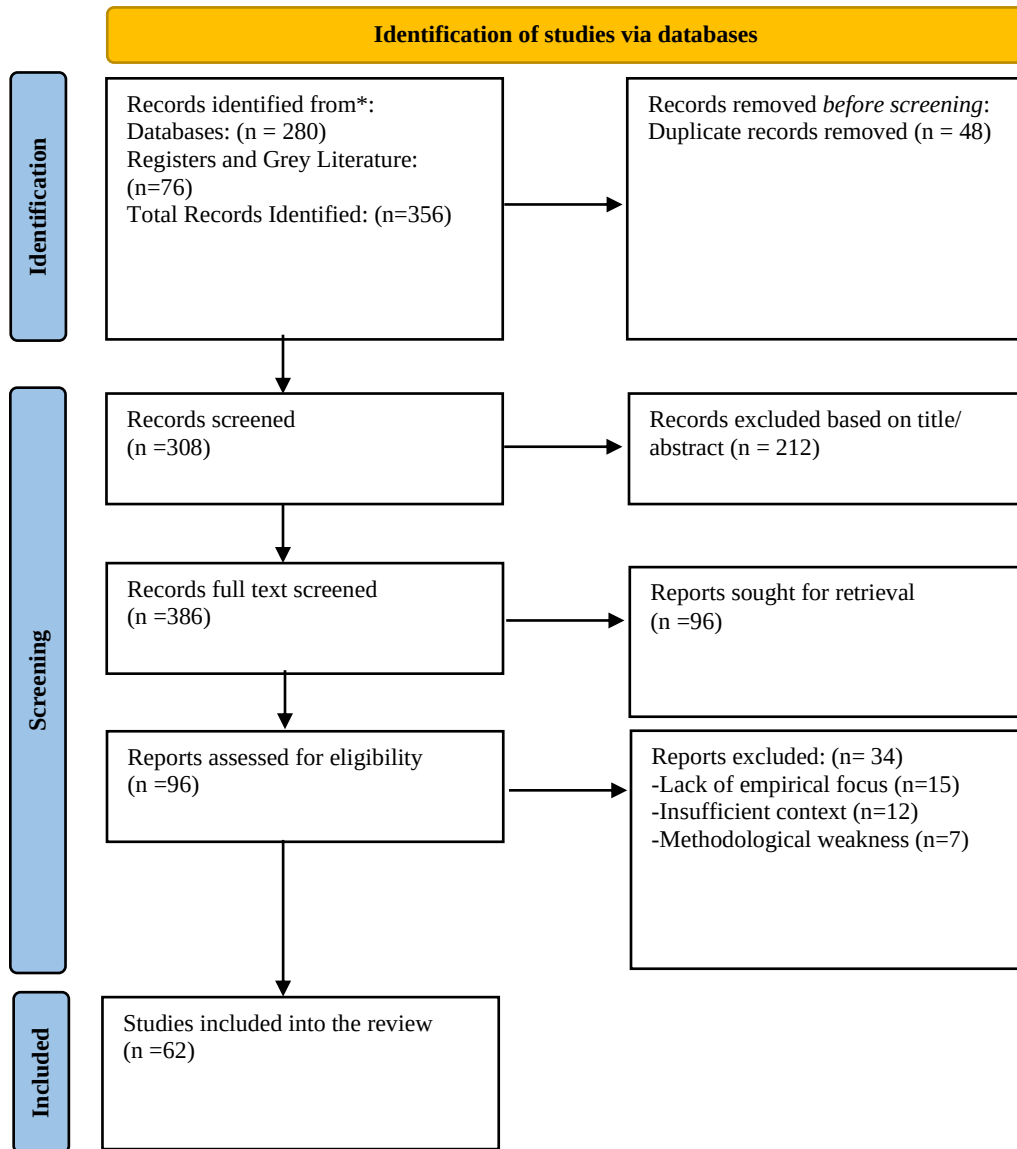


Figure 1. PRISMA 2020 Flow Diagram illustrating the study selection process

Source: Author construction

4. Research Findings

This section unpacks the landscape of e-government in Lesotho. The section unpacks the different forms, types, and manifestations of e-government in Lesotho. The section also examines the challenges and complexities of e-government in Lesotho.

4.1 The Lesotho e-government Landscape

Since it provides the platform for connectivity, access, and delivery of electronic services (e-services), ICT infrastructure is a crucial component of the development of e-health. It encompasses the hardware, software, and structural elements that enable connectedness and interconnectivity. Currently, private companies own the

majority of Lesotho's ICT infrastructure. Because the majority of the present base stations are located in towns, the backbone structure of Lesotho's ICT infrastructure remains inadequate, despite notable advancements.

Fixed and mobile telecommunications, broadcasting, multimedia, and the Internet are all part of Lesotho's e-government sector. These are connected to essential services including banking, e-commerce, and postal services. The usage of ICTs and e-government is critical to the growth of sustainable businesses in the knowledge economy era. Chilunjika (2024a) asserts that although it is generally accepted that technology consists solely of machines, various products, and software, it also encompasses the knowledge and procedures required to create, manufacture, manage, and utilise technological products. Technical expertise and literacy are also important aspects of technology. Lesotho's national framework for innovation, science, and technology is still in its early stages of development. The government spent USD 0.44 million, or 0.01% of GDP, on research and development in 2015. Due to the low level of research and development spending to date, Lesotho's adoption of e-government is still in its early phases (Government of Lesotho, 2020).

However, the government is still encouraging the use of technology for new applications, with a particular emphasis on technical training, to facilitate a rapid transition to climate-resilient agriculture, high-quality healthcare, ICT, digital manufacturing, and the green economy. Building institutional capacity and developing infrastructure were the two main pillars of the Lesotho e-government initiative, which aligned with the Country Strategy Paper (CSP) from 2013 to 2017 and aimed to enhance governance and accountability. Through better governance and the resolution of institutional capacity issues within the government that ICT may help address, this project aims to support the country's objective of achieving a stable democracy. As a result, the project established open access concepts in fibre submarine cable systems and related Virtual Landing Points for the landlocked nation of Lesotho; it also established a metropolitan fibre network and a fibre link from Maseru to Hoek in Maseru; and it installed telecommunications towers in rural areas (Lesotho Human Development Report, 2024). Moreover, cloud computing was utilised, the number of servers increased, data centre capacity and storage were enhanced, and the Government E-Portal was established, housing the national portal, line ministries, and a call centre. Optimising the current metropolitan fibre network connecting ministries and data centres, increasing bandwidth access to submarine cable systems for e-government services, and expanding ICT coverage to four selected rural areas under the Universal Access Program were all necessary for strengthening the core government-controlled fibre network infrastructure.

Accordingly, the installation of telecommunications towers in four specific rural regions has been chosen: Maseru (Qoali valley), which borders Lesotho and the Republic of South Africa (RSA) in the Maseru area, and consists of 11 communities along the Qoali River towards the Nts'upe range. The Maseru area has sixteen communities, the Moremoholo Valley has fifteen, and the Botha Bothe tract has eight Motete settlements. There are two schools and a health centre in Motete (Lesotho National Human Development Report, 2024). fortifying the data centres, which included improving their operations, upgrading their software, and purchasing new equipment. Access to government services is another advantage of improving a government site, which benefits all citizens. Fibre was installed across Lesotho Electricity Company (LEC) power lines, and a government-controlled dark fibre metropolitan network was acquired through the Indefeasible Right of Use (IRU) for a period of ten years, which is the lifespan of a metropolitan cable (Government of Lesotho, 2020). To ensure the availability of a connection to the data centre in Hoek, Maseru, the least expensive option in the industry is to construct fibre optic facilities on the LEC power line. To ensure sufficient availability and security, a backup link has been established via a low-voltage power line or the enhanced temporary setup provided by ETL, which utilises telephone poles.

Currently, the government is renting a black fibre network to connect all of Maseru's ministries, including data centre connections. It also has fibre-based access to all of Lesotho's district headquarters. The networks' inadequate setup leads to excessive running expenses. According to the Lesotho National Human Development

Report (2024), a tender for an Indefeasible Right of Use (IRU) of a dark fibre network has been adopted for this project to save costs and create a secure, reliable, and scalable core metropolitan e-government fibre infrastructure. In setting out the metropolitan network ring, this method will optimise the state-of-the-art network configuration, lowering the cost and the number of kilometres of dark fibre run. It will further improve the security of the main government infrastructure network and increase the fibre capacity.

Regarding national and international bandwidth, the government now pays significantly more for international bandwidth than other landlocked nations in the region. Due to heightened competition brought on by the introduction of multiple new underwater cables, prices are dropping quickly. Following the launch of e-services, it is anticipated that the government will require additional bandwidth. According to the Government of Lesotho (2020), a Virtual Landing Point (VLP) was installed as part of the country's e-government infrastructure to reduce international bandwidth costs. An international submarine cable operator's Point of Presence (PoP) is a VLP, which, when deployed in the area, leads to much lower costs because it acts as an open access point for high-capacity international access.

4.2 Challenges and Complexities of e-government Operationalisation in Lesotho

E-government projects in Lesotho face numerous challenges. Generally, these challenges can be categorised as follows:

4.2.1 Infrastructure

Lesotho has a sparse and uneven deployment of e-government infrastructure, despite the deregulation and privatisation of ICT in an effort to increase access to suitable telecommunications. The nation is well-connected in terms of ICT services and infrastructure, thanks to its physical infrastructure, including submarine cables. Only over 30% of people have a mobile internet connection, although about 70% of people own a phone. This is mainly due to the service being expensive (Chilunjika & Chilunjika, 2024). Despite considerable efforts to expand e-government nationwide, ICT development and e-government remain concentrated in the lowlands, particularly in Maseru. According to the Lesotho National Human Development Report (2024), the country has achieved full coverage of a 2G network, 98% coverage for 3G, and 70% coverage for 4G. However, due to Lesotho's hilly terrain, more antennae and associated infrastructure are required for the broader rollout of 4G and future technological rollouts throughout the nation, which would require large expenditures. Despite having more SIM card owners than the population, this led to Lesotho being one of the nations with the most expensive Internet (both fixed and mobile), with a 500MB data package costing about 7% of the nation's monthly Gross National Income (GNI) (UNCTAD 2018). The rural districts of Thaba Tseka, Mokhotlong, Qacha's Nek, and Quthing had the highest percentage of non-Internet users (mobile users) according to the regional distribution of users by district. The lack of infrastructure in such areas, compared to the lowlands, helps to explain this. Since most homes cannot access newspapers, radio, or television, these areas also suffer from a lack of media coverage. In 2017, a Universal Service Fund (USF) survey found that: 20.7% of internet users were constrained by the slow speed of the Internet, and they would use it more if it were fast enough for their needs; 67.5% of people had never used the Internet; 57.1% of people did not know what the Internet was; 59.4% did not know how to use it; and 49.3% did not own a device for accessing the Internet (USF, 2017).

Rolling out e-government nationwide is challenging due to issues including low teledensity and limited fixed-line telecommunications penetration. In Lesotho, this circumstance has led to gaps in e-government services. Several factors cause the gaps. Firstly, a lack of infrastructure makes it difficult for government departments and line ministries to provide high-quality and easily accessible e-government services; secondly, it makes it difficult for Basotho people, especially those living in rural areas, to access e-government services; and finally, poor and unreliable infrastructure is deteriorating the performance of e-government systems, making it difficult for users to obtain high-quality e-government (Chilunjika et al., 2024).

4.2.2 Language Barrier

Additionally, a language barrier prevents the general public of Lesotho from easily accessing government communication channels, including websites and other official platforms. Lesotho's official websites are inaccessible, resulting in disparities between the literate and illiterate populations (Matsieli & Sooryamoorthy, 2021a, 2021b). According to accessibility in the context of e-government, the government has a strong incentive to increase everyone's access to websites and their contents. When it comes to e-government services, language is a significant accessibility consideration. The languages spoken by the local population must be reflected in the language used on official websites. According to the World Bank Group (2017), as of February 2017, Sesotho was a widely spoken language in Lesotho and the mother tongue of over 99.7% of the Basotho country. Sesotho is the primary language spoken by speakers of the other minority indigenous languages, such as Sethepu, Sephuthi, IsiXhosa, and IsiZulu. Therefore, it is not unexpected that Lesotho is referred to as a "monolingual nation" in Sesotho and is nearly a homogeneous country.

Nevertheless, out of all the government websites that were viewed, none of the ministries discussed or featured information in Sesotho. English is used on all of the websites. Section 3(1) of the Constitution of Lesotho, which declares that "The official languages of Lesotho shall be Sesotho and English," promotes and protects bilingualism (Government of Lesotho, 2020). As mentioned above, Sesotho is a commonly used communication medium and the first language of almost 99% of the population (Lesotho Communications Authority, 2017; World Bank Group, 2017). It is surprising, but not unexpected, that Sesotho is not one of the languages spoken on official websites given this background. According to Marlow et al. (2007), people in any nation value accessing public services in their native language, whether it is a preference or a necessity. Government information is more accessible and pertinent when it is presented in a language that the majority of the population can understand. Accordingly, one major obstacle to accessibility is the provision of online material in a language other than the native tongue (United Nations, 2014). It discriminates against those who may not be proficient in English or who typically feel more at ease when information is provided in their native language or languages. Additionally, it undermines the foundation of democracy and e-government by preventing increased citizen involvement in politics and government operations. Therefore, it is unavoidable that the content of the websites must be in a language that the local population is familiar with and can understand to improve citizen involvement and expand accessibility to e-government information and services.

4.2.3 Lack of ICT Skills

Adoption and execution of e-government depend heavily on the human element. ICT expertise is required to improve the deployment and use of digital services after the infrastructure has been established. As a result, several studies have found that one of the primary obstacles to Lesotho's adoption of e-government is a shortage of ICT expertise (Matsieli, 2020; Matsieli & Sooryamoorthy, 2021). According to research by Matsieli and Sooryamoorthy (2021) on essential success elements in the adoption of e-government in Lesotho, government employees lack the necessary skills to design, run, and maintain e-government systems. As a result, a lack of skills among the general public impedes Lesotho's e-government readiness, digital economy development, and e-government acceptance and operationalisation. The main barrier to Internet use in Lesotho is, for the most part, a lack of digital literacy.

4.2.4 Interoperability Challenges

Interoperability in the context of e-government refers to the capacity of government systems and organisations to exchange information and communicate with one another. Interoperability is both a governance and a technical issue. The majority of e-government technologies in use in Lesotho function in "silos," which are specific departments or ministries that lack a typical architecture that enables seamless data sharing and communication. The government may struggle to maintain a unified perspective on its citizens for efficient service delivery, for instance, if a database in the Ministry of Health is incompatible with one in the Ministry of Home Affairs, requiring citizens to input the same information repeatedly. A significant obstacle to enjoying the benefits of e-

government that have been promised is this fragmentation. Increased efficiency, decreased redundancy, better policy-making based on integrated data, and a seamless experience for citizens are among the key benefits; however, without interoperability, they remain "merely a delusion" (Matsieli, 2020). The governance structure as a whole is ineffective, even if individual systems are modernised, due to the absence of interoperable frameworks. In addition to technical standards, robust interdepartmental cooperation and data-sharing agreements are necessary for achieving interoperability, which can be challenging to develop in a disjointed political and administrative context.

4.2.5 Security and Privacy Concerns

One of the key factors influencing the adoption of e-government is the concern for privacy and security. This is because the adoption and use of e-government platforms necessitate several laws to regulate online behaviour. The lack of explicit regulations addressing security and privacy when utilising digital technology in Lesotho is a serious concern raised by this study. It was determined that there is a lack of necessary legal frameworks, political will, and the ability to address ethical issues, including data ownership, security, and privacy, as well as consent to use personal data. Additionally, the nation is not immune to cyberattacks (Chilunjika et al., 2024). The most frequent cyberattacks include: application service attacks, in which the computer system's software applications are compromised and cause malfunctions; web interface attacks, in which the attacker gains access to the web interface by using weak or insecure authentication protocols, compromising device integrity and potentially causing denial of service; network attacks, which disrupt device-to-device communication and cause message delays or loss; and data integrity attacks, which modify system data by adding, changing, or erasing stored data or data in transit. Phishing, unauthorised access to data sources, data alteration and destruction, website defacement, malware and virus attacks, and other malevolent actions by attackers are additional concerns (Blašková et al., 2024). There have been reports of cyberattacks that resulted in the hacking of the online networks of the Lesotho government. Given the seriousness of these attacks, robust cybersecurity measures are necessary to enhance data and system safety and integrity, ensuring Lesotho's effective and efficient service delivery.

4.2.6 Funding Constraints and Donor Dependency

Due to the capital-intensive nature of e-government initiatives, significant and consistent financial commitment is necessary. According to research, the Lesotho government lacks the domestic financial resources required to fund these programs adequately. Government organisations often lack sophisticated, contemporary IT infrastructure, including dependable servers, secure networks, and up-to-date software, which are essential for delivering reliable online services. This persistent underfunding has a direct effect on the ground. As a result, Lesotho has traditionally relied heavily on donor assistance to launch and sustain its e-government initiatives (Lesotho Communications Authority, 2017). Donor organisations and foreign partners have largely funded programs for infrastructure development and capacity building. However, there are risks associated with this reliance. Accordingly, the COVID-19 pandemic severely strained international aid budgets, leading to the reduction or withdrawal of financing from numerous donor organisations. Many e-government initiatives have been put on hold as a result of this abrupt withdrawal of external funding, underscoring the dangers of basing a national digital transformation strategy on external, frequently erratic funding sources. As a result, programs rarely reach a national scale or achieve sustainability, instead remaining in a state of pilot or partial implementation.

4.2.7 Digital Divide and Low Literacy Rates

In Lesotho, the digital divide is a complex and ever-evolving issue that creates service gaps, particularly in the use of e-government services. The disparity between citizens with and without internet access is what it is. People in rural and urban areas in Lesotho have limited or no access to digital services, which is reflected in the country's digital divide. Additionally, it highlights the gender digital divide, with Basotho men having greater access to the Internet than Basotho women (Lesotho Communications Authority, 2017). In Lesotho, the digital divide is considered a significant obstacle to the adoption of e-government, as many rural residents and some women lack access to ICT devices and the Internet. In addition to widening the digital divide in Lesotho, low literacy rates

among rural residents run against the fundamental principles of e-government. City dwellers in Lesotho are typically more tech-savvy and literate, making them more likely to use and access online public services and information. However, people in rural areas are more likely to be illiterate, which means they lack ICT skills and knowledge and are more likely to oppose e-government platforms as models for service delivery. The reason behind this is that residents who possess literacy skills can recognise the potential advantages of e-government services in their daily lives.

On the other hand, the Lesotho National Human Development Report (2024) noted that individuals lacking literacy tend to have unfavourable opinions about e-government platforms. The goal of these advances is undermined by illiteracy, which lowers citizens' trust in actively using e-government platforms. The demand for ICT increases with a society's level of education. Another element impeding the efficacy and efficiency of e-government in Lesotho is the gender digital divide. In general, Lesotho is a patriarchal society, which affects how women in the digital age exercise their rights (Government of Lesotho, 2020; Lesotho Communications Authority, 2017). Despite Lesotho's progress in eliminating gender inequality, women were found to have less overall access to digital technology than men. This is especially noticeable among rural and impoverished women. Certainly, women can access health, education, and other social and financial services if they are empowered (Chilunjika et al., 2024). It might also be a potent instrument to enable women and girls to produce pertinent content for empowerment, associate, assemble, and express themselves on topics related to digital rights that are important to them, as well as to engage in governance. Therefore, it is necessary to establish laws and regulations that will enable Basotho women and girls to get meaningful access to the internet and e-government services.

4.2.8 Complex Political Dynamics and Institutional Instability

Although Lesotho has made significant strides to enhance its ICT and e-commerce business environments, these initiatives have frequently been hindered by the nation's complex political landscape, which has resulted in numerous government transitions that have prevented the adoption of robust laws and regulations. The research provides strong support for the claim that one of the main obstacles to e-government in Lesotho is political instability. A trend of coalition governments has marked the political landscape of Lesotho, with numerous no-confidence votes and leadership changes, according to the Lesotho National Human Development Report (2024). Long-term strategic initiatives, like e-government, are particularly vulnerable in this atmosphere of volatility. However, with every new administration, it has been observed that policy priorities frequently change due to frequent changes in government, resulting in the abandonment or redesign of ongoing initiatives. This breaks continuity, wastes resources, and hinders the momentum of complicated digital transformation (Matsieli, 2020). The implementation of projects initiated by past governments is hampered by this political climate, resulting in a disjointed and uneven national ICT policy.

Conclusion

This study highlights the transformative potential of e-government in improving state-citizen relations, enhancing public service delivery, and strengthening governance transparency in Lesotho. However, despite some progress in developing ICT infrastructure, the operationalisation of e-government initiatives remains limited by several factors. On the technological front, the efficiency of digital platforms is hindered by limited internet penetration, weak system interoperability, and growing cybersecurity vulnerabilities; on the organisational front, bureaucratic inefficiencies, a lack of digital literacy among civil servants, and ongoing funding shortages have prevented the public sector from fully embracing digital innovations. Lesotho's low Human Development Index (HDI) score (UNDP, 2021) reflects systemic injustices that exacerbate the digital gap, especially in rural and underdeveloped areas. The issue is further made worse by weak policy frameworks and disjointed institutional coordination. Cybersecurity risks and the lack of thorough data protection regulations also erode public confidence in e-services, highlighting the urgent need for legislative and capacity-building reforms.

The study concludes that to fully realise the transformative potential of e-government, especially in terms of improving public service delivery and bolstering governance transparency, multi-stakeholder collaboration, capacity-building initiatives, and adaptive policy reforms are essential. By uniting government, business, academia, and civil society players, multi-stakeholder collaboration ensures that reforms have greater traction and resilience by fostering shared problem-solving, reciprocal learning, and institutional buy-in. Cross-sector strategic alliances also improve resource sharing and long-term digital services, particularly in settings with limited financial and technical resources. Furthermore, increasing awareness, facilitating adoption, and equipping implementers and citizens to interact with the e-government system efficiently all depend on capacity-building, which is accomplished through educating public officials, fostering digital literacy, and improving technical competencies.

To ensure that e-government initiatives remain relevant and responsive to evolving socio-political and technological contexts, adaptive policy reforms that incorporate iterative review and inclusive stakeholder feedback are crucial. The Lesotho government must also make investments in infrastructure, such as stable energy and broadband expansion, and enhance digital literacy through targeted training and education initiatives. Building confidence requires bolstering cybersecurity safeguards and legal frameworks; enhancing policy coherence and interagency cooperation can expedite their implementation. To close the digital divide and guarantee accessibility for all individuals, inclusive design principles must be implemented. The stated advantages of efficiency, openness, and accessibility could be lost if these steps are not taken, leaving e-government projects underutilised. For digital transformation to be effective, future initiatives must prioritise adaptable governance, sustainable funding, and stakeholder engagement. The full potential of e-government in developing nations requires a comprehensive strategy that incorporates institutional, technological, and societal aspects.

The innovation of this study is not in identifying new obstacles, but rather in its context-specific analysis of how the distinct geography, politics, and socioeconomics of Lesotho exacerbate common e-government issues. This illustrates how hilly geography drives up infrastructure costs by necessitating “more antennae” and producing costly data, 500MB costs over 7% of monthly GNI (Lesotho National Human Development Report, 2024, as referenced in Chilunjika, 2024). When funding changes, donor-dependent programs halt, making this geographic restriction even more vulnerable. Policy continuity is also severely hampered by political instability, which leads to the abandonment or redesign of ongoing initiatives. Although 99% of the population speaks Sesotho as their first language, the study highlights a significant and often overlooked socio-linguistic exclusion: websites that use English exclusively (World Bank Group, 2017). According to the Lesotho National Human Development Report (2024), it also presents a digital gap that is stratified by geography, gender, and literacy, with low literacy feeding unfavourable opinions about e-government. These findings, which present Lesotho as a microcosm, offer other small, landlocked countries essential lessons on how to create practical and suitable digital governments.

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INSIGHTS INTO CHALLENGES OF SINGLE MOTHERHOOD IN ACADEMIA: CASES FROM LITHUANIA, TÜRKİYE AND UNITED KINGDOM***Rūta Latinytė***Vilnius University, Universiteto 3, Vilnius, Lithuania**E-mail: ruta.latinyte@kf.vu.lt**Received 18 June 2025; accepted 26 November 2025; published 30 December 2025*

Abstract. This study examines the lived experiences of mothers and single mothers working in academia, exploring how gendered and institutional structures influence their everyday realities. Through an autoethnographic and phenomenological approach, it analyses three first-person narratives from academic women from three different cultures: the United Kingdom, Türkiye and Lithuania, each negotiating the competing demands of care, research, and teaching within unequal labour conditions. By combining semiotic text analysis and phenomenological anthropology, the study reveals how structural discrimination becomes embodied as guilt, exhaustion, and misrecognition, yet also how women reconfigure these experiences into resilience, creativity, and solidarity. The findings highlight recurring tensions between care and career, voice and silence, belonging and othering – showing that universities, while appearing meritocratic, might indulge hidden discriminating patterns. The research contributes to feminist academic discourse by demonstrating the epistemological value of lived experience as knowledge and by outlining pathways toward inclusive, family-friendly, and intersectionally aware academic environments.

Keywords: motherhood; single mothers; labor discrimination; labor market equality; economic anthropology

Reference to this paper should be made as follows: Latinytė, R. 2025. Insights into challenges of single motherhood in academia: cases from Lithuania, Türkiye and United Kingdom. *Insights into Regional Development*, 7(4), 203-221. <http://doi.org/10.70132/y4885534233>

JEL Classifications: J7, Z1

Additional disciplines: sociology, information and communication, cultural anthropology

1. Introduction

This study aimed to explore the lived challenges, social meanings, and institutional barriers experienced by academic mothers, with a particular focus on those raising children alone. It is an ethnographic case study using self-reflection and auto-ethnographic writings to collect life stories in the field. Yet, the three selected stories were also presented or published publicly, so they also represent the media content and the discussions ahead. The research questions were focused on reflections that explore: 1) what are women's views on motherhood in the pursuit of academic career; 2) how do institutional structures, gender expectations, and cultural attitudes intersect

* The research leading to these results has received funding from the Research Council of Lithuania (LMTLT), agreement No. S-PD-24-102.

to shape women's professional identities and opportunities; 3) what meanings do academic mothers attribute to their lived experiences of work, care, and belonging with an emphasis on particularly vulnerable social groups, such as being a single mother, a black mother, younger or older than expected in a particular work position and so on. The study provides insights into creating a university as a family-friendly workplace from a mother's perspective, highlighting both the emotional and structural aspects of gender inequality in academia.

2. Theoretical background

The research is grounded in feminist theories of social aspects, including care work, intersectionality, and analytical theories such as French semiotics, phenomenological anthropology, and everyday life studies. Intersectionality provides the view of how race, gender, and class co-constitute multi-layered disadvantage (Crenshaw, 1991), while semiotics helps to deconstruct the text itself (Giroud & Panier, 1991; Greimas, 2005), and phenomenology grounds analysis in lived embodiment and perception (Merleau-Ponty, 2002; Jackson, 1998, 2012).

Regarding the definition of a single adult household, some historical and sociological explanations are necessary. Until the beginning of the 20th century, European culture was dominated by the joint or extended family, which consisted of representatives of different generations: grandparents, parents, and children, as well as uncles, aunts, cousins, and half-siblings. With industrialisation, the nuclear family (also known as the elementary family, atomic family, snowball family or marital family) became more widespread – a family group consisting of parents and their children (one or more), usually living in the same house. Bronislaw Malinowski first recorded the term in his article “Psycho-Analysis and Anthropology” (1924).

Later, the concept of family itself evolved from the traditional modern concept, based on marriage and blood (or adoption) ties, to a postmodern one, necessitating a reevaluation of the criteria for what constitutes a family. Sociologist Vida Česnuitytė describes the postmodern family as a variety of family models in which the relationships between members are broader than those of the nuclear and extended family, going beyond biological and marital ties, characterised by relationships between two or more generations, and the relationships between family members are more diverse in structural and functional terms, as is the redistribution of roles between men and women in the family (Česnuitytė, 2012). The concept of the postmodern family would also include families of two adults who are not in their first marriage or partnership. Ernesta Platukytė proposed the term “re-created family” for such families as a new model of the “nuclear family” that goes beyond the framework of the “nuclear family,” both in marriage and cohabitation, which could “include all persons living in the family, including children who are growing up in the family and have at least one non-genetically related parent” (Platukytė, 2017: 69).

In my research, the most relevant family type is the single-adult family, which is supported by one adult (usually the mother, less often the father, but also including stepmothers, stepfathers, brothers and/or sisters, grandparents, and other relatives). A single-adult family becomes:

- 1) parents who have separated after a broken marriage or cohabitation (both participate in the child's life);
- 2) parents who have never been married and have never lived together (but both participate more or less in the child's life and support);
- 3) single mothers without established paternity, where the father is not listed on the child's birth certificate (in such cases, the father usually does not participate in the child's life, although he may be known or presumed);
- 4) solo mothers (Psouni, Berg & Persson 2022), where the child was consciously and deliberately conceived through sperm donation and artificial insemination (the father is unknown and does not participate in the child's life);
- 5) widows/widowers.

Another phenomenon that has spread in the popular media in recent years but has not yet been widely described in scientific literature is the “married single mom”. This term refers to a woman who is married or cohabiting but feels lonely, both emotionally due to a sense of isolation and practically because her partner does not contribute equally to household and childcare responsibilities. It is used in popular media and social media content, for example, mocking a husband who left a filthy kitchen for his wife, highlighting how social comments suggest that modern marriages “aren't working” (Scanlan, 2024). In academia, this term first appeared in the personal life stories of researchers, such as University of Miami professor Geri Maples, who spoke about it in the context of the experiences of military wives (Maples, 2016).

The absence of financial resources, education, and social support makes a negative impact on the emotional and social well-being of single mothers (Dharani & Balamurugan, 2024). Single mothers also reported a lower quality of life compared to married mothers (Kim & Kim, 2020; Jansen & Vyas-Doorgapersad, 2023). Although the economic challenges are real, they can also be seen as a stereotype, as the first part of this same research has revealed.

Single motherhood in academia is not a new topic – Mary Ann Mason, Nicholas Wolfinger, and Marc Goulden provided evidence that both gender and family status matter for the career prospects of aspiring academics (Mason, Wolfinger, & Goulden, 2013). According to Ann CohenMiller, “the gender gap is particularly enhanced within academia, with academic mothers facing particular challenges” (CohenMiller, 2013). In academia, parenthood explains most of the gender productivity gap by lowering the average short-term productivity of mothers (Morgan et al., 2021; Liebl & Josefson, 2024; Pimentel & Ali, 2025; Ocampo-Penuela, 2025).

Feminist scholars have demonstrated how academic institutions perpetuate hidden discriminatory logics that produce double standards for women and normalise self-disciplining effects, such as guilt and resilience (Lynch, 2010; Ahmed, 2017; McRobbie, 2020). Ea Høg Utoft revealed how the circumstances of the COVID-19 pandemic affected women's ability to manage issues of academic productivity and work–life balance (Utoft, 2020); however, the pandemic was not the only period with such an imbalance. Other scientist's point, that given the moral imperative on women to do care work, their higher education and further career is more complicated compared to one of men. (Lynch, 2010; Rezk et al., 2022).

Race is another challenge to be faced when pursuing an academic career (Walker, 2020; Showunmi, 2023). And despite all these risks of possible discriminatory practices, the situation worsens in times of crisis, such as the COVID-19 pandemic (Boche, 2022). In parallel, theories of recognition explain how respect, esteem, and love underpin the conditions for self-realisation and how their absence yields misrecognition. The intersectional framework posits that “socio-demographic identities should be considered simultaneously to challenge universalist, gender and ethnic neutral assumptions of leadership” (Showunmi, Atewologun, & Bebbington, 2016). American philosopher and phenomenologist Shaun Gallagher notes that agency refers to the subjective first-person experience of being the source and controller of one's actions (Gallagher, 2020: 334). This implies an internal conflict between opposing the public stereotype and regaining self-confidence.

I aim to contribute to this topic through the lens of semiotics and cultural anthropology, which can offer tools to map the figures, cultural value oppositions, and narrative roles through which institutions organise meaning (Greimas, 2005). Bringing semiotics together with phenomenology creates a bridge between structural analysis (value systems such as *career/care*, *voice/silence*) and embodied experience (time pressure, spatial positioning, affect), revealing how symbolic hierarchies are internalised, negotiated, and sometimes resisted (Pereira, 2017). This research could also expand the notion of significant structural and systemic discriminatory practices within the academic profession, as described by Sarah Jane Aiston (Aiston & Jung, 2015). Finally, I would also like to join a call for recognition of the physical and emotional toll of motherhood on women in academia together with other researchers, like Pimentel and Bel Hadj Ali (2025).

3. Research methodology

This research focuses on qualitative data, collected between 2024 and 2025 from 15 in-depth interviews and seven participatory feminist, cultural and/or human rights events with discussions and conversations in Lithuania, France and Poland. This article is a result of both discussions and shared life stories from research participants. Three life stories were selected for an in-depth anthropological analysis. The case study examined the experience of everyday practice (de Certeau 1990; de Certeau, Giard & Mayol 1998) of a mother, particularly a single mother, working in the academic field. The subject of analysis is the lived experience of academic motherhood as reflected in three auto-ethnographic stories. Each story is analysed through two interpretive frameworks: 1) **semiotic analysis** – mapping figurative, narrative and logical-semantic layers of the text from the Greimasian semiotics (Giroud & Panier, 1991), and phenomenological analysis – revealing how those structures are lived through time, space, body, and relations (Merleau-Ponty, 2002; Jackson, 1998, 2012). Some examples of phenomenological analysis of personal narratives can be found in the works of Jurga Jonutytė and Giedrė Šmitienė (Jonutyte & Šmitienė, 2021). The combination of these methods enables a holistic understanding of how systemic gender inequalities are embodied and narrated in personal accounts and to link feminist theory to the realities of living and working as a feminist (Ahmed, 2017; Pereira, 2017).

The research was conducted by following three methodological steps common to interpretive ethnography and attentive reading: first, the collection of auto-ethnographic narratives; then, the analysis of each text was conducted by applying the method of attentive reading to identify recurring themes, isotopies, and tensions (Greimas, 2005). Greimasian view on the text structure, identifying the figures, actantial models and logical-semantic oppositions, is also used to reveal emerging cultural value systems. The phenomenological reduction is also incorporated into the process of attentive reading, allowing for the identification of how experiences are lived through temporal, spatial, bodily, and relational dimensions (Merleau-Ponty, 2002; Jackson, 1998, 2012). The final step involved a cross-case comparison to highlight patterns and variations in lived motherhood across different contexts.

The combination of semiotic and phenomenological analysis is not commonly used, yet it is possible and deepens the analytical possibilities. The semiotic oppositions map the value fields (voice/silence, belonging/othering), while the phenomenology shows how those values are felt and constituted in lived time/space/body/relations. The semiotic actantial model clarifies structural roles (helpers/opponents), and the phenomenological triad (Self–Other–World) illustrates how particular scenes (such as doors, meetings, and networks) either enable or block recognition. Semiotic reading helps discern the grammar of the story, how lived experience is conveyed; yet, phenomenology reveals how those values are lived – as time pressure, spatial confinement to the back office or home, embodied strain, and intersubjective shaming.

4. Text analysis

4.1. Story No. 1: So, what's it like to be female and black or black and female?

As I sit here on a Sunday evening gathering my thoughts to begin to tackle this ongoing question: “so what's it like to be female and Black or Black and female a sudden surge of tiredness takes over. Is this something I really need to do now, and if so, why bother putting myself through such mental torture?” To give you an indication of where I am coming from, I thought it would be useful to provide a glimpse of who I am. I was raised by upper-middle class German Jewish parents, which makes me very white. I have coined the phrase “socialised as white” as I look black but have been socialised as white. At this stage, you may be asking so what? Let me start from my humble beginning – at the age of six months, I started my journey into whiteness as I was given away by my biological mother in the middle of a busy London station. From there, I took up my place in “the large house” in

North East Devon. I recall when I was first introduced to the importance of being a woman; I felt a deep sense of excitement. It was while working at a local college in Broadstairs, Kent, that I was invited to a women's conference. I was unsure what it was, but I thought it would be a valuable experience for my career and CV. (Can you imagine accepting an invite to a women's conference just as a way to move up the career path in the current climate?). The conference was situated in a great location overlooking the Kentish coast; it was picturesque and the perfect spot for a three-day conference. It would be the first time I had spent three whole days in the company of women. I was young, a mother of two young daughters and teaching in a further education college. For me, the experience I shared was working in education and being a woman. It was a really great three days – I did not have to think about the care of my daughters, and my then husband (who later announced he was actually gay) was excellent with the girls and domestic chores, etc. I learnt a lot and was able to feel at ease with my confidence. We undertook many tasks that delved into our past; however, I skipped around many of these because, even then, I knew there were areas of difference that I was not ready to explore. As I stood in the group, feeling somewhat at ease, I became aware of a notion of difference that I had not previously discussed in a group setting. I was a female who was black surrounded by other women who were White. In normal circumstances, I would not have mentioned this; however, it was something which, for the first time as an adult, I was rather conscious of being Black and female. I do remember a room having the poster of 'Other Women' on the door and wondering if this was where I needed to be. It was upon asking somebody that I was told it was for LGBT – something which I did not understand then. After the conference, I became an active feminist and decided that I needed to stand up for women's rights, especially since I had two daughters. I was able to belong as a woman in the feminist movement, which added to my sense of identity. So, let me move the story along a little further when I was fortunate enough to secure a position in London. Starting with a post in London, coming from Devon, Somerset and then Kent, it was interesting. I straight away became active in as many issues as possible, including gender, race and LGBT issues. My focus was gender, and it was when I became a chair of one of the regional equality groups that I became aware of the difference. I arrived at a meeting as Chair of the Women's Committee and was informed that the Race Committee was next door. I was shocked as it was the first time that I had not been considered a woman. I said, well, I am a woman and the chair of this committee. I could see people were not happy; however, I pressed on with the agenda. It was some years later that I started to realise that there were actual differences in being a feminist and that the core political issues connected to being white or black in the movement were fundamental in how one was seen as a woman. Some people might think I was strange, as they were unable to understand who I was and what I stood for. To me, it was clear I was a woman and the feminist agenda needed to reflect me as a higher-middle-class woman of colour. The challenge I faced was from liberal white women living in London who struggled to understand who I was and wanted to help me. It was then I started to realise I was slowly changing and seeing everything so clearly, I was on the journey of coming to terms with being a female and Black. I find that when I need to unpack my thinking, I post something on my Facebook page and then wait for the responses. Hi, all, I am in so much pain right now. Looking around it is hard. Keeping a job in the academy is challenging you are surrounded by discrimination and people who want peace but do not know what to do. Others do not want to believe that their colleagues could be racist, but instead allow themselves to be drawn into games where they can stand back and say, “oh, I did not really mean to be like that...it was something I needed to think about, this and that, I am so sorry if I hurt you”. It is hard because you want to yell from the rooftop, but you have to stay calm while everything around you is so complicated. We need to stand together and stop trying to be the “model minority”; we need to make some noise. We have the skills; we must connect internationally to become one voice. When it is late at night, and I want to talk to somebody because the world appears to be so off-key, I need to know that we are there for each other. I needed to say how I feel tonight after watching the videos of our USA brothers RIP to all. Love and blessings x (Victoria Lane 8th July 2016).

The text was published online as part of the “Blog Writing with Impact” event in 2017 by “genderandeducation.com”. The author of the text is dr. Victoria Showunmi. Her emerging themes include gender identity and race in the context of leadership, as well as their implications for the experiences of learners and educators. Victoria's research interests include Gender and Leadership in Education, as well as the well-being of

black girls and young black women. She is recognised as a qualitative researcher, conducting research on social justice, intersectionality, and leadership across various sectors and contexts. For me, Victoria is an inspiring scholar who helped me discover intersectionality and the importance of starting every research project with an open introduction that includes the researcher's own identity, environment, and reasons for conducting the research.

The narrative of Showunmi et al. offers a deeply layered reflection on the intersection of race, gender, and professional identity within academic institutions (Showunmi, Atewologun & Bebbington, 2016; Crenshaw, 1991). Using Greimasian semiotic and phenomenological frameworks, the story can be read as an unfolding of recognition and misrecognition, expressed through temporal, spatial, and relational structures that define the lived experience of a Black woman in academia.

From a figurative perspective, time progresses from infancy to adulthood, framing identity as an evolving awareness. Late-night social media postings serve as a digital agora of solidarity, where voices are reclaimed against pressures toward decorum and silence. It begins with the image of a six-month-old baby handed over in a crowded London station – a moment of rupture that marks the beginning of a lifelong process of negotiating belonging. Time then expands through stages of early feminism, motherhood, professional engagement, and the late-night reflections shared on social media. The recurring “Sunday evening” exhaustion and the “late at night” calls for solidarity reveal temporality as both biographical and affective – shaped by cycles of fatigue, resistance, and renewed self-awareness. Time becomes a structure of becoming: from an unexamined participation in “women's” spaces toward an embodied understanding of intersectional difference.

The spatial dimensions of the story play an essential role in meaning-making. The London station stands as a primal scene of displacement; the “large house in North-East Devon” implies classed safety and the early experience of whiteness as domestic normality; the conference by the Kentish coast serves as a temporary “haven” for feminist awakening, while committee rooms later in London become gatekeeping spaces, where institutional boundaries sort people into categories – “race” here, “women” there. Spatially, conference sites and committee rooms act as gates of inclusion and exclusion; the “Other Women” door literalises categorical sorting, while online spaces open alternative publics, dramatising the limits of inclusion. This reminds me of researcher Regina Austin, who defies “the black public sphere” that “puts engagement, competition and exchange in the place of resistance, and uses performativity to capture audiences, Black and White, for things fashioned through Black experience” (Austin, 1997). Finally, the Facebook page becomes a digital agora – a nocturnal space of connection and solidarity – transforming isolation into a networked form of collective care.

Within this network of temporal and spatial figures, the narrative identifies key actants. The *Subject* is the narrator herself – a Black academic “socialised as white,” whose hybrid identity challenges categorical boundaries. Her *helpers* include feminist networks, daughters, LGBT allies, and the online communities that give her language and solidarity. Her *opponents* are racism, sexism, and the more subtle forms of paternalism that misrecognise her agency while claiming to support her. The *objects of value* the *Subject* pursues can be seen as recognition of being both Black and a woman, as well as voice, belonging, and justice. These values are situated within the tension between empowerment and exclusion.

At the narrative level, the actantial model reveals a moral and political journey driven by an ethical demand for recognition and justice, a responsibility to her daughters, and a commitment to the broader anti-racist feminist movement. The *sender* of the action can be seen as embodying the lived pain of misrecognition, as well as the structural injustice inherent in the academic environment. The *Subject*, seeking voice and inclusion, mobilises the tools of activism and self-definition as empowering modalities to pursue the *object* of value – intersectional recognition and institutional change. The *helpers* – supportive networks, prior feminist experiences, and the self-reflexive act of naming herself “socialised as white” – equip her to act, while the *opponents* – institutional racism,

sexism, and the “model minority” pressure to remain calm – it means – to continually limit her agency. The narrative concludes with an ambiguous *sanction*: empowerment through clarity and solidarity coexists with persistent exclusion, prompting her call to “connect internationally” and build a transnational community of voices. At the semantic level, the story articulates several recurring isotopies: belonging versus othering, voice versus silence, recognition versus misrecognition, care versus harm, and safety versus exposure. These oppositions form the underlying logic of meaning and can be mapped through Greimasian semiotic squares (Greimas, 2005). The axis of *voice/silence* illustrates how the narrator’s public speaking, whether literal or metaphorical (“yelling from the rooftop,” “making some noise”), resists the imposed calm of institutional decorum. Between these poles lies a complex middle ground – “non-silence” – in which the women speak carefully and strategically, maintaining agency without resorting to self-erasure.

Similarly, the opposition between *belonging and othering* structures the experience of feminist spaces. The storyteller belongs as an “active feminist” and chair of a women’s committee, but is simultaneously redirected to a “race” committee, signalling exclusion from universalised womanhood. The narrative exposes the conditionality of belonging in institutions that treat “woman” as implicitly white. This logic extends into the *woman/not-woman* opposition, where the protagonist’s womanhood is granted or withdrawn depending on whether race is acknowledged within the category. The final opposition, *Black/White*, synthesises the story’s central contradiction: the narrator’s embodied blackness and her “white socialisation” reveal the instability of racial categories. By working the hyphen (“Black-and-woman”) and the slash (“Black/white socialisation”), she exposes the failure of existing identity schemas to accommodate lived complexity.

From a phenomenological perspective, the story reveals how these structural tensions are lived in time, space, body, and relationship. Temporally, her life transitions from childhood displacement to adult clarity, reflecting a continuous process of self-discovery and self-recognition. Spatially, the narrative oscillates between sites of exclusion (the committee room) and refuge (the conference, the online community). The lived body, marked as Black yet socialised white, becomes a site of double consciousness and affective knowledge: exhaustion, pain, courage, and solidarity are all experienced bodily.

In the sphere of intersubjectivity, her relationships range from the intimate (her daughters, her former husband) to the institutional (colleagues and committees) and the imagined global community of “our USA brothers.” These relationships embody both ethical demands and emotional burdens. The self, finally, emerges as a site of intentional resistance. By naming herself as “socialised as white,” she reclaims authorship over her identity and builds a conceptual bridge between contradiction and coherence. Her ethos stands in opposition to the “model minority” script, advocating instead for collective resistance and international solidarity.

We can see that the phenomenological core of the story lies in the strain of *double recognition* – the need to be acknowledged simultaneously as a woman and Black, not sequentially or conditionally. The institutional scenes – doors, committees, social media posts – become lived topographies of (mis)recognition, while bodily fatigue and emotional pain testify to the daily cost of navigating these contradictions. The text thus reveals how academic life, often imagined as meritocratic and neutral, remains structured by invisible hierarchies of visibility, belonging, and value that reproduce the racialised and gendered order of knowledge production.

4.2. Story No. 2. Motherhood as a Guilt

I was called to the office of the director after I applied for the position at the university. He said: “Your CV looks good for the position, but I want to ask a few questions about your marital status and motherhood. You said you have a son; this means you will bear another baby soon. Firstly, I want to warn you beforehand that if you get pregnant, you cannot get extra maternity leave. You have to start working as soon as possible”. I accepted and promised not to have a second baby for some time to get the position. However, surprisingly, after working in a testing office for a year (which required a heavy workload and long working hours, but I had a chance to work at

home), I learned that I was pregnant with my first child. I had to hide my pregnancy to avoid conflict during my first year of academic life. When I told the manager about my pregnancy, the manager told me: “since you are pregnant, you cannot teach, and as a punishment, you have to work in the testing office, and you cannot give you extra maternity leave for the baby”.

Feeling Guilty

Guilt is a feeling that accompanies many women, especially in ITC countries. Guilt, accompanied by fear, is used as a tool to suppress women from talking about anything openly. When it comes to motherhood, all the responsibilities of caring for children and the household are often placed on women, regardless of whether they work or not. As a single mother, I felt guilty for both my work and motherhood. I remember a talk with my friend about a gossip told by a married English teacher: “Fatma blames you for your divorce. She says you started your PhD degree with two small children, and divorce is the result of this. How can a man accept and support such a busy woman? I am at home taking care of my husband, children and house with little effort at work so I am happily married”.

Although such discourse is everyday in my city (Conservative), I reflected on my life and considered whether she was right or not. Not only men, but also women, can be more supportive of the male-dominant society than men. Everything she said was not true; I was an academic who took care of my children perfectly, kept my house clean, and cooked every day. However, the problem was that I was still trying to explain myself to people. It was the feeling of guilt. At university, after working one year at the testing office, every lecturer was invited to attend a conference where all the expenses were covered and near the seaside (like a reward for hard work). I was the only woman in testing office and worked without any holiday and after two years, she came to me and said: “I know you have been working for two years in testing Office and it is your turn and right to attend this conference but you have a small kid and you are married, your husband wont permit you to attend this event so I decided to send your colleagues again. Also, I already decided, and you have no right to object”. This was an essential point in my career. No matter how hard you work, no matter what you succeed, some people will see you as a housewife and make you feel guilty because of motherhood or your marital status.

Single Mother Not Academic Not Woman

As a single mother with two grown children and a busy, passionate, and ambitious academic, I was constantly reminded of my motherhood when it came to mobility, career opportunities, or the choices I made as a woman. I will give a few examples about it: Me: “I am thinking of doing a post-doc in England”. Friend: “You are already 47, you should think about getting retired and settling down”. Me: “I want to get married again”. Friend: “You are crazy, you are a mother, first of all, you should think about them and plan to be a grandmother”. Me: “I am planning to apply for a position and go forward in my career”. Male Colleague: “I think this position is more suitable for you, you are already old, and you have two children. It will be very stressful for you”.

The author of the text preferred to contribute to this study as an anonymous participant. She was the one who inspired me to look deeper into the topic of single academic mothers. The narrative, Motherhood as Guilt, presents the lived experience of a single mother and academic whose professional journey is continuously shadowed by institutionalised forms of gender control. The story traces how motherhood, rather than being recognised as part of human diversity within the academic community, becomes a disciplinary device through which women are judged, restricted, and shamed. A Greimasian semiotic reading reveals how structural oppositions, such as *care versus career*, *mobility versus fixity*, and *dignity versus guilt*, shape the value field of this narrative. Meanwhile, a phenomenological analysis exposes how these contradictions are lived through temporal pressure, spatial confinement, and embodied strain.

Temporality in the story unfolds as a continuum of testing, regulation, and delayed recognition. The early career stage begins with promise – a job interview that quickly turns into an interrogation about marital status and

reproductive plans. The director's question about potential future pregnancies sets the temporal condition for employment: she may work, but only under a suspended threat of disqualification. As time progresses – from the first year of pregnancy concealment, through two years of heavy workload in the testing office, to later reflections at the age of forty-seven – time itself becomes a tool of control. Colleagues and supervisors police temporal boundaries, invoking age and motherhood as reasons to limit ambition (“you are already forty-seven, it's time to retire”). Biographical time thus becomes morally charged: ageing, motherhood, and career progression are framed not as natural rhythms but as normative deviations requiring justification.

Spatially, the story is structured around hierarchies of visibility and access. The director's and manager's offices function as *gatekeeping interiors* – spaces where permissions are granted or denied according to patriarchal codes. The testing office, by contrast, is a backstage area of invisibility, associated with punishment and overwork; it symbolises the relegation of women's labour to hidden, undervalued spaces. The seaside conference, initially imagined as a site of professional recognition and mobility, transforms into a scene of exclusion when she is told she cannot attend because her “husband won't give permission.” Even the domestic sphere – home and motherhood – appears less as a refuge than as a social expectation projected onto her: the world repeatedly “replaces” her into the role of the compliant caretaker. In this spatial logic, every domain that could enable autonomy is reframed as morally suspect or professionally inappropriate.

The actantial configuration clarifies the moral drama at work. The *Subject* is the narrator herself – an ambitious, hardworking academic and single mother – while her *helpers* are competence, perseverance, and a sense of fairness that occasionally finds institutional acknowledgement (for instance, the rule that conference attendance should rotate). The *opponents*, however, are pervasive and structural: managerial practices that question motherhood, colleagues who gossip, and ideological constructs that treat guilt as an instrument of discipline. The *objects of value* she seeks – legitimate recognition, professional mobility, dignity, and the right to embody both motherhood and scholarship – remain under constant negotiation, always partially withheld.

At the narrative level, the *sender* of the action is a blend of ethical and existential imperatives: the belief in fairness and merit, the duty toward her children, and the vocation of academic work. The *subject* strives for recognition and advancement but encounters *opponents* who translate patriarchal norms into institutional procedures: “You cannot teach,” “You won't receive maternity leave,” “Your husband won't permit travel,” or “You are too old and stressed.” These statements collectively form the discourse of exclusion disguised as administrative rationality. The *helpers* – her diligence, her right to recognition, her documented achievements – contrast sharply with the *sanctions* she receives: professional punishments and moral blame. Gossip and moralising by peers function as symbolic sanctions reinforcing institutional ones. The ultimate outcome is not defeat but clarity: an awareness of the structural injustice that governs her academic environment.

The semantic structure of the narrative is organised around several isotopies – recurrent networks of meaning – that oppose each other in the Greimasian semiotic field. The first and most dominant opposition is *care versus career*. The institution ideologically sets these as mutually exclusive, presenting care as the woman's “natural” domain and career as a transgressive ambition. Yet the narrator insists on their coexistence: she embodies both mother and scholar, challenging the binary by performing care and career simultaneously, at high personal cost. The second key opposition, *mobility versus fixity*, maps how professional movement – travel to conferences, postdoctoral plans – is moralised as inappropriate for mothers, while fixity (staying at home or in the “testing office”) is idealised as responsible femininity. This moral geography renders mobility suspect and transforms the desire for advancement into a source of guilt.

The opposition of *recognition versus misrecognition* captures the instability of meritocratic ideals. The narrator is recognised for her hard work only when institutional rules can be selectively ignored; once motherhood becomes visible, rules are suddenly “reinterpreted” to exclude the women. In this sense, procedural fairness is conditional

upon conformity to gender norms. The pair *dignity versus guilt* reveals the psychological mechanism of control: dignity belongs to those who perform without complaint, while guilt is imposed on those who assert rights or aspire beyond prescribed limits. The institutional culture transforms guilt into a disciplinary technology, keeping women silent and compliant. Finally, the tension between *woman-as-mother* and *woman-as-academic* frames the core of the story. The institution constructs these as incompatible identities, forcing women to choose between domestic duty and intellectual autonomy. The narrator resists this dichotomy, asserting the intersection of both roles as her legitimate identity.

From a phenomenological standpoint, these structural tensions are lived through multiple layers of experience – temporal, spatial, bodily, relational, and existential. Temporally, the story captures the rhythm of control: from the interview’s conditional promise to the punitive measures during pregnancy and the later ageist remarks that mark her as “past her prime.” Institutionally defined time – “first year,” “after two years” – becomes the schedule through which power operates, determining when women can be punished or dismissed. Spatially, her world consists of enclosed, hierarchical spaces – the director’s office, the testing office – where she is both physically and symbolically contained. The seaside conference, imagined as a space of recognition, collapses into the same logic of exclusion.

The lived body becomes a site of contradiction and stigma. The pregnant and maternal body is treated as both risk and failure, simultaneously overburdened and erased. Affectively, the body bears the emotional costs of double performance – worker and mother – manifesting in fatigue, anxiety, and shame. Yet within this strain lies resolve and pride: she describes herself as an academic who “takes care of her children perfectly,” sustaining dignity despite systemic devaluation.

The intersubjective dimension further exposes how institutions and peers reproduce patriarchy through everyday interactions. The “others” in her world include superiors who make personal decisions appear bureaucratic, colleagues who moralise her divorce, and friends who enforce normative ageing (“you should settle down”). Even when absent, the figure of “the husband” functions as an imagined regulator invoked to legitimise her exclusion. Against this social field, her children emerge as ethical anchors – sources of both responsibility and purpose – motivating her persistence despite structural discouragement.

At the level of the lived self, the narrator constructs an identity that refuses reduction. She sees herself simultaneously as mother, scholar, and woman seeking both love and recognition. Her intentionality is future-oriented, as evidenced by her applications for postdoctoral positions, plans to remarry, and aspirations for promotion. Yet each of these intentions collides with a socially constructed boundary between what she does and what she is told she can do. This dissonance – between competence and stereotype – produces the core affective conflict of the text: the necessity to continually justify one’s right to exist as both carer and intellectual.

Phenomenologically, the essence of the experience is motherhood rendered as institutionalised guilt. Every legitimate claim – maternity leave, conference travel, promotion, even romantic desire – is reframed as suspect, demanding apology or renunciation. The world of the story operates as a *permission economy*, in which the narrator’s worth must be constantly negotiated through obedience and self-discipline.

The convergence of semiotic and phenomenological frameworks clarifies the intertwining of meaning and experience. Together, they demonstrate that motherhood in academia is not merely a social status but a field of contested meanings through which institutions reproduce gendered hierarchies under the guise of meritocracy.

4.3. Story No. 3. How to survive doctoral studies?

Here is a promised collection of life hacks for everyone who is writing or considering writing a dissertation. It will be helpful or help you feel that you are not alone (in a low voice. Psychologists might want to skip this, as it will cover a whole textbook of diagnoses for many problems.

From the very first year, it seems that all the other doctoral students around you have already written the theoretical part, read all the document archives, and you don't even have a library card. Keep in mind that all the others are just pretending.

- And from the very first (well, maybe more like the second) year, you are hopelessly behind schedule, only artificially embellishing the situation for the certification committees.

- The main feeling that accompanies you throughout your doctoral studies, as my colleague Jurgita aptly noted, is constant self-reproach for everything that is not writing your dissertation. This includes spending time with loved ones, professional work (if you have a job), as well as activities such as eating, sleeping, or using the bathroom. That's right: you brush your teeth and regret that you didn't write (anything) today and that you're not writing now either.

This self-reproach means that no amount of rest, vacation, or spa treatments will help, and eventually, nothing will make you happy because you still haven't written anything, and time is running out. (...)

- Children are not the only ones who interfere with writing. Some cats sleep maliciously (and snore) when you are trying to concentrate. And then there are dates or cosy family dinners that you don't want to give up. But self-doubt creeps in even here.

- Even when writing a dissertation, self-doubt doesn't go away. It nags you that you're working too slowly, wasting time on something that may not be necessary, that you're writing one chapter after another, that you should have written this one a long time ago, and that you left the kids in front of the computer and TV.

- When you go to a psychotherapist for help, you hear the question: "Why is it so important for you to write that dissertation?" and you realise that you are a hopeless case.

- Writing at night is sometimes tempting because it is the time when everyone around you is quiet, no one is writing, calling, running around, or shouting, and at around 2 a.m. you get into the flow of writing. At 4 a.m. you realise that you won't get any sleep and that not only the next day but the whole week will be ruined.

One of the biggest challenges is when you are a doctoral student with a full-time family to support and therefore have a full-time job, and if instead of a salaried job you become a full-time freelancer, it doesn't help, maybe even makes things worse, and if instead of a freelancer you become a full-time lecturer, that doesn't help either, it makes things even worse again. Well, I couldn't survive on a scholarship (which isn't bad at all, because it's even higher than the salary of a research assistant or a beginning lecturer).

There's a trick: you enrol in a doctoral program and try to join the academic community, driven by noble goals, deep interest, a calling to explore, make discoveries, and share knowledge with students. But over time, you realise that you've just signed up for a challenging and very low-paying job – you've become a teacher.

- You then solve the latter problem by increasing your teaching load and full-time position to superhuman levels, which makes writing your dissertation during the semester completely impossible.

Oh, but there are weekends, and you promise yourself that you will definitely write on the weekend, and you don't, and so you agonise twice as much on the weekend.

- My research material was people's stories, all of which were wonderful. I am fascinated by the openness and trust of the contributors; it is something magical. The problem is that I am terrified of people. I am afraid to call, afraid to meet, and fearful throughout the entire conversation. I can't describe how big a hurdle I have to overcome each time.

- Any assessment, from semi-annual evaluations to exams and all deliberations, and, of course, the defence itself, will be a complete disaster. It seems like there's nothing to it, but I can't bring myself to do it.

- It will be very, very embarrassing to send my texts to my supervisor, experts, reviewers, and committee members to read. My colleague gave me some advice – he said it would be embarrassing if you didn't do what you wanted, but you have to close your eyes and send it, then they will tell you what to correct, you will correct it, and everything else will be fine.

When you write something worthless, you know it yourself, and adults (meaning those with a PhD) will confirm it. But when you write something good, you suspect it, but you're still afraid that it's nonsense – here someone must tell you what is really valuable, what is worth continuing.

- I was terrified of my own thoughts and observations, at first I tried to hide behind authorities (I looked for who had already written about it, because someone had probably already written about it, you have to find who), but I got scolded for defending myself – it turns out that what you notice, you have to emphasise it. That feeling of “wow, what a great idea I've had, this is good!” and then “oh no, someone already wrote about this half a century ago, and so did this person, and even this local scientist” – unfortunately, it's always there.

- One of the thoughts that shocked me the most was how this could be – your dream has just come true, you've enrolled in a doctoral program, you've been given the time and even the funds to research what you've been longing for, the fulfillment of your life's goal, meaning, whatever, and now you DON'T WANT TO, you are lazy, you avoid (fill in your own) this noble task. Why? I still don't know the answer to that.

- Not everyone will support you on this path. Someone told me, when I was happy about enrolling, that “it's a useless field of study and the state is just wasting its money.” The most important thing is to be close to ethnic culture. The same person told me that my most important passions – (ethnology and fencing) are just a temporary fascination and I will undoubtedly give up, like everything else I do. Although I don't know what I have already given up, I have been fencing since adolescence (with breaks only during part of my studies, motherhood, and COVID), I became more interested in ethnology around 2005 and have not let go since then, and public relations is my only professional-commercial path, in which I have been working for more than 18 years. I don't know why I said that I do everything. Just keep in mind that some people deliberately want to offend and belittle others, so don't take it to heart.

- Love is support (even when criticism is involved). That's the most important thing to know about relationships.

- How the scientific profession works, with all the points, source search systems, scientific journal searches, Q1, Q2, etc. – no one will explain it to you, you'll have to figure it out for yourself and find a willing mentor. I suspect it's similar to medical residency.

One of the worst habits is to put your dissertation at the bottom of your daily to-do list, because it's not urgent today – your certification is in six months, no one will eat you alive if you do it tomorrow or next week or next month – and so it goes on and on. Don't do that. It's best to set aside not just a day, but a whole week or a few days for your dissertation, when no other tasks, including paying bills and going to the dentist, will get in the way. Some doctoral students complain that they went it alone the whole way. You may feel that way because you are working on your own, but I felt that everyone helped me a lot. First of all, my supervisor. Additionally, the comments from experts and reviewers were sincere and detailed, and the feedback from committee members was remarkably detailed. I have never received so much attention in my life (outside of my family). (By Rūta Latinytė, the text was published in a personal Facebook profile the 11/16/2022)

Since the last narrative is my own, I must be very careful in my analysis, so I will be brief and maintain a methodological distance. The narrative, *How to Survive Doctoral Studies?*, presents a self-reflexive and ironically humorous account of doctoral life that transforms what might appear as an individual struggle into a sociocultural commentary on academic labour, productivity ethics, and the affective economy of knowledge work. While written in a confessional and self-deprecating tone, the text reveals the structures of meaning around *guilt, time, value, and recognition* that shape academic subjectivity. Through a semiotic reading, one can observe how oppositions such as *work versus rest, care versus self, authority versus autonomy, and motivation versus exhaustion* organise the text's value field. At the same time, a phenomenological view shows how these tensions are lived through the temporal, spatial, and bodily experience of an overextended scholar-mother negotiating institutional and familial expectations.

Temporality once again dominates the narrative. From the very first year of doctoral studies, time appears as both promise and punishment – a measure that never suffices, always slipping away. The doctoral candidate inhabits what could be called *chronological guilt*: every moment not spent writing becomes morally charged as wasted.

The text captures this rhythm with ironic precision: even the most ordinary activities – eating, brushing teeth, sleeping – are shadowed by self-reproach for not writing. Temporal experience becomes divided between what phenomenologists call *lived time* (the embodied flow of days and nights) and *institutional time* (the external schedule of deadlines, evaluations, and defence). The narrator oscillates between these two, never able to rest in either. Writing at night, in the stillness of 2 a.m., briefly promises authenticity and flow. Still, it leads to exhaustion the next day – a perfect metaphor for the self-devouring temporality of academic work. Time, in this narrative, functions as both actant and oppressor.

The spatial structure of the story also reveals a dual tension between confinement and escape. The domestic sphere – filled with children, cats, and family dinners – serves as both comfort and distraction, a site of care that competes with intellectual labour. The university or the imagined “academic community” represents the sphere of professional legitimacy, yet it too is described as opaque and isolating, full of unspoken rules (“no one will explain it to you, you have to figure it out”). The absence of accessible mentorship transforms the institution into an abstract labyrinth – an invisible architecture of expectations. Within this geography, the “sea” appears as a liminal and liberating space – associated with creativity, inspiration, and clarity (“all the best pieces are written by the sea”). It contrasts the claustrophobia of everyday life and the bureaucratic opacity of academia, suggesting that meaningful thought requires distance from institutional machinery.

The actantial model recognised in this narrative portrays a subject caught between two modalities: duty and desire. The *subject* is the doctoral student, an academic mother who enters the system with idealism and a sense of calling but gradually becomes trapped in cycles of guilt and overwork. The *sender* of the quest is the intellectual vocation – the inner wish to understand, discover, and contribute meaningfully to knowledge. The *object* of value for the subject is completion and recognition – not merely a degree, but a sense of coherence between self and work. The *helpers* include sporadic moments of support from supervisors, reviewers, and family, as well as their own resilience and humour. The *opponents* are multifold: institutional structures that reward overwork; the moral economy of guilt that equates rest with failure; the self-critical voice that mirrors academic competition; the social milieu that devalues her field and undermines her confidence; and the basic living needs with financial demands. In this moral landscape, every act of care, rest, or hesitation is perceived as a sign of weakness. The *receiver* of women’s effort is both personal and collective: the future self and all those who share the same impossible striving to reconcile creativity, family, and survival in academia.

The semantic logic of the narrative revolves around several key oppositions that construct the doctoral experience as a site of ambivalence. The first is *work versus rest*, which defines the emotional economy of the text. Work is valorised to the point of pathology, while rest is delegitimised as procrastination. The narrator’s self-criticism transforms rest into guilt, and even pleasure into transgression. The second opposition, *autonomy versus dependence*, structures the relation to institutional authority. On the one hand, the narrator seeks independence – owning her ideas, daring to write from herself (“look, I noticed this”). On the other hand, there is a need to hide behind the authority of others (“someone has probably already written about it”). Academic recognition thus becomes conditional: autonomy must first pass through the gate of citation, supervision, and review.

A third key opposition is *inspiration versus exhaustion*. The doctoral journey begins with excitement and purpose but gradually devolves into a battle against fatigue, bureaucratic demands, and self-doubt. Inspiration appears fleetingly – in solitude by the sea, in moments of creative flow, or in the gratitude expressed toward supportive mentors – but exhaustion dominates the embodied experience of writing. A fourth opposition, *community versus isolation*, defines the intersubjective field. The narrator repeatedly claims to be helped by others, yet the doctoral process remains solitary: “You may feel that you went it alone the whole way.” The paradox of academic community is that it is both hyperconnected and emotionally distant – structured by feedback, evaluation, and ranking rather than solidarity.

Phenomenologically, the text offers a vivid account of how the doctoral process is *lived*. In terms of *lived time*, the doctoral student experiences an endless present of unfinished work, where each day repeats the same anxiety of not writing enough. The temporality of guilt replaces the temporality of growth. *Lived space* is fragmented: the home, the office, the imagined beach, and the mental space of writing all coexist but never harmonise. The body – tired, sleepless, self-doubting – becomes the site where institutional and personal demands collide. Through exhaustion and anxiety, the body itself testifies to the violence of academic productivity culture.

In *lived intersubjectivity*, the doctoral student encounters a spectrum of others: supportive supervisors and reviewers, as well as condescending peers and dismissive voices that trivialise her discipline. These interactions reveal the ambivalence of recognition in academia, where validation and belittlement coexist. The *lived self* is shaped by constant oscillation between pride and shame, competence and inadequacy. She knows she is capable – she manages research, teaching, and family – but she is haunted by the feeling of “never enough.” The core affective tonality is *self-reproach*: a moralised exhaustion that substitutes self-care with relentless striving.

At its essence, the phenomenological structure of this story can be summarised as the *normalisation of self-blame*. The doctoral student internalises institutional pressures so profoundly that they become self-administered. The world of the text presents itself as an ethical system where one must constantly earn the right to rest, to feel proud, and even to think one's own thoughts. The dissonance between vocation and exhaustion, creativity and guilt, defines the existential condition of academic motherhood and, more broadly, the neoliberal scholar.

Bringing together the semiotic and phenomenological readings, we see that this narrative illuminates the structural and affective underpinnings of contemporary academic life. Semiotics exposes the logic of values – how productivity, guilt, and recognition interlock to produce compliant academic subjects. Phenomenology shows how these abstractions are lived: as insomnia, self-doubt, bodily fatigue, and fleeting moments of joy. Together, they reveal that the doctoral experience, far from being a purely intellectual journey, is an existential terrain where care, time, and meaning are continually negotiated. The text ultimately suggests that survival in academia depends not on perfect discipline but on recognising that thinking, like living, requires rest, care, and imperfection.

5. Comparative synthesis of the three narratives

Taken together, the three narratives compose a composite ethnography of academic life as lived from the intersection of gender, motherhood, and identity. Each story articulates a distinct modality of constraint and resistance within the structures of higher education, while collectively revealing how institutional power, cultural expectations, and intimate affective worlds intertwine to shape the experiences of women scholars. The first narrative, by Victoria Showunmi, foregrounds intersectionality as the tension between belonging and othering: a Black woman “socialised as white” who must constantly negotiate recognition within spaces that claim inclusivity but remain normatively white and male. The second story turns to institutionalised guilt as the central mechanism through which academic motherhood is regulated – a permission economy where career mobility, dignity, and even emotional fulfilment are conditioned by compliance with patriarchal norms. The third story, my own, written with irony and intimacy, translates these external structures into an internalised economy of self-discipline: the doctoral student, mother, and teacher who polices her own time and body through relentless guilt and self-surveillance.

Across these three accounts, the university emerges not merely as a workplace but as a moral and affective institution. It disciplines through recognition – granting legitimacy selectively while demanding constant performance. Temporal structures, whether probationary years, motherhood calendars, or dissertation deadlines, serve as instruments of control that feminise time as delay, guilt, or exhaustion. Spatially, the recurring images of doors, offices, committees, and testing rooms delineate zones of visibility and exclusion. At the same time, fleeting refuges – such as the seaside, a conference, or an online community – offer temporary relief and a sense

of solidarity. Bodily experience becomes a central epistemic site: fatigue, shame, and self-doubt are not individual weaknesses but embodied testimonies to the violence of meritocratic systems that reward endless productivity and emotional restraint.

Phenomenologically, all three women inhabit a condition of double consciousness: they are constantly aware of how they are seen – as women, as mothers, as racialised subjects – and must translate that gaze into strategies of survival. The semiotic oppositions that structure their stories – voice/silence, belonging/othering, care/career, recognition/misrecognition, dignity/guilt – recur across different contexts and identities, forming a grammar of inequality that traverses race, class, age and family status. Yet within this grammar also lies agency. Each narrator enacts subtle forms of resistance: reclaiming the right to speak, insisting on the coexistence of care and career, transforming fatigue into testimony, and turning isolation into solidarity.

Together, these stories trace the contours of an emotional cartography of academia, where self-worth is negotiated in relation to institutions that promise enlightenment but often reproduce social hierarchies. They demonstrate that what is commonly experienced as personal failure – exhaustion, guilt, or doubt – is, in fact, socially structured and politically meaningful. By articulating their experiences through autoethnography, these women reconfigure vulnerability into critical knowledge. Their narratives collectively call for a reimagining of academic culture – one grounded not in competition or perfection, but in recognition, care, and the ethical interdependence of scholarly and personal life.

Results and insights

The three case studies collectively reveal recurring patterns in how motherhood is lived, represented, and negotiated within academic life. Each narrative – though emerging from different biographical and cultural contexts – illustrates how academic institutions, while outwardly committed to meritocracy and equality, continue to reproduce gendered hierarchies through everyday practices and affective regimes. Across all three stories, several structural and experiential dimensions recur with striking consistency.

Misrecognition and Intersectionality. Women in academia can stay unrecognised in the whole multiplicity of their identities – as mothers, scholars, racialised or culturally specific subjects. Instead, institutions tend to reward conformity to the universalised "academic worker". The experience of a Black woman "socialised as white," a single mother punished for pregnancy, and a doctoral student juggling motherhood and teaching all expose the limits of institutional inclusion: difference is tolerated only when silent or symbolic, not when it demands structural change.

Guilt as a Mechanism of Control. Across the narratives, guilt functions as a disciplinary tool – an emotional technology that regulates behaviour without direct coercion. This can remind us of the perfectionist self-discipline from the "The Burnout Society" by Byung-Chul Han (Han, 2015). Whether imposed through managerial disapproval, peer gossip, or internalised self-reproach, guilt enforces compliance with productivity norms. Women often feel guilty for giving divided attention, desiring mobility, resting, or even dreaming. This normalisation of guilt transforms care into a liability and exhaustion into proof of commitment.

Temporal Pressure. Time works as the structuring element for all three texts and also emerges as a powerful instrument of control. Academic temporality – structured by deadlines, evaluations, and publication cycles – conflicts with maternal and affective time, which is cyclical, unpredictable, and embodied. The result is chronic exhaustion and a sense of "temporal dissonance," where one's life rhythms never align with institutional expectations. In this dissonance, care work is rendered invisible precisely because it operates on a different temporal logic than the accelerated pace of academia.

Spatial Politics. Spaces such as offices, committees, and conferences are not neutral but socially charged. They act as gates of inclusion and exclusion – marking who belongs and who must remain invisible. For the single mother in Turkey, the “testing office” becomes a disciplinary space; for the Black feminist scholar, the “Other Women” door symbolises categorical exclusion; for the doctoral student, the domestic sphere turns into a site of divided attention. Each narrative maps the geography of belonging and the embodied cost of navigating it.

Voice and Silence. Finally, all three stories revolve around the politics of voice – who may speak, how, and at what cost. Women's voices are welcomed when they reproduce institutional discourse (diversity, excellence, resilience) but are resisted when they articulate discomfort, critique, or vulnerability. The recurring movement from silence to speech – from being misrecognised to claiming authorship – marks the process through which lived experience becomes knowledge.

Taken together, these dimensions reveal that universities, despite the applied gender equality policies, are at risk of remaining structured by quite conservative value systems that penalise care, dependency, and embodied difference. The academic ideal continues to reflect a disembodied subject – one who is infinitely available, unencumbered by domestic ties, and emotionally contained. The lived experiences of mothers, racialised scholars, and early-career academics expose the dissonance between institutional ideals of excellence and the real conditions of human life.

Conclusions

The analysis of the narratives, supported by insights from scientific literature, confirms that motherhood in academia remains a structurally disadvantaged position. Institutional cultures mirror broader societal hierarchies, where gender, race, age, family status and class intersect to reproduce inequality. Yet, the personal narratives analysed here – articulated through autoethnographic, phenomenological, and semiotic lenses – reveal an invisible oppression: the micropolitics of resistance, humour, and creativity through which women scholars navigate and re-signify their lived realities.

The novelty of this study lies in combining semiotic and phenomenological anthropology to interpret the lived experience of academic motherhood. This dual framework bridges structural and experiential analysis, showing how discrimination operates simultaneously at two levels: as a system of institutional values and as an embodied, emotional condition. Semiotic analysis exposes the underlying value oppositions – care versus career, belonging versus othering, guilt versus dignity – while phenomenology renders visible how these structures are lived through time, space, and the body. The synthesis of these approaches enables a nuanced understanding of how institutional power is not only enacted but also experienced.

Limitations of the study include the small number of narratives and the autoethnographic nature of the data, which limit generalizability but enhance interpretive richness. The subjectivity of the participant researcher becomes part of the study, aligning with feminist methodologies that treat experience as a legitimate site of knowledge production. Future research could expand into comparative and cross-cultural analyses of academic parenthood, incorporating perspectives from diverse disciplines, institutions, and national contexts to illuminate global patterns of inequality further.

Some implications for policy and practice can be derived from this research. Advancing gender equality in academia requires moving beyond the accommodation of exceptions – individualised fixes for individual mothers – and toward systemic redesign. It would be important to:

1. Align evaluation and promotion with the realities of care, recognising non-linear career trajectories, accounting for caregiving pauses, and ensuring tenure-clock flexibility without stigma. Even, recognise care as an enriching experience that is valuable for the researcher's development and potential.

2. Institutionalise predictable parental leave and re-entry supports, including teaching relief, bridging funds, phased returns, childcare stipends, and emergency care options.
3. Reconfigure the spatial and temporal organisation of work to avoid “care-penalty” scheduling, promote hybrid participation in seminars and committees, and develop partnerships for accessible childcare.
4. Require equity-by-design governance, including transparent workload models, rotation of invisible labour, and formal assessments of the gender and care impacts on institutional policies.
5. Embed intersectional recognition through bias-aware recruitment, mentoring programs for single mothers and scholars of colour, and clear grievance pathways for intersectional harms.
6. Cultivate cultures of voice – through leadership training in bystander intervention and restorative dialogue – and formally value community, teaching, and mentorship labour in academic evaluations.
7. Include children's travel and childcare costs in the eligible costs of projects and missions, as well as travel to conferences, thus enabling mothers to participate equally in all academic activities without incurring additional personal costs for family care.

In conclusion, a family-friendly university is not merely a collection of supportive measures or rhetorical commitments; it is a redefinition of what constitutes academic excellence. From this perspective, excellence must encompass care, continuity, and relational ethics as central academic values. The transformation of academia toward inclusivity and equality thus requires not only structural reform but also a cultural shift in meaning – where human vulnerability, interdependence, and embodiment are recognised as integral to the life of the mind.

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Funding: This research has received funding from the Research Council of Lithuania (LMTLT), agreement No. S-PD-24-102.

Data Availability Statement: More information and data can be obtained from the author on a reasonable request.

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PRIVATE HEALTH CARE IN TIMES OF PANDEMICS IN SOUTH AFRICA: DOES AFFORDABILITY AND CLASS MATTER?

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Received 25 August 2025; accepted 1st December 2025; published 30 December 2025

Abstract. This paper argues that class and the affordability of healthcare do not matter during times of pandemics. The class and affordability of private healthcare are a privilege only when there are no reported healthcare crises on earth. The middle class believes that private healthcare, which is mainly achieved through the affordability of medical aids, secure employment, and service by exceptional nursing professionals, is an everlasting privilege. This paper utilises secondary data (books, articles, and government documents) to argue that the privilege of private healthcare is often limited by the natural instability that humanity may face at any time in its lifetime, when unexpected pandemics emerge. This paper concludes that private healthcare affordability and class are temporary privileges that can be limited at any time by unstable factors, such as natural disasters and pandemics. This paper contributes to policy in that it highlights significant pointers for public administration and the middle class to understand that, in the context of pandemics, full privileges can be limited, and that public healthcare staff and facilities may play a more significant role in mitigating the pandemic.

Keywords: affordability; private health care; pandemic; crisis; medical aid

Reference to this paper should be made as follows: Sebola, M.P. 2025. Private healthcare in times of pandemics in South Africa: Does affordability and class matter? *Insights into Regional Development*, 7(4), 222-230. <http://doi.org/10.70132/b3329539583>

JEL Classifications: I10, I18

1. Introduction

South Africa's healthcare system is two-tiered, with a large public sector and a smaller private sector. In 2022, 15.7% of South Africans were covered by private medical aid (Cowling, 2025). In South Africa, the private hospitals play a significant role in the health system. However, private hospitals are supported by a few middle-class citizens and some self-funded business individuals. In 2022, 73.1% of households utilised public healthcare, while 25.4% opted for private care (Statista, 2025).

The private hospital's health services are said to be unique and are serviced by ethically grounded nurses providing quality healthcare, which is assumed to exceed the public sector's healthcare standard. Dunga (2019:61) argues that in developing countries, there is a consistent link between income and health, in the sense that higher income levels correspond to greater access to quality healthcare. Individuals with lower incomes have no choice but to go to public hospitals, where healthcare services are generally of extremely low quality (Maphumulo & Bengu, 2018), which has led to a particular extent to South Africans losing trust in the ruling elites and their public administration. South Africa's public health system is characterised by poor leadership, corruption, a lack of medical resources, staff shortages, and long waiting times (Abrahams, Thani & Kahn, 2022). Based on such anomalies, private healthcare becomes an option for a few, mostly middle-class and affluent individuals. Those who cannot afford quality healthcare and have no other option are faced with the difficulty of receiving low-quality public service at public hospitals. The question raised in this paper is: Does the privilege of private healthcare matter during pandemics? In answering this research question, this paper will look at the following

objectives: 1) to provide literature and a theoretical context of the paper; 2) to characterise context of the South African nursing during pandemic; 3) to analyse the different professional ethics between private and public health care nurses; 4) to evaluate the capacity of hospitals during COVID-19 pandemic, 4) to conclude whether affordability and class mattered during the COVID 19 pandemic?

2. Literature Review and Theoretical Perspectives

This paper tackles a crucial area of human challenges in the event of disasters. Both epidemics and pandemics are considered unforeseen crises that are often beyond the capacity of humanity to deal with immediately at first occurrence. While many authors have written about COVID-19 issues, little to nothing has been written about how these unplanned events often create barriers to middle-class benefits and ultimately put everyone on an equal scale. The COVID-19 literature has focused mainly on health effects, the role of nurses and healthcare practitioners, and how governments have contained it. I decided to pursue the argument of this paper through the lens of the Crisis Theory. The emergence of COVID-19, which disrupted the global health system, showed the world that no class could be better than the other when such an unplanned event occurs. In addressing such gaps in the literature and practice, this paper offers a new perspective through an analytical approach and the Crisis Theory lens, arguing that class and affordability among the middle class did not matter during the COVID-19 pandemic. The Crisis Theory was developed as an intervention or a response to the growing demand for services in situations where immediate assistance was required for large numbers of individuals (Poal, 1990). Walby (2022:499) defines it as “an event that has the potential to cause a large detrimental change to the social system and for which there is a lack of proportionality between cause and consequences”. Therefore, this creates the need for crisis intervention. The theory is primarily applied across various disciplines, depending on the angle of scholarship in social science pursued (Baumgardt & Weinmann, 2022). A pandemic such as COVID-19 caught the entire globe by surprise, in which instance some measures were taken in a panic mode. Even though humanity lives in a state of panic during pandemics, a need arises for action to be taken to deal with the event itself. The COVID-19 crisis led to millions of deaths worldwide (Walby, 2022). Careful background information on this issue itself is important for successful intervention in a crisis. According to Wang & Gupta (2025:1), the best available intervention model is SAFER-R (which consists of stabilisation, acknowledgement, facilitation of understanding, encouragement, recovery and referral). The successful application of this model ultimately helps people return to a state of normalcy after a crisis has been resolved. The application of this model in this discussion is crucial for understanding the limitations and behaviour of individuals, state organs, and institutions during times of crisis. Crises are mainly traumatic, and they leave emotional scars in people; others find it difficult to recover after such a crisis. The COVID-19 pandemic had not only left an emotional crisis in humanity, but it had also left others with chronic ailments that were not previously detected. To some medical practitioners, the pandemic remains a mystery even after it has passed.

2. Methodology

This paper is a qualitative study. The paper used secondary data sources (books, articles, and government documents) to argue that the privilege of private healthcare is often limited by the natural instability that humanity may face at any time in their lifetime, when unexpected pandemics emerge. The author sampled the materials for use in the study, ensuring that the materials used are relevant to issues related to South African COVID-19-related concerns, the roles and ethics of the nursing profession, private healthcare, health professionalism, and the capacity of South African hospitals during the pandemic. The author used the deductive analysis approach in analysing data obtained through secondary data sources.

3. Results and Discussions

The results and discussions are based on the primary research question raised in the paper. The question was: Does the privilege of private healthcare matter during pandemics? In answering this research question, this paper will look at the following objectives 1) To give context of the South African Nursing during pandemic, 2), To analyse the different professional ethics between private and public health care nurses, 3) To evaluate the capacity of hospitals during Covid 19 pandemic, 4) and to conclude whether Affordability and really Class Mattered during the COVID 19 pandemic?

3.1 The South African Nursing during the COVID-19 Pandemic

Generally, both public and private sector nurses became heroes of the health sector during the COVID-19 pandemic worldwide, as more attention was paid to them and the medical doctors. However, doctors remain slightly behind the scenes. Some traditional and spiritual healers also took a hit at the time, as their spiritual superiority was doubted in the face of scientific advancements. The nursing profession has become so complex that nurses must take care of patients, attend to patients' families, perform their administrative duties, and adhere to their demanding work shifts (Alguwez, 2022). They were seen as the frontliners of the COVID-19 pandemic in comparison to other healthcare workers (Fawaz, Anshasi & Samaha, 2020), in the sense that they continuously had to interact with the patients. Pires, De Oliveira, Siqueira, Feldmann, Oliveira, & Gasparino (2018) posited that the nursing team is mainly responsible for 95% of healthcare in patients. Although that was ignored in Africa, these continuous interactions caused many nursing staff to experience high burnout, depression, anxiety, fear and exhaustion (Gohentsemang, Coetzee, Botha & Fourie, 2024). At that stage, there were no narratives of the separation of public and private sector nurses in this role, as the health sector remained the critical sector responsible for providing care, curing illnesses, managing health, and attempting to save lives for all. While universities, colleges, schools, markets, and other workplace sectors were closed, hospitals remained open to safeguard humanity from harm (Peiro, Lorente, & Vera, 2020). However, it is acknowledged that the work ethics of nurses in the public and private sectors are not seen from the same professional perspective. Arguments of quality associated with private and poor service, as well as those associated with the public sector, were temporarily averted during the COVID-19 pandemic, implying that the argument of quality and quantity of healthcare is a time-phased matter controlled by events.

South Africa faced numerous healthcare challenges before the emergence of the COVID-19 pandemic (Ngobeni & Dhanpat, 2022), which may primarily be administrative and political in nature. However, the critical ones include human resources and access to quality health care (Abrahams et al., 2022). COVID-19 was therefore adding to the already ailing challenges of the South African healthcare system. Although facing those challenges, in South Africa during the COVID-19 pandemic, both public and private hospitals were seen as one arm responsible for a significant contribution to and delivery of the country's healthcare system, facing the same challenges of capacity to deal with the pandemic, with insufficient available resources. That was in the sense that they were all overcrowded to the limit and had staff whose performance was not limited by a self-attitude of not performing, but rather by the availability of resources to cope with the overall deteriorating public healthcare facilities even though South Africa itself is short of healthcare workers, with 213 people for one nurse (Abrahams et al., 2022) in public hospitals.

Generally, both nurses in the private and public health care sectors faced various risks associated with their calling, which in some instances have exposed them to the risks of infections and potential loss of life. During the COVID-19 era, there was little to be concerned about in terms of which sector, private or public, offered higher-quality healthcare in South African hospitals. Collectively, in their various sectors of healthcare, they pursued their calling to save lives, even where it meant losing their own. Although the public attaches no little significance to how many lost their life in their line of duty, emanating from their calling, we know that it happened. Tlotleng,

Cohen, Made, Kootbodien, Masha, Naicker, Blumberg & Jassat (2022) noted that no such data exists or has been explored regarding the healthcare workers admitted during the COVID-19 illness. No nurses of each of the sectors worked for the purpose of being motivated by the incentive scheme of any sector, but by the desire to save lives.

3.2 Different Professional Ethics Between Private and Public Health Care Nurses

Generally, South Africans differentiate between the ethical duties of those in the private and the public hospitals on different scales. The staff of private hospitals are better rated than those in public hospitals, creating a disparity in unequal healthcare within the South African public healthcare system. The ethical responsibility of nursing is based on four fundamental principles: promoting health, preventing illness, restoring health, and alleviating suffering (Stellenberg & Dorse, 2014). While both public and private healthcare nurses are produced by the same health qualifications and registered under the same professional healthcare bodies, public healthcare workers are viewed as of slightly lower quality in comparison with their counterparts in private healthcare provision. It is argued that this is mainly due to the relaxation of the service ethos in the public sector, where it is not in dispute that codes of conduct and ethics exist. However, it is acknowledged that the enforcement of those codes of ethos is relaxed. Even with the existence of the Batho Pele Principles (People First Principles), both patients and family members are reportedly not treated with courtesy.

According to Torkaman, Heydari & Torabizadeh (2020:1), the nurses' professional and ethical performances are influenced by the health organisation's environment, quality, and holistic ethical commitment within the organisation. Private healthcare hospitals are primarily driven by profit and therefore strive to appear as if they are providing first-class healthcare to their clients (Choonora & Eyles, 2015:1), as opposed to the less caring attitudes often associated with public hospitals. More often, they adopt a customer-focused model guided by high ethical standards. Therefore, it implies that public health organisations that adopt a laissez-faire attitude promote a lack of appropriate commitment from their nursing staff. The ethical climate is critical within the healthcare environment (Okumoto et al., 2022) in ensuring that the public's health is in the hands of health professionals guided by professional ethics. In the public healthcare environment, there is a massive problem of staff and resource shortages that causes nurses to develop poor attitudes, which compromises their professional commitments to their profession (Abrahams et al., 2022). Neither are private healthcare providers angels of ethical practices, since at times they have to use unqualified healthcare workers as a way of saving costs (Choonara & Eyles, 2015:1-3). A thin line between these two can be based on a rationale for non-compliance with ethical principles. Private healthcare, even with unqualified healthcare workers, may claim to achieve the goal of serving clients effectively. In contrast, a public healthcare worker in the same situation may fail to deliver service to a client due to a lack of resources.

3.3 The Capacity of South African Hospitals during the COVID-19 Pandemic

Generally, the COVID-19 pandemic caught all nations by surprise. South Africa was no exception to the rule, with a significant loss of life expected (Le Grange, Dickison & Davis, 2020). Significant concern in South Africa was the anticipated shortage of critical care beds, which posed a worrisome factor in managing the surge. Although numerous modelling efforts emerged, South Africa relied on the South African COVID-19 Modelling Consortium, which regularly publishes short- and long-term projections (Solanki, Blecher, Cornell, Crisp, Engelbrecht, Manning, Morar, Myburgh, & Patel, 2021). According to Ngobeni, Breitenbach & Aye (2020), as of 2018, the South African healthcare system consisted of 813 hospitals, comprising 404 public hospitals and 409 private hospitals. The public sector hospitals accounted for 49.7% of beds, while the private sector accounted for 50.3% of the beds. At this juncture, there is also a problem with dysfunctional public hospital facilities compared to the better facilities in private hospitals.

The figures mentioned above indicate that the South African government has placed a significant responsibility for its healthcare in the hands of private healthcare providers, which is only accessible to a few (Hlafa, Sibanda & Hompashe, 2019; Malakoane, Heunis, Chikobvu, Kigozi, Kruger, 2020). The health system continues to be

characterised by social exclusion between the haves and the have-nots (Ndebele, Mlambo & Molepo, 2021). Those without medical insurance are likely to have their health expectations not met or compromised promptly (Moeti et al., 2023), resulting in a shortened life expectancy. This explains why public hospitals are often overcrowded with long queues and are unable to accommodate ailing patients. Public healthcare supports 84% of the population, while private healthcare supports only 16% of the middle-class insured population (Mokhele et al., 2021). The inequality in these percentages indicates that poor South Africans are far from receiving quality healthcare, which threatens the economic productivity of the society (Mhlana & Ndhlovu, 2021).

On the other hand, private hospitals' beds, with only 16% of the population to serve, will never be full at any time except during pandemics, which therefore means that they always have available beds, while public hospitals are always full. Since medical insurance is not a compulsory policy in any South African employment contract, government hospitals still take full responsibility for the uninsured professionally employed population in the country. Thus, overburdening the poor and the unemployed to enjoy such a right.

According to Alavinenejad et al. (2022), 75% of the Intensive Care Unit (ICU) beds in South Africa are located in private sector hospitals, while only 25% are in public hospitals, which can't accommodate 80% of the population that required this service during the pandemic. According to McQuid-Mason (2021:304), South Africa's three largest private hospital group "reported that a surge in COVID-19 cases had filled their ICUs' capacity, and some of the hospitals were diverting ambulances to other facilities". This implies that even the middle-class citizens could not be accommodated in the so-called selected few health access. Other resource-providing provinces in the country entered into Service Level Agreements (SLAs) with private health hospitals to accommodate referrals from public hospitals for critical care in ICU wards (Solanki, Bletcher, Crisp, Engelbrecht, Morar, Myburgh & Patel, 2021). The capacity of the South African health system in providing healthcare is below par by any standard of measurement, due not only to physical resource constraints but also to the inequitable distribution of health workers between the two sectors (Ashmore, 2013). In reality, the public health system is not capable of handling the available health-seeking population, even without the threats of pandemics at play. Notably, the current healthcare system in South Africa does not fund private healthcare providers, such as private hospitals and clinics (Young, 2016:9), which some proponents accuse of being market-oriented, thereby prohibiting access to specific categories of citizens (Basu et al., 2012). The government can resolve this issue by introducing the National Health Insurance (NHI) scheme, which promises to fund both the private and public healthcare sectors.

The same government is often failing to provide itself and deliver services efficiently to the public (Pillay, 2007; Sebola, 2023). Corruption and poor leadership are making it difficult for the political administration to achieve its service delivery objectives (Sebola, 2023; Sebola, 2025). Many will agree with me that the NHI will not resolve the ailing public healthcare crisis as long as the complex issues separating private from public healthcare are not carefully addressed. The government environment, which creates fertile ground for corruption through manipulated supply chain management processes, will collapse the private sector's healthcare within a short space of time if the NHI is implemented carelessly. It is not known why the government wants to resolve the ailing public healthcare system by attempting to replace it with an effective system of private healthcare rather than building more hospitals with beds that can at least cover 50% of the population. It will be important in the future for the South African government to consider subsidising private hospitals without interfering in their operations, except through regulation. If the government provides support to private health care providers, they can invest in infrastructure and offer more affordable healthcare to South Africans. Thus far, they have demonstrated that, despite their limited resources, they can provide more and better healthcare facilities than the government (Ngobeni et al., 2021; Solanki et al., 2021; Alavinenejad et al., 2022). It requires hard work, dedication, and moral commitment for the South African government to gain the public's trust in the imagined benefits of merging the former two-tier health systems. Mokhele et al (2021:389) reported that "in India, some people escaped from public hospitals and quarantine due to trust deficit in the public health care system in many parts of the country. Yet, even in South Africa, during the COVID-19 pandemic, some wealthy individuals who contracted COVID-19

have preferred to be cared for by private doctors and nurses at home rather than in hospitals. Some argued that, despite loss of trust in the health system, there was a possibility of more risky infections at hospitals than at home.

3.4 Did Affordability and Class Really Mattered during the COVID-19 Pandemic?

Literature demonstrated that almost all hospital facilities were over-subscribed during the pandemic (Solanki et al., 2021; McQuid-Mason, 2021:304). Nursing services were required simultaneously in all sectors. There was, therefore, a continuous exchange of human resources, skills, and facilities among the various sectors to save lives, as the workforce shortage became apparent (Chen, Lai, & Tsay, 2020). Although there were Service Level Agreements (SLAs) for facilities and human resource skills in private healthcare, it does not seem that there were any for the exchange of human resource skills from public to private healthcare. The Private nurses who provided services to the public healthcare sector in such a capacity were probably on a part-time basis (Solanki et al., 2021). The SLA primarily focused on sharing both human resources and facilities with the private healthcare sector through an agreed-upon payment model and rates. The SLA and model rate were developed by the Western Cape Provincial Government and adopted by the National Government for all provinces (Solanki et al., 2021). This arrangement was only an indication that South Africa's public healthcare system is severely under-capacity to serve the health needs of its majority population.

Although there is insufficient data available about the capacity of the private healthcare sector during pandemics, the sector also faces a staff shortage. In this instance, they most cases rely on contract nurses working in public sector hospitals. Gohentsemang et al (2024:3) have noted "the demand-supply imbalance for nurses, which has grown because of the interaction of several demand-side factors". It is generally acknowledged that the nursing profession is in demand due to a labour force shortage in the sector (Aiken et al., 2022). With this in mind, we acknowledge that not only is one sector exclusively better in terms of health care workers' capacity. The issue of middle-class citizens enjoying the privileges of private health care is a matter of time and stability. We have experienced during the COVID-19 pandemic, as no evidence exists that private healthcare providers sent some of their patients to public healthcare. Still, we have proof that the public healthcare sector signed SLAs with public sector hospitals to care for some of their patients in instances where their hospitals are at full capacity. In this instance, the poor share private sector resources with the middle class. The privileges of the middle class become limited, not only through sharing their benefits with people experiencing poverty, but also because, during this time of pandemic, private hospitals contract many nurses from public hospitals to help them meet their hospital capacity workload. The situation itself, as it currently stands, has also created a perception that private healthcare is losing its efficiency and effectiveness, as it must involve employees with less understanding of their work ethics and culture in its health system contracts. During the pandemic, it may have been challenging for health sector institutions to address complaints of poor work ethics and performance, as capacity was limited.

Conclusions

This paper is based on a new perspective on COVID-19 literature, which has been trending in health science perspectives in public health journals. The novelty of this paper lies in its unique approach to addressing COVID-19 literature from the perspective of social class benefits. This paper argues that class and the affordability of healthcare do not matter during times of pandemics and disasters. The class and affordability of private healthcare are privileges only when there is no reported healthcare crisis on earth. The paper aims to dispel the myth that the middle class believes private healthcare, which is primarily achieved through the affordability of medical aids, secure employment, and is serviced by exceptional nursing professionals, is an everlasting privilege. The contribution of this paper to knowledge production is not only limited to the middle-class understanding of their limited privilege during pandemics, but also to policymakers in the healthcare sector, who need to understand that pandemics and disasters are unplanned, and therefore, a need arises for the government to invest more in health infrastructure. Although from a health perspective, some medical practitioners reject the relationship between COVID-19 and the new health problems suffered by post-COVID-19 victims, COVID-19

have indeed left new chronic illnesses in the lives of many, which they previously did not have. It is indeed risky for the South African government to place more than 50% of its healthcare responsibility in the hands of the private healthcare sector, which it is not even subsidising. Indeed, the paper's argument is not comparable to previous writings, as many authors did not approach the COVID-19 discussions from an unequal social class perspective.

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AN EXPERIMENTAL ANALYSIS OF ARTIFICIAL INTELLIGENCE (AI) USE FOR TRAFFIC MONITORING IN URBAN ENVIRONMENTS*

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Received 15 September 2025; accepted 6 December 2025; published 30 December 2025

Abstract. This article presents an experimental analysis of lightweight convolutional neural network (CNN) object detection models designed for on-device traffic monitoring in urban environments. The study investigates the performance of several mobile-oriented detectors, including EfficientDet, SSD MobileNet V2, and SSD MobileNet V2 FPNLite, with the goal of identifying an optimal balance between detection accuracy, inference speed, memory footprint, and energy efficiency on resource-constrained Android devices. To assess practical applicability, all models were evaluated under realistic operational conditions, including varying object distances, partial occlusions, and reduced illumination typical of urban monitoring scenarios. The comparative analysis shows that the recommended configuration – SSD MobileNet V2 FPNLite (640×640) accelerated with NNAPI – achieves the most favorable trade-off for real-time deployment, reaching approximately 40% mAP on the evaluation dataset while maintaining fast on-device inference and reduced power consumption. Experimental testing further demonstrates that the system achieves up to 94% recognition accuracy at close range and delivers stable performance at medium distances, surpassing several lightweight state-of-the-art detectors in practical real-time tests. Additionally, a modular Android application based on the Model-View-Controller architecture is presented, demonstrating seamless integration of the selected model into an end-to-end mobile processing pipeline. The results confirm that accurate and efficient on-device object detection for traffic monitoring can be achieved without reliance on high-end hardware or cloud-based computation, making the proposed solution well-suited for mobile, embedded, and edge-intelligent urban applications.

Keywords: Detection; Real-Time System; Convolutional Neural Networks

Reference to this paper should be made as follows: Hazdiuk, K., Bilak, Y., Shumyliak, L., Cibák, L. 2025. An experimental analysis of artificial intelligence (AI) use for traffic monitoring in urban environments. *Insights into Regional Development*, 7(4), 231-250. <http://doi.org/10.70132/n2454482348>

JEL Classifications: O33, C55, L86, R41

1. Introduction

Rapid urbanization and the increasing complexity of modern cities have created an urgent need for intelligent systems capable of monitoring and interpreting dynamic urban environments in real time. The ability to accurately detect objects – such as vehicles, pedestrians, cyclists, and other critical elements of traffic flow – is fundamental for a wide range of applications, including basic traffic monitoring, intelligent transportation systems, autonomous vehicles, smart surveillance, public safety monitoring, and urban analytics (Mohammed et al., 2025). Traditional computer vision approaches often fail to provide the required robustness and precision in

* The work was funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under the project No. 09I03-03-V01-00085

conditions typical for urban settings, such as variable lighting, occlusions, weather fluctuations, and dense traffic scenarios.

The relevance of this research is further reinforced by recent advances in information technologies and the rapid growth of computational capabilities of mobile devices. Over the past decade, the number of mobile devices has increased significantly, and modern smartphones and embedded platforms are now capable of performing complex data-processing operations locally, without relying on remote servers (Hirsch et al., 2025). This shift enables the widespread adoption of artificial intelligence technologies for various civilian applications, including navigation, social media, smart security systems, and real-time analytics.

As AI integration into everyday technologies expands, optimizing machine learning models for efficient execution on mobile and edge devices becomes a critical task. Since conventional machine learning and deep learning algorithms typically require substantial computational resources, deploying such systems in mobile environments demands new approaches to model design, compression, and adaptation (David et al., 2020), (Wang et al., 2025). There is an increasing need for lightweight yet accurate models capable of operating under the resource constraints inherent to mobile platforms. This challenge is especially significant in computer vision, where high-quality image and video processing must be achieved in real time.

Recent advancements in deep learning, particularly in convolutional neural networks (CNNs), have substantially enhanced the performance of object detection tasks. State-of-the-art models such as Faster R-CNN, SSD, and YOLO demonstrate impressive accuracy while supporting near real-time inference, making them suitable for deployment in dynamic and heterogeneous urban environments. Nevertheless, achieving stable performance on mobile or embedded devices remains difficult, given the trade-off between computational efficiency and detection accuracy.

This study aims to address these challenges by developing a real-time object detection system optimized for basic traffic monitoring in urban scenes using advanced CNN-based architectural solutions. The proposed approach focuses on balancing accuracy with computational efficiency, ensuring reliable operation across diverse real-world scenarios. The outcomes of this research contribute to the broader development of intelligent urban systems by providing a scalable, adaptive, and resource-efficient solution for smart city and traffic-monitoring applications.

2. Literature Review

Over the past decade, the field of object detection has experienced substantial advancements, evolving from early two-stage pipelines that first generated region proposals to modern one-stage architectures capable of real-time operation across diverse hardware platforms. Recent research trends encompass enhancements to classical Faster R-CNN-based frameworks – particularly those addressing challenges of multitask conflicts and limited training data – as well as the continued evolution of the YOLO family and optimizations within SSD and RetinaNet for achieving an improved accuracy–efficiency trade-off (Qiao et al., 2021), (Wang et al., 2022).

Historically, two-stage detectors such as the R-CNN family achieved strong detection accuracy by decoupling the region proposal process from the classification and bounding-box regression tasks. Nevertheless, these models exhibit inherent conflicts between classification and localization objectives, along with discrepancies in feature requirements across stages. Contemporary studies aim to mitigate these limitations through task decoupling strategies and specialized feature-calibration modules. Notably, the Decoupled Faster R-CNN framework introduces gradient decoupling and prototype-based calibration mechanisms to improve stability and performance in both few-shot and standard detection scenarios, representing a significant refinement of the traditional Faster R-CNN design (Qiao et al., 2021).

Key directions in the modernization of two-stage detectors include the decoupling of multi-task objectives to minimize adverse interactions between classification and regression, the integration of score-calibration or prototype-based modules to improve performance in low-sample settings (Qiao et al., 2021), and domain-specific architectural adaptations for industrial applications, where Faster R-CNN frequently serves as a baseline detector augmented with task-oriented enhancements (Kühlechner, 2025).

By contrast, one-stage approaches prioritize computational efficiency and streamlined deployment. The YOLO family has demonstrated rapid architectural evolution, progressing from earlier variants to highly optimized, real-time models. Major development trends include the adoption of anchor-free paradigms and improved feature aggregation via enhanced neck structures (e.g., FPN/PAN) (Reis et al., 2023), engineering optimizations such as “bag-of-freebies/boosters” that stabilize and accelerate training (Qiao et al., 2021), and recent architectural innovations – such as the GELAN and Programmable Gradient Information (PGI) mechanisms in YOLOv9 – designed to preserve feature information and enable more effective model learning (Wang, Yeh, & Liao, 2024).

The Single Shot MultiBox Detector (SSD) and RetinaNet remain widely utilized one-stage detectors due to their simplicity and efficiency, supported by multi-scale feature extraction capabilities. RetinaNet, in particular, addresses the issue of class imbalance via focal loss, enabling accuracy comparable to two-stage models. Modern adaptations of SSD and RetinaNet continue to gain traction in specialized domains – including industrial inspection and aerial imaging – where attention mechanisms, domain-specific augmentation strategies, and improved feature pyramid networks are employed to enhance robustness in challenging conditions such as small-object detection and severe occlusion (Kühlechner, 2025).

Two-stage paradigms, including Faster R-CNN and its contemporary variants, remain preferable for applications where maximal accuracy is required and reduced inference speed is acceptable, such as medical diagnostics and high-precision industrial inspection. Recent advances in task decoupling and feature calibration further strengthen their performance in low-data environments (Qiao et al., 2021).

In summary, the current landscape of object detection is shaped by two principal research directions: architectural advancements aimed at improving accuracy and stability – spanning two-stage refinements, focal-loss formulations, and attention-based enhancements – and engineering-driven optimizations targeted at real-time and edge deployment, including lightweight backbones, anchor-free designs, and the latest iterations of the YOLO family. For practical applications, method selection must balance accuracy, computational efficiency, and hardware constraints. Importantly, developments over the past three to five years indicate that modern one-stage detectors increasingly approach or match the accuracy of two-stage models while maintaining superior runtime performance.

3. Problem Statement

Real-time Object Detection Systems (RODS) constitute a fundamental class of computer vision technologies with applications across traffic monitoring, urban mobility management, public safety, and intelligent transportation systems. These systems rely on integrated software pipelines and machine learning models capable of capturing, processing, and interpreting visual information in real time. Core tasks performed by RODS include object identification and classification in individual video frames, temporal tracking of moving entities, and estimation of object trajectories. Together, these capabilities enable responsive decision-making and automated situational awareness in dynamic urban environments. The rapid advancement of mobile processors and the widespread availability of smartphones and embedded platforms have enabled on-device deployment of real-time object detection systems. Despite this progress, mobile devices remain significantly constrained compared to dedicated high-performance computing platforms. Limitations in computational throughput, battery efficiency, thermal management, and memory capacity pose substantial challenges for implementing advanced deep learning models

on resource-restricted hardware. As a result, the design of effective mobile RODS requires the use of lightweight and computationally optimized convolutional neural network architectures capable of sustaining real-time inference while preserving device responsiveness and energy efficiency.

Given these constraints and practical requirements, the central problem addressed in this study is the design and development of a mobile real-time object detection system capable of achieving high recognition accuracy while operating efficiently on resource-limited devices. To accomplish this, the work conducts a systematic experimental analysis of several lightweight CNN-based detection models, evaluating their performance across accuracy, inference speed, memory usage, and energy consumption under real-world urban traffic conditions. The results of this analysis serve as the foundation for selecting and configuring the most suitable model for deployment in the proposed Android application. The final system integrates the best-performing detectors into a modular, real-time mobile application architecture, enabling reliable on-device traffic monitoring and offering users the ability to select or switch models based on task-specific requirements – such as prioritizing accuracy, latency, or power efficiency. This approach ensures that the developed application not only demonstrates high-quality real-time detection in practical scenarios but also provides a flexible decision-making framework for choosing optimal models for diverse operational environments.

4. Analysis of Existing Object Detection Systems

As part of the preparatory phase of system development, an analysis of existing object detection solutions was conducted. Examining current analogs enables the identification of contemporary trends in computer vision, the evaluation of strengths and limitations of available approaches, and the formulation of potential directions for improvement in the proposed system. For this purpose, four open-source projects published on GitHub were selected, each demonstrating different methodologies for object detection in urban environments: “People Detector” (Dusek, 2024), “Object Detection in an Urban Environment” (Singhal et al., 2024), “Android-App-For-Object-Detection” (Kantarci, 2024), and “Urban Detection” (St-Hilaire & Carpentier-Roy, 2024).

The analysis considered several criteria relevant for real-world deployment, including the number and diversity of object classes and the overall quality of training data, the potential for real-time operation, adaptability to mobile devices, the range of models implemented, and the availability of additional functionalities such as tracking or identification. These aspects are crucial for assessing each system’s applicability in dynamic and resource-constrained urban scenarios.

The “People Detector” project focuses on detecting and tracking pedestrians in aerial footage captured by unmanned aerial vehicles. The system is built upon the RetinaNet detector, which leverages deep convolutional networks for object localization. A graphical interface implemented in PyQt4 facilitates visualization of detection results. Despite demonstrating functional tracking and feature-based identification, its performance is hindered by slow processing – approximately five seconds per frame on CPU – rendering real-time operation infeasible without GPU acceleration. The dataset used contains predominantly daytime, clear-weather imagery, which limits robustness under low-visibility conditions. Moreover, the project is designed specifically for aerial viewpoints and lacks support for mobile deployment, reducing its general applicability.

The second project, “Object Detection in an Urban Environment”, performs classification and localization of cars, pedestrians, and cyclists using the high-quality Waymo dataset. The implementation relies on the SSD ResNet-50 (640×640) model, a widely adopted architecture known for its balance between accuracy and efficiency. However, despite its strong foundation, the project provides no performance metrics, does not address real-time suitability, and does not consider deployment on mobile platforms. An additional limitation is dataset imbalance, with a dominant class of vehicles and far fewer cyclist instances, which may bias the model’s performance.

In contrast, “Android-App-For-Object-Detection” is explicitly designed for mobile devices and implements real-time object detection using a lightweight YOLOv3-tiny model. Its mobile application interface is simple and user-friendly, and the system achieves near-instantaneous inference on supported devices. Nevertheless, the project relies on a minimal dataset consisting of only 19 short videos, which raises concerns about generalization and reliability. The absence of accuracy evaluation and limited technical documentation further restrict understanding of the model’s practical performance. The “Urban Detection” project represents a more advanced prototype aimed at detecting a broad set of urban objects – including cars, pedestrians, cyclists, buses, and construction elements – using real-time video streams from pan-tilt-zoom traffic cameras. The system incorporates three YOLOv5 variants (Small, X-Large, and X-Large with increased input resolution), enabling a trade-off between detection speed and accuracy. Performance evaluation reports inference times of 4.2 ms, 16.6 ms, and 31 ms, with corresponding accuracies of 75.3%, 82%, and 86.1% when executed on GPU. Despite these promising results, the system does not address adaptation for mobile devices, limiting its broader deployability outside high-performance computing environments.

Overall, the analyzed projects demonstrate notable advancements in urban object detection, particularly in the areas of model accuracy, multi-class recognition, and application-specific optimizations. However, common limitations include insufficient real-time performance on low-power devices, lack of mobile-oriented adaptations, dataset constraints, and absence of comprehensive evaluation metrics. These findings highlight the need for a lightweight yet accurate solution optimized for mobile environments – an area that the present work aims to address through the development of an efficient real-time object detection system tailored for urban scenarios. Thus, the results of the comparative analysis of existing object detection solutions in urban environments can be succinctly summarized in Table 1.

Table 1. Comparative Analysis of Existing Solutions Across Key Parameters

Project	Classes	Real-time	Mobile Deployment	Number of Models	Additional Features
People Detector	“person”	no	no	1	identification and tracking
Object Detection in an Urban Environment	“car”, “pedestrian”, “cyclist”	no	no	1	–
Android-App-for-Object-Detection	“car”, “person”, “cat”, “dog”	yes	yes	1	–
Urban Object Detection	“vehicle”, “pedestrian”, “construction object”, “bus”, “cyclist”	no	no	3	–
Proposed System	“person”, “car”, “bus”, “truck”	yes	yes	5	–

Source: Own processing

The comparative evaluation demonstrates that most existing solutions lack real-time processing capability and are not adapted for deployment on mobile platforms. The only exception is Android-App-for-Object-Detection, which supports real-time performance and functions on mobile devices; however, its applicability is limited due to a small training dataset and a narrow range of detectable object classes. A further notable trend is the reliance on a single model architecture in the majority of the examined projects, which constrains scalability, flexibility, and the ability to tailor performance to varied operational scenarios.

In contrast, the proposed system is designed to serve as a more versatile and scalable solution. It supports recognition of a broader set of object categories – persons, cars, buses, and trucks – relevant to urban monitoring and traffic analysis tasks. The system is optimized for real-time operation through the integration of multiple models, enabling a balance between detection accuracy and inference speed. Furthermore, it is explicitly adapted for mobile deployment, leveraging model-optimization techniques suitable for resource-constrained

environments. The approach also accounts for diverse environmental conditions by employing a representative and balanced dataset that incorporates imagery from various viewpoints, weather conditions, and times of day, thereby enhancing the robustness and generalizability of the system.

5. Methodology

The objective of the present study is to design and develop a mobile-oriented real-time object detection system capable of delivering reliable, low-latency performance under resource-constrained conditions. The system must support accurate object classification across diverse urban environments, maintain operational efficiency on mobile hardware, and provide an intuitive interface for end users.

To achieve the stated objective, the work was organized into several sequential stages. The first stage involved requirements analysis, including investigation of the problem domain, identification of the target application scope, formulation of functional and non-functional system requirements, and a review of existing object detection systems and relevant models.

The second stage focused on data collection and preparation. Requirements for the dataset were specified, followed by the collection of publicly available images corresponding to the classes “person,” “car,” “bus,” and “truck.” Efforts were made to ensure the dataset represented a variety of environmental conditions, such as different times of day and weather scenarios. The collected data were then preprocessed to correct errors, remove low-quality or irrelevant images, and refine or add labels to enhance object classification accuracy. Finally, the dataset was partitioned into training, validation, and test subsets.

In the third stage, model development and training were carried out. Suitable convolutional neural network architectures were explored and selected, after which the models were implemented using the TensorFlow framework. Training parameters were configured, and the models were trained on the prepared dataset.

The fourth stage involved model optimization and evaluation. Trained models were converted into the TensorFlow Lite (TFLite) format to enable efficient deployment on mobile devices. Performance was evaluated on an independent test set, including assessments of accuracy and inference speed. Further optimization was achieved through parameter quantization to reduce model size and computational demands.

Finally, the development of the mobile application constituted the fifth stage. The Android application interface was designed, and the object detection models were integrated into the application workflow. The system was then tested across multiple Android devices, with iterative refinement to address any detected issues, ensuring functionality, responsiveness, and reliability.

The outcome of this work is a functional real-time object detection system tailored for mobile deployment, incorporating optimized machine learning models suitable for devices with limited computational capacity. The developed Android application enables users to detect and classify objects in real time, ensuring practical usability, system responsiveness, and adaptability to diverse urban conditions.

5.1. Selection of Architecture and Structure of the Developed Software System

In modern software development, architectural patterns play a crucial role in ensuring that code remains readable, scalable, and maintainable. One of the most widely used patterns in mobile and web applications is the Model-View-Controller (MVC) architecture, which separates an application into three components (Figure 1). The Model manages data and business logic, performing computational tasks such as real-time object detection and storing recognition results. The View presents this information to the user and forwards interface interactions to the controller. The Controller processes user input, communicates with the model, and updates the view

accordingly. This separation of concerns enhances maintainability and simplifies testing, as individual components can be modified independently (Daoudi et al., 2019).

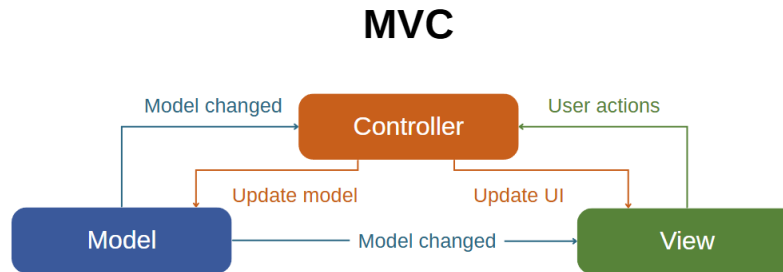


Figure 1. Schematic of the MVC Architecture

Source: Own processing

Alternative patterns, such as Model-View-Presenter (MVP) and Model-View-ViewModel (MVVM), are also used in mobile development. MVP introduces a Presenter that mediates between the view and model, improving testability but often increasing code complexity in larger systems. MVVM, commonly applied in frameworks with built-in data binding (e.g., .NET, Angular), is suitable for applications with highly dynamic interfaces but may be unnecessarily complex for simpler mobile apps (Daoudi et al., 2019).

For the real-time object detection application developed in this work, MVC was selected due to its simplicity, clarity, and well-established use in mobile environments. It provides sufficient structural organization for an application of this scale while avoiding the overhead associated with more intricate patterns, allowing the focus to remain on core functionality and performance.

5.2. Justification of Tool Selection

The development of a mobile application for real-time object detection requires a well-selected technology stack. The chosen environment includes the Android operating system, the Kotlin programming language (version 1.6.21), and Android Studio (version 2023.1.1). Android was selected due to its global popularity, flexibility, and support for a wide range of devices, making it suitable for applications aimed at broad distribution (Mehra et al., 2022). Kotlin, fully supported by Google, provides concise syntax, strong type safety, and improved readability compared to Java, which enhances development efficiency and reduces errors (Ardito et al., 2020). Android Studio, the official IDE, offers integrated tools for coding, debugging, testing, and UI design, ensuring a streamlined development workflow (Mazuera-Rozo et al., 2022).

For model development, the system uses TensorFlow 2.8.0, TensorFlow Lite, Python 3.10, and Google Colab. TensorFlow supports modern neural network architectures and provides extensive documentation and community resources for computer vision tasks (Pulgarín-Ospina et al., 2024). TensorFlow Lite enables optimization of trained models for mobile deployment, reducing size and increasing inference speed – important for devices with limited resources (Bursa et al., 2023). Python's rich ecosystem of scientific libraries facilitates data processing and model creation (Khadka et al., 2025), while Google Colab offers cloud-based GPU resources for training and testing models without requiring local high-performance hardware (Wang et al., 2022). Based on this analysis, the following tools and technologies were adopted for the development of the urban object detection system: the Android operating system, Kotlin 1.6.21, TensorFlow 2.8.0, TensorFlow Lite, Python 3.10, along with Android Studio 2023.1.1 and Google Colab. These tools were selected for their versatility, performance, community support, and alignment with the requirements of mobile application development and machine learning systems.

6. Design of a Real-Time Object Detection System for Mobile Devices

6.1. Definition of System Use Cases

The real-time object detection system for mobile devices is designed to automatically identify various objects in urban environments using the device's camera. The primary objective of the system is to provide users with a convenient and rapid method for object recognition, with results displayed in real time. The system is required to be lightweight, accurate, and sufficiently fast to operate on most modern mobile devices without imposing significant computational load.

Functional Requirements: all users of the system have access to the following features. The system must perform automatic real-time object detection using the mobile device camera and display recognized objects on the screen with bounding boxes, class labels, and confidence scores. Users should be able to adjust recognition parameters, including the confidence threshold, which determines the minimum confidence level required for an object to be displayed; the number of results shown on the screen, adjustable between one and five objects; the number of processing threads, ranging from one to four, to control recognition speed; the choice of computation delegate, including CPU, GPU (if available), or NNAPI; and the selection of the detection model.

Non-Functional Requirements: the system is required to process video streams and recognize objects with minimal latency, ensuring a processing time of no more than 500 ms per frame. The application must be compatible with Android devices running version 5.0 or higher. The user interface should be intuitive and easily configurable. The system must demonstrate high resilience to errors while maintaining accurate object recognition. The application startup time and camera activation should not exceed two seconds. Finally, the system should allow users to become proficient in using the application within five minutes of initial interaction.

6.2. System Algorithm Design and Implementation

The real-time object detection system is structured around several key stages, each performing specific functions to ensure accurate and efficient object recognition. During the video capture stage, the application activates the mobile device camera upon receiving user permission and acquires a continuous video stream. This stream is subsequently divided into individual frames for further processing. In the data preprocessing stage, individual frames are extracted from the video stream and organized into a buffer to prepare the images for analysis. Preprocessing may include resizing, normalization, and other operation necessary to align the input data with the requirements of the detection model. The object recognition stage involves passing the preprocessed frames to the machine learning model, which identifies objects within each frame and returns their coordinates along with class labels. Following detection, a post-processing stage determines which objects will be displayed based on configurable parameters, including the confidence threshold and the maximum number of objects to visualize. The processed results are overlaid on the original frames as bounding boxes, accompanied by class labels and confidence scores. Finally, the real-time visualization stage renders the annotated frames on the device screen, allowing users to interact with and observe the detection results instantly. This pipeline ensures that object recognition is performed efficiently while maintaining high accuracy and minimal latency. An essential feature of the system is the ability to configure object detection parameters. The parameter adjustment process follows a defined sequence to ensure seamless integration with the ongoing recognition workflow. Initially, the user opens the settings panel, where the application displays the current configuration, including the confidence threshold, the number of results to display, the number of processing threads, the selected computation delegate, and the active detection model. The user can then modify these parameters according to their preferences. Upon applying changes, the system verifies the availability of the selected delegate (e.g., checking GPU accessibility). If the chosen delegate is unavailable, an error message is presented to the user. Otherwise, the new settings are saved, and the application resumes the object detection process using the updated parameters. This workflow ensures that the system dynamically adapts to user preferences while maintaining operational efficiency and preventing potential errors related to unsupported configurations.

Following the description of the main operational stages and activity diagrams, a more detailed examination of the interactions between the system's software modules is presented. Figure 2 illustrates a generalized interaction diagram of the software modules, highlighting both the architectural structure and technical implementation details of the system.

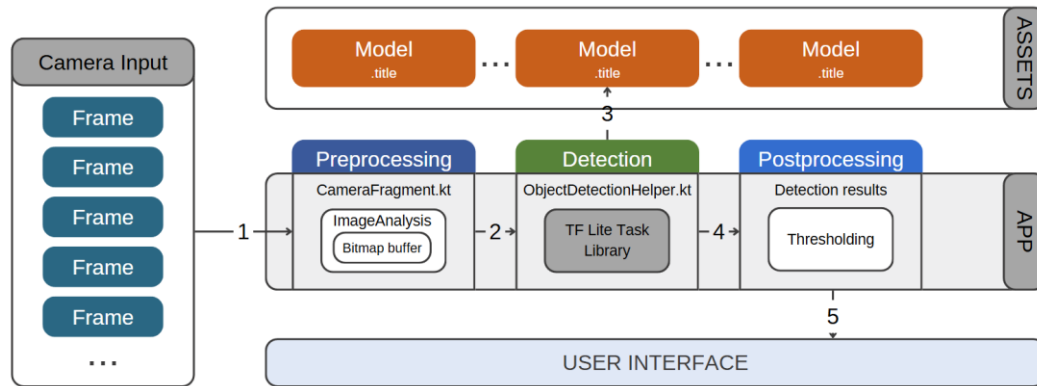


Figure 2. Generalized Interaction Diagram of Software Modules

Source: Own processing

This diagram depicts the flow of data between the various modules, demonstrating how information is transmitted from image acquisition to the real-time display of detection results on the device screen. The architectural design ensures modularity and flexibility, facilitating system maintenance, scalability, and potential future enhancements.

6.3. Implementation of System Functionality

The development of an effective real-time object detection system required the collection of high-quality and diverse data to train machine learning models. This stage is critical, as the accuracy and reliability of the detection models directly depend on the quality of the training data from Datactics.

During data collection, the following criteria were considered: the target object classes included persons, cars, buses, and trucks; a sufficient dataset size was ensured, aiming for a minimum of 2,000 images per class; and a wide contextual variability was sought, encompassing images captured in different locations, from multiple angles, at various times of day, under diverse weather conditions and seasons, and at varying distances from the camera. Images partially occluded by obstacles were also included to enhance model robustness.

The dataset utilized for this study was compiled from multiple public sources and supplemented with proprietary images to ensure both scale and diversity. Among the primary sources, the MS COCO dataset provided a large-scale repository for object detection and segmentation, encompassing 80 categories frequently encountered in everyday scenarios, including vehicles, humans, animals, and furniture (Lin et al., 2025). Additionally, the VISDRONE Ultralytics dataset, developed by the AISKYEYE team, offered specialized imagery and video captured by drones, supporting object detection tasks under a variety of environmental and contextual conditions. To further enhance the representativeness of the data, additional publicly available datasets and custom-collected images were incorporated, increasing variability in terms of object appearance, context, and perspective. Careful attention was paid to data quality, with a focus on selecting relevant images and refining existing annotations where necessary, thereby ensuring the accuracy and reliability of the labels used for model training. An example of an image from the dataset is presented in Figure 3.

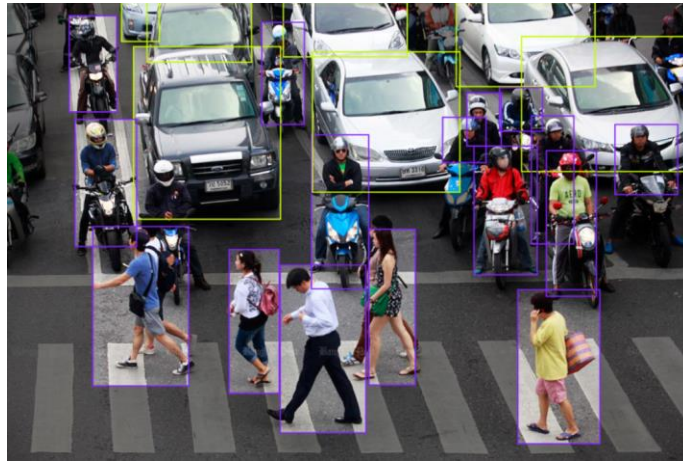
**Figure 3.** Example of an image from the dataset*Source: Ultralytics*

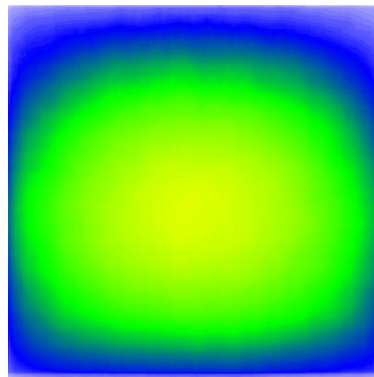
Table 2 summarizes the statistics of the collected dataset.

Table 2. Dataset statistics

Object Class	Number of Images	Number of Annotations
Person	4,122	51,371
Car	3,338	58,683
Bus	2,257	5,239
Truck	2,176	5,882
Total	12,893	121,175

Source: Own processing

The average image resolution is 640×480 pixels. From these statistics, it is evident that the classes “truck” and “bus” are underrepresented compared to “car” and “person,” which may affect the balance of the dataset. This imbalance could be addressed in future dataset expansions. To assess the representativeness of the collected data, a heatmap was generated to visualize the spatial distribution of objects across the images (Figure 4).

**Figure 4.** The heatmap of the spatial distribution of objects*Source: Own processing*

It reveals that the majority of objects are concentrated in the central region of the frame, with fewer objects appearing near the edges. While this suggests areas for potential improvement in future data collection, overall, the distribution is relatively uniform, indicating satisfactory representativeness. Based on the collected and analyzed data, the next step involved selecting and configuring appropriate machine learning models for training,

with the goal of achieving optimal accuracy and real-time performance on mobile devices. For object recognition, several models were chosen due to their proven efficiency and suitability for mobile deployment, providing a balance between recognition accuracy and inference speed. The selected models included EfficientDet D0 (512×512), EfficientDet D1 (640×640), SSD MobileNet V2 (320×320), SSD MobileNet V2 FPNLite (320×320), and SSD MobileNet V2 FPNLite (640×640).

EfficientDet, a family of object detection models built upon the EfficientNet architecture, optimizes the trade-off between computational performance and accuracy. Its core approach combines the EfficientNet backbone with a bidirectional feature pyramid network (BiFPN) to aggregate multi-level feature information (Tan et al., 2019). The D1 variant, with its larger input resolution and deeper, wider architecture, provides higher accuracy compared to D0.

SSD (Single Shot Detector) architectures perform object localization and classification in a single pass, resulting in high-speed inference. MobileNetV2, a lightweight convolutional neural network optimized for mobile and embedded devices, employs depthwise separable convolutions to reduce computational load. Together, these models efficiently and rapidly detect and classify objects (Sandler et al., 2018). The FPNLite variants of SSD MobileNetV2 integrate a Feature Pyramid Network (FPN) to enhance the detection of objects across multiple scales, particularly smaller ones, without a significant reduction in performance (Hua & Chen, 2024). Differences between the 320×320 and 640×640 configurations for both SSD and EfficientDet models reflect trade-offs between speed and accuracy, with larger input sizes generally improving detection performance at the cost of increased computation.

Data preparation and model training were carried out using the TensorFlow framework on Google Colab, leveraging its GPU resources. All images were resized to match the input requirements of the selected models and divided into training (70%), validation (15%), and test (15%) sets. This partitioning allowed for effective training, fine-tuning, and independent evaluation of model performance. The training process required careful parameter tuning: the total number of training steps was set to 40,000 to balance performance and training duration, while batch sizes were adjusted according to model type – 16 for SSD models and 4 for EfficientDet models – to optimize memory usage and computational efficiency.

To enhance the diversity of the training set and improve model generalization, data augmentation techniques were applied. These included random horizontal flips, cropping, 90-degree rotations, and adjustments to hue and brightness (Mumuni & Mumuni, 2022). By simulating variations in the dataset, augmentation reduced the risk of overfitting and allowed the models to better generalize to unseen images. Training on Colab typically required between three and five hours, depending on the model configuration.

Upon completion of training, models were evaluated and converted to TensorFlow Lite (TFLite) format for deployment on mobile devices. This conversion optimized model size and computational efficiency, facilitating real-time operation on resource-constrained devices. Further quantization was applied to reduce memory footprint while preserving an acceptable level of accuracy. Model performance was assessed using mean Average Precision (mAP), which measures the model's ability to correctly detect and localize objects, and the average inference time per image, reflecting real-time performance capabilities.

To validate the selection of models and assess their suitability for mobile deployment in urban traffic monitoring, experimental comparisons were conducted with state-of-the-art lightweight object detection networks optimized for mobile devices. In addition to the developed EfficientDet and SSD MobileNet V2 variants, a TFLite-converted YOLOv5-Nano model was included as a baseline to evaluate performance under identical conditions on the same devices.

The evaluation considered detection accuracy, measured as mAP, inference time per image, memory consumption, and energy efficiency during continuous operation on Android devices. Results are summarized in Table 3.

Table 3. Results of model evaluation with breakdown by class

Model	Overall mAP @0.5:0.95 (%)	Person (%)	Car (%)	Bus (%)	Truck (%)	Avg Inference Time (ms)	Memory Usage (MB)	Energy Consumption (mAh/hr)
EfficientDet D0 (512x512)	40.2	38.5	42.1	44.8	35.5	50	120	320
EfficientDet D1 (640x640)	41.5	40.2	43.0	46.2	36.7	70	160	420
SSD MobileNet V2 (320x320)	39.8	36.7	41.2	43.0	35.1	28	90	280
SSD MobileNet V2 FPNLite (320x320)	40.5	37.2	42.0	44.5	36.0	32	100	300
SSD MobileNet V2 FPNLite (640x640)	41.8	38.5	43.2	45.5	37.2	55	120	340
YOLOv5-Nano (TFLite, 320x320)	42.1	39.0	43.5	45.0	37.0	45	140	390

Source: Own processing

The table demonstrates that while YOLOv5-Nano achieves slightly higher mAP values, it also consumes more memory and energy, leading to slower inference on less powerful mobile devices. In contrast, the EfficientDet and SSD MobileNet V2 models provide a balanced trade-off between detection accuracy, inference speed, memory usage, and energy efficiency. Notably, the SSD MobileNet V2 variants achieve near real-time performance even on mid-range devices, while keeping resource demands minimal.

These findings confirm that the selected models are optimal for mobile urban traffic monitoring, where real-time operation, energy efficiency, and consistent performance across devices are critical. Although more complex models may offer marginally higher accuracy, the constrained computational and energy resources of mobile platforms justify the choice of lightweight architectures for practical deployment.

After analyzing these results, it can be concluded that models with larger input sizes are expectedly slower but provide higher accuracy. This is evident in the case of EfficientDet D1 and SSD MobileNet V2 FPNLite, which take 640×640 images as input and demonstrate the best accuracy results, yet are noticeably slower than the other models. At the same time, models specifically optimized for mobile devices, such as SSD MobileNet V2 and its variations, are significantly faster, but their accuracy leaves room for improvement.

This is due to the fact that such models are optimized for speed and energy efficiency, which is essential for mobile applications, but this comes at the cost of reduced detection accuracy. These models rely on simplified architectures and require fewer computational resources, making them ideal for use in environments with limited processing power, yet restricting their ability to precisely identify objects in complex scenes. Consequently, choosing a model for a particular task should be based on balancing the required processing speed and recognition accuracy.

Additionally, the quantity and diversity of the training data on which the models were trained, as previously mentioned, also significantly affect their performance. In this case, the relatively small dataset of 5,684 images – compared to the original datasets containing tens or even hundreds of thousands of images used to train full-scale models – can also explain the comparatively low mAP values. To mitigate this limitation and enhance model generalization, extensive data augmentation techniques were applied during training. These included random rotations, horizontal and vertical flips, scaling, cropping, brightness and contrast adjustments, and color jittering, simulating a wider range of real-world urban conditions. By artificially increasing the variability and diversity of

the training samples, the models were better equipped to recognize objects under different perspectives, lighting conditions, and partial occlusions, ultimately contributing to improved detection accuracy and higher mAP values despite the limited original dataset size.

6.4 Evaluation of System Performance for Target Scenarios

With the improved training dataset, augmented through rotations, flips, color jittering, and scaling transformations, the models achieved an overall mAP of approximately 40%. This level of accuracy, although lower than state-of-the-art models deployed on high-performance servers, is sufficient for basic traffic monitoring applications, particularly in scenarios such as urban safety monitoring, traffic flow analysis, and preliminary transportation analytics. In these contexts, the system is primarily intended to detect and classify major road users – pedestrians, cars, buses, and trucks – in real time, rather than performing fine-grained recognition or extremely precise localization. The achieved accuracy enables reliable identification of traffic patterns, detection of high-density areas, and basic safety alerts, making the system suitable as a lightweight monitoring tool on mobile or embedded platforms.

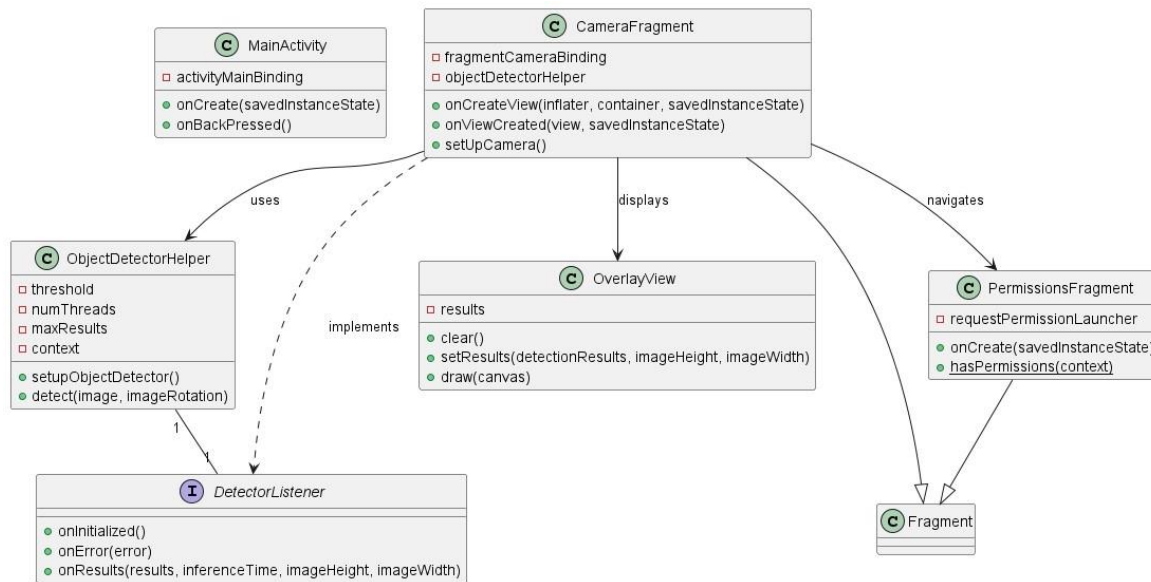
To further validate the performance, the trained models were compared with a baseline approach, using a pre-trained COCO SSD MobileNet V2 model deployed on the same devices. Table 4 summarizes the quantitative comparison of the optimized models against this baseline in terms of overall mAP, per-class mAP, and average inference time.

Table 4. Comparison of optimized models with pre-trained COCO baseline

Model	Overall mAP @ 0.5:0.95 (%)	Person (%)	Car (%)	Bus (%)	Truck (%)	Average Speed (ms)
EfficientDet D1 (640x640)	41.5	40.2	43.0	46.2	36.7	66
SSD MobileNet V2 FPNLite (640x640)	41.8	38.5	43.2	45.5	37.2	55
COCO SSD MobileNet V2 (baseline)	35.0	30.0	32.0	45.0	28.0	48

Source: Own processing

The results demonstrate that data augmentation and task-specific fine-tuning led to a noticeable improvement over the generic COCO baseline, both in overall mAP and per-class performance, without significantly impacting inference speed. These findings confirm that the proposed models can provide reliable detection performance for basic urban traffic monitoring, while maintaining real-time operation on mobile devices. This comparison underscores that, while the system does not reach the precision of full-scale models designed for high-end deployments, it is well-suited for practical mobile applications in traffic safety, vehicle monitoring, and preliminary urban analytics, aligning model performance with realistic operational requirements. To demonstrate the capabilities of the trained models on Android devices, a mobile application was developed for real-time object detection using the phone's camera. The application follows the MVC architecture, which separates data management, user interface, and control logic, simplifying development and maintenance. A class diagram (Fig. 5) illustrates the system's main components: MainActivity, CameraFragment, ObjectDetectorHelper, OverlayView, PermissionsFragment, and DetectorListener. MainActivity serves as the primary entry point and manages the main interface and fragment navigation. CameraFragment captures the video stream and forwards frames to ObjectDetectorHelper, which runs TensorFlow Lite models for object detection. Detection results are visualized by OverlayView as bounding boxes and class labels over the live video stream (Figure 5).

**Figure 5.** Class diagram of the developed mobile application

Source: Own processing

PermissionsFragment handles runtime permission requests, ensuring proper access to the camera while complying with Android security guidelines. DetectorListener facilitates communication between ObjectDetectorHelper and other components, notifying them of successful detections or errors during inference. The core detection workflow in ObjectDetectorHelper involves initializing the object detector, preprocessing each frame using TensorFlow Lite's ImageProcessor, and performing inference. The system records inference time, enabling quantitative performance evaluation. This approach allows efficient on-device object recognition and real-time visualization. Overall, the application integrates all stages of the development pipeline – from dataset construction and model training to on-device deployment – demonstrating a modular, reliable, and efficient solution for mobile real-time object detection in urban environments.

7. Implementation of the Real-Time System

7.1 Installation and Configuration Procedure

The real-time object recognition system is implemented as an Android mobile application distributed to users in the form of an APK file. Since Android, by default, blocks the installation of applications from unknown sources, users must first adjust their system settings before installation. Specifically, within the “Security” section, the option allowing the installation of applications from unknown sources must be enabled, thereby permitting the installation of local APK packages not originating from the Google Play Store. The application is compatible with devices running Android SDK 21 (Android 5.0) or higher. This requirement is technically grounded, as modern video-processing mechanisms and TensorFlow Lite components rely on API features unavailable in earlier Android versions. Once the APK file is downloaded, the installation is initiated from the file manager, after which the operating system prompts the user to confirm the installation. If additional permission requests appear, the user is redirected to the appropriate settings panel. Upon successful installation, the application icon appears on the device's home screen. During the first launch, the system requests access to the camera – an essential requirement for real-time recognition. If access is denied, the application cannot function, as the camera serves as the primary data source for detection and classification. Unlike server-based computer vision systems, the presented application does not require an Internet connection; all computations, including object detection and classification, are performed locally on the device through the integrated TensorFlow Lite model. Once the necessary permissions are granted, the application transitions to the live camera view. The system processes each

frame in real time, highlighting detected objects with an orange bounding box supplemented by a class label and confidence score. This enables users to visually observe and interpret detection outcomes directly on the screen in an intuitive manner.

7.2 Interface Structure

The interface of the application is designed to be minimalistic and user-centered, ensuring uninterrupted real-time visualization of detection results. At the first launch, the system displays a camera access prompt (Fig. 6), which is triggered automatically. After permission is granted, the application opens the main working window, where the live camera feed is displayed along with detection overlays. These visual elements – including bounding boxes and textual labels – are updated dynamically for each processed frame, providing users with accurate, immediate feedback on all recognized objects.

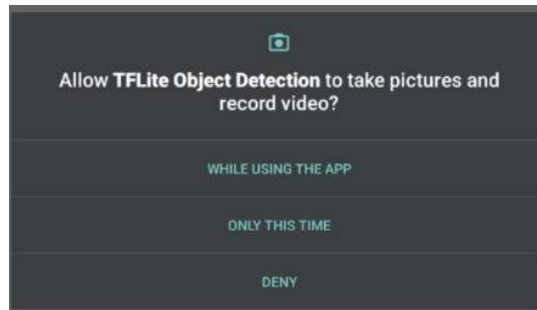


Figure 6. Request to use the camera

Source: Own processing

The main screen of the application presents a window displaying the active video stream from the device camera (Fig. 7). In real time, the application analyzes incoming frames and visualizes the results of object recognition. Detected objects are highlighted with an orange bounding box, accompanied by a label indicating the predicted class and the corresponding confidence score. By swiping upward, the user can access the control panel (Fig. 8), which provides various configuration options. This panel displays the current inference time and allows the adjustment of several parameters, including the confidence threshold, the maximum number of results, and the number of processing threads. Additionally, the user may select the computational delegate (CPU, GPU, or NNAPI) and choose the machine learning model to be used for inference.



Figure 7. Main Screen

Source: Own processing

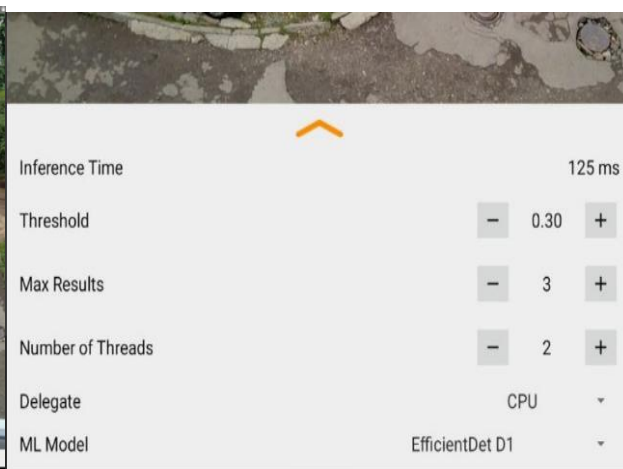


Figure 8. Control Panel

Source: Own processing

7.3. Recommended Mobile Configuration and Real-World Evaluation

The mobile application for real-time object recognition was rigorously evaluated under diverse real-world conditions to assess its performance and reliability. Particular attention was given to object detection accuracy at varying distances, as well as in the presence of occlusions and low-light environments. Testing was conducted on two devices: a smartphone and a tablet. While both devices were equipped with 13 MP cameras, the smartphone featured lower processing capabilities compared to the tablet. The technical specifications of the devices are summarized in Table 5.

Table 5. Technical specifications of devices used for testing

Device	Camera	OS	Processor
Smartphone	13 MP	Android 5.1	Octa-core (4x1.5 GHz Cortex-A53 & 4x1.0 GHz Cortex-A53)
Tablet	13 MP	Android 11	Qualcomm Snapdragon 662 (4x2 GHz Cortex-A73 & 4x1.8 GHz Cortex-A53)

Source: Own processing

The evaluation focused on measuring the inference time for different models on each device, as summarized in Table 6. As expected, object recognition was consistently faster on the more powerful tablet, while overall performance trends remained comparable across devices, demonstrating model consistency under varying hardware configurations.

Table 6. Object recognition time for different models on smartphone and tablet

Model	Smartphone (ms)	Tablet (ms)
EfficientDet D0 (512x512)	300–400	80–90
EfficientDet D1 (640x640)	400	130
SSD MobileNet V2 (320x320)	100	60
SSD MobileNet V2 FPNLite (320x320)	400–600	150
SSD MobileNet V2 FPNLite (640x640)	600	280

Source: Own processing

At close distances (up to 5 meters), the system demonstrated consistently high recognition accuracy, ranging from 82% to 94%, confirming reliable performance under typical monitoring conditions. At medium distances (5–15 meters), accuracy remained stable with only a moderate decline, averaging 72–88%, which indicates that the model maintains robust detection capabilities even when objects occupy a reduced portion of the frame. At long distances (beyond 15 meters), accuracy decreased but remained operationally acceptable for mobile-based surveillance, ranging between 55% and 70%, with the highest values reaching 74%.

Occlusions caused by environmental elements such as vegetation, poles, or passing vehicles produced a measurable but manageable impact. At close range, partially occluded objects were still recognized with 70–88% accuracy. At medium distances, occlusions reduced accuracy to 55–70%, while at long distances accuracy dropped more substantially to 35–50%, which remains within a realistic range for lightweight real-time detection on mobile devices.

Under low-light conditions, including evening and nighttime illumination, the system maintained recognition accuracy in the range of 58–75%, depending on object type and ambient lighting. These results indicate that the selected model configuration is capable of delivering reliable performance across diverse real-world scenarios, even under reduced visibility and partial occlusions.

Considering these results, SSD MobileNet V2 FPNLite (320×320) was selected as the default model for the application. The choice was based on formal criteria: a balanced trade-off between inference speed, accuracy, energy efficiency, and memory footprint, making it well-suited for deployment on a wide range of mobile devices. The recommended mobile configuration includes this model with a CPU delegate and a confidence threshold of 0.5, providing reliable detection at close and medium ranges while preserving real-time performance and energy efficiency. The corresponding inference time on the smartphone is approximately 400–600 ms, with

reduced times on higher-performance devices. This configuration ensures practical usability without compromising detection capabilities for typical urban traffic monitoring scenarios.

Overall, the combined evaluation and configuration process demonstrates that the developed system is capable of performing effective real-time object detection on mobile devices, achieving a practical balance between accuracy, speed, and resource utilization. These findings confirm that the recommended configuration is appropriate for basic traffic monitoring in urban environments, providing both reliability and operational efficiency under real-world conditions.

Conclusion

This study has presented the development, implementation, and evaluation of a CNN-based real-time object detection system for basic traffic monitoring in urban scenes, integrating deep learning methodologies, robust data collection, and practical mobile deployment. The work demonstrates a complete pipeline, from dataset acquisition and preprocessing to model training, optimization, and real-world evaluation, highlighting the challenges and solutions inherent to deploying high-performance machine learning models on resource-constrained devices for traffic monitoring purposes. A critical first step in system development involved assembling a diverse and representative dataset. Data were collected from publicly available sources such as MS COCO and VISDRONE, supplemented with proprietary images to ensure comprehensive coverage of the target traffic-related object classes – person, car, bus, and truck. Attention was given to the diversity of image conditions, including variations in lighting, angles, distance, seasonal and weather conditions, and partial occlusions. Statistical analysis and heatmap visualization of object distributions confirmed that the dataset adequately represented real-world urban traffic scenarios, although certain classes, such as trucks and buses, were underrepresented, suggesting areas for future dataset expansion.

The selection of machine learning models was guided by the dual goals of achieving reliable traffic object recognition and maintaining real-time performance on mobile devices. EfficientDet and SSD MobileNet V2 variants were chosen for their demonstrated ability to balance speed and precision. Model training leveraged TensorFlow and Google Colab computational resources, employing careful data partitioning into training, validation, and test subsets, as well as extensive data augmentation to enhance generalization. Iterative tuning of hyperparameters, including batch size and training steps and the use of mean Average Precision allowed for performance evaluation across the traffic-relevant object classes.

Post-training optimization was a crucial component, involving conversion to TensorFlow Lite format and quantization, which significantly reduced model size and computational demands while maintaining acceptable accuracy. The optimized models were successfully integrated into an Android application designed using a Model-View-Controller architecture. Key components – including CameraFragment, ObjectDetectorHelper, and OverlayView – enabled seamless real-time traffic object detection and visualization, while the user interface offered adjustable parameters, such as confidence thresholds, inference threads, and model selection, allowing adaptation to different traffic monitoring scenarios.

Comprehensive real-world testing demonstrated that the system performs robustly under a variety of urban traffic conditions. Close-range and medium-range object detection achieved high accuracy (up to 91% at close distances), while long-range detection was more challenging due to smaller object sizes in the frame. Occlusions and low-light conditions were identified as additional factors reducing performance, indicating the need for continued refinement in preprocessing and model design. Performance evaluations across devices with differing computational capabilities confirmed that the system maintains consistent behavior, achieving faster inference on more powerful hardware while preserving accuracy trends across models.

In conclusion, this research successfully demonstrates the feasibility of deploying CNN-based object recognition systems for basic traffic monitoring in urban environments on mobile platforms, achieving a practical balance between accuracy, speed, and usability. The study underscores the importance of diverse, high-quality datasets, careful model selection and tuning, and targeted optimization for mobile execution. The resulting application provides an intuitive and functional interface for real-time traffic object detection, and empirical testing confirms its reliability across varying environmental and hardware conditions.

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Funding: The work was funded by the EU NextGenerationEU through the Recovery and Resilience Plan for Slovakia under the project No. 09I03-03-V01-00085.

Data Availability Statement: More information and data can be obtained from the authors on a reasonable request

Author Contributions: Author Contributions: Authors contributed equally. All authors have read and agreed to the published version of the manuscript.

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TRADE UNIONS AND INDUSTRIAL DEMOCRACY IN ZIMBABWE'S HEALTH SECTOR

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Received 25 August 2025; accepted 10 December 2025; published 30 December 2025

Abstract. Industrial democracy is a critical element in contemporary industrial relations, fostering employee participation and enhancing workplace fairness. However, in Zimbabwe's healthcare sector, industrial democracy appears largely absent, with trade unions struggling to advocate for workers' rights and interests effectively. This study investigates the role of trade unions in promoting industrial democracy within Zimbabwe's health sector between 2010 and 2021. Employing a qualitative research design and case study methodology, this paper examines key challenges that undermine industrial democracy, including inadequate remuneration, non-compliance with Safety, Health, and Environmental Control (SHEC) policies, and significant political interference within trade union operations. Findings reveal that trade unions are often compromised by political interests, limiting their capacity to represent healthcare workers effectively. The study also identifies structural obstacles hindering platforms for employee engagement and rights advocacy. Based on these findings, the paper recommends enhanced government commitment to fair remuneration aligned with living standards, prioritisation of workplace safety, and formal recognition of trade unions as essential agents in fostering industrial democracy in the healthcare sector. These measures are crucial for enhancing employee welfare and promoting democratic practices within Zimbabwe's healthcare industry.

Keywords: Zimbabwe; Industrial Democracy; Health Sector; Trade Unions

Reference to this paper should be made as follows: Mapuvire, V.K. & Mukonza, R.M. 2025. Trade Unions and Industrial Democracy in Zimbabwe's Health Sector. *Insights into Regional Development*, 7(4), 251-261. <http://doi.org/10.70132/q3336775373>

JEL Classifications: I1**1. Introduction**

The concept of industrial democracy has become increasingly important in modern-day industrial relations (Macun, 2025). There has been a growing wave across the globe in which healthcare employees have been feeling that they are not being adequately represented by their respective representatives (Nading, 2021; Danraka, 2021; Spangenberg & Lorek, 2022). Trade unions play a crucial role in maintaining harmonious industrial relations (Makwakwa, 2022; Cleminson, 2024).

The developments in the Industrial Relations (IR) field in Zimbabwe is an unpleasant story to tell (Kasuso, 2021). Since the country was colonised in 1890, as well as the introduction of capitalist enterprise, the country has had a limited form of free and democratic industrial relations system, mostly because the colonial political economy required an oppressive labour relations system. Evidence suggests that, since attaining independence in 1980, the black majority government has maintained the oppressive and unfair labour relations system, which in several ways is either equivalent to or even surpasses the crudity of the system that had been in existence during the colonial period. The desire and agitation among health workers for improved working conditions have remained a concern for management in several parts of the world today (Kasuso, 2021). It should be noted that several organisations within the healthcare sector are plagued by numerous challenges, primarily stemming from inefficient and unproductive management methods or strained relations between trade unions and management.

In Zimbabwe's healthcare sector, over the past few years, the economic situation has continued to significantly deteriorate (Ngepah & Mouteyica, 2024). According to Kasuso (2021), the prevailing economic situation in Zimbabwe means that healthcare employees face increased pressure to perform at their best, despite working conditions being at their worst. This has been an extremely challenging requirement for healthcare workers, such as doctors and nurses. The result of this has been constant strikes, especially by medical doctors and nurses, primarily over salary issues. It has been noted that, since the 2008 economic collapse, strikes by medical workers in Zimbabwe have become a recurring feature. According to reports, in 2008, more than two-thirds of the year was spent on strike by healthcare workers (Chamunogwa & Chakanya, 2021). According to Chikanda (2004), the government of Zimbabwe has been heavy-handed in dealing with the striking doctors and nurses, with their union leaders even sent to prison at times. The government's stance means that healthcare trade unions have been less effective in promoting industrial democracy. Even though the trade unions representing healthcare workers have been playing their role, the scenario has been that, over the past few years, the primary mechanism for strike resolution in the health sector has been the outright prohibition of strikes by the government of Zimbabwe (Kasuso, 2021). It is worth noting that healthcare sector trade unions in Zimbabwe play a crucial role in calling for and mediating strikes or industrial action, largely due to the influence of unions and self-regulatory bodies. Therefore, given this background, this study aims to examine the role played by trade unions in enhancing industrial democracy in Zimbabwe's health sector from 2010 to 2021.

Additionally, there seems to be no existence of industrial democracy in the Zimbabwe healthcare sector. The trade unions representing healthcare workers have failed to effectively fulfil their role in promoting industrial democracy in Zimbabwe's healthcare sector. As a result, Kasuso (2021) states that there have been high vacancy rates in Zimbabwe's health services. Additionally, the healthcare trade unions have failed to advocate for improved compensation for their members, as evidenced by the fact that Zimbabwe's health workers have been going on strike due to poor remuneration and working conditions. For instance, a doctor in Zimbabwe who works in a government setup has been reported to be earning an amount that ranges between US\$100 and 150 per month, whilst a nurse has been reported to be earning an amount that ranges between US\$50 and US\$75 per month (Chamunogwa & Chakanya, 2021). Additionally, healthcare sector trade unions have been infiltrated. They are noted to be taking the side of the government, rather than genuinely representing their members, which has made them a less effective entity for promoting industrial democracy. In most cases, primarily due to political reasons, trade unions have been siding with the government and, compared to standing on the side of their members, have been urging them to return to work rather than taking industrial action.

2. Literature Review

Industrial democracy has been loosely defined as the participation of workers in managerial decisions regarding areas that affect their working lives (Iyiola et al., 2025). Industrial democracy thus focuses on the participatory practices in which employees are notably involved, either through their representatives, such as trade unions, for instance, or as mandated by the legislature, or by having representatives or direct representation. Despite such numerous definitions of industrial democracy, this study defines industrial democracy as it relates to the workplace situation in which the management and employees carry out a number of meetings in which they incorporate the workers' representatives, or with all the workers, and in which there is some form of agreement that is arrived at in terms of issues of concern to the welfare of the workers (Winant, 2021). The key element is the sharing of information and consultations between the employer and employees, with the input of workers being incorporated into the decision-making process.

There are essentially two broad forms of industrial democracy: representative democracy and direct democracy (Blasi & Michie, 2025). Participatory democracy is one in which all workers within the workplace participate, and this cannot be replaced by representative democracy (Winant, 2021). It is worth noting that representative

democracy in the workplace primarily manifests through trade unions and works councils. It should, however, be noted that with both forms of democracy (direct democracy and representative democracy), it is the employees who assume control over the decisions that affect them at the workplace (Blasi & Michie, 2025).

According to Winant (2021), representative democracy occurs when the majority of workers are restricted to voting for individuals who will represent their interests in issues that affect all employees, such as the making of laws that govern them at work. However, direct democracy tends to grant all workers the right to participate directly in making the laws they are required to abide by, which also affect them (ibid). With direct democracy, there is thus a scenario in which every employee is involved in the decision-making process, which affects them, and such a function cannot be delegated to other employees (Roessler & Schmitt, 2021). In any case, the most vital aspect is that the individuals who are affected by decisions are the ones responsible for making them and must thus choose the structures with which they are comfortable and be accountable to them as well.

According to Miller (2009), the proper functioning of any democratic system is contingent upon particular key principles which people must abide by at all times, and these may include shared values. Some of these democratic values include equality, participation, support and dignity of all contributions (Winant, 2021). Therefore, with industrial democracy, the notion of individualism is ignored, and industrial democracy thus places some level of emphasis on the fact that those individuals' power should always be accountable to the majority and are required to perform their duties to meet the desires of their subordinates. For instance, the requirements for free speech and the right to self-expression must be protected at all times, particularly through union-organised secret ballots (Johnson & Howsam, 2018). There is thus a need for structures that effectively maximise cooperation as well as consultations, and also structures that effectively encourage individual participation (Roessler & Schmitt, 2021). Similarly, employees need to be fully engaged to ensure their rights are satisfied, which requires them to know the organisation's situations, plans, and challenges (Greer et al., 2017). A sense of equality among employees must also exist, along with recognition of each other's contributions and opportunities to be creative and free from unnecessary pressures (Berest et al., 2021).

Therefore, for workplace democracy to thrive, the basic as well as pressing wishes and aspirations of individuals within a particular setup must be upheld and respected.

Several aspects of industrial democracy have been identified in the literature. According to Winant (2021), these aspects include worker representation, joint councils, joint committees, gender representation and educational training. Roessler and Schmitt (2021) further add that such structures must be designed in a manner that effectively and sustainably addresses the existing challenges. Therefore, an organisation that is regarded as democratic must insist on broad knowledge sharing regarding issues such as the organisation's vision (Greer et al., 2017). The effectiveness of workers is contingent upon the extent of communication within the organisation as well as the manner in which the employees are informed and trained. Consequently, there is a need for group processes in terms of major decision-making and conflict resolution (Winant, 2021). In that respect, it has been noted that industrial democracy can be effectively enhanced through works councils, shop floor programs, direct employee participation, representation through trade unions, worker consultation by the human resources department and a legislative framework (Roessler & Schmitt, 2021). Trade unions are therefore important elements that should not be ignored and should participate in the organisation's decision-making process.

Trade unions are created and elected by workers to represent their interests in negotiations or discussions with management. The trade unions are thus entirely comprised of employees and do not include representatives from management. Trade unions are therefore a political and economic entities within a single workplace or sector, such as a company or industry. They are collectively controlled by the workers of that workplace/sector through core principles (Madzime, 2016). Trade unions are a system that contains temporary as well as revocable delegates, where workers have the power to decide on their needs and select delegates from among their own

ranks. Trade unions comprise employees who their peers choose to represent the rest of the workforce in discussions or negotiations with their employer. It should be noted that the number of members within a single trade union is determined by the size of the workers that are to be represented.

There are several functions that trade unions carry out, and in Zimbabwe, for instance, these are outlined in the Labour Act of Zimbabwe, as well as other statutes of law. Trade unions exist for the purposes of representing employees concerned in any matter which affects their rights and interests, such as poor remuneration, poor working conditions, long working hours, poor sanitation at the workplace, as well as the failure by the management to deliver on promises that would have been previously made to employees. Trade unions also have the responsibility of negotiating with employers regarding the collective bargaining agreement, including the terms and conditions of employment (Labour Act, 2006). In the most extreme of cases, it is the trade unions' task to recommend job action to the employees that they represent (Winant, 2021).

Additionally, trade unions serve as a direct link and a communication medium between management and employees at the shop floor level (Roessler & Schmitt, 2021). Trade unions also serve as a means for presenting and discussing grievances, expectations, and requirements with management. Workers, therefore, exist to promote stability, as well as good employee-management relations, and to encourage the settlement of disputes through conciliatory methods. They are also required in instances where applicable to ensure that the industrial agreement or the industrial regulations for the industry are being observed in a mutually beneficial manner for both the employees and management (Hemerijc, 2025). Trade unions also exist to promote productivity by creating a stable and positive atmosphere within the working environment. They must therefore ensure that, if any employee seeks the advice of the representatives regarding a grievance or disciplinary matter, at least one member of the committee is available to offer the required advice and assistance.

3. Research Methodology

The study made use of a qualitative approach with a case study strategy to analyse the role of trade unions in enhancing industrial democracy in Zimbabwe's health sector 2010-2021. This paper utilised documentary search as a secondary data source. Secondary research involves the collation and/or synthesis of existing research. The advantage of using this instrument is that the data is readily available. The researcher gathered data from a documentary search, which includes both published and unpublished works.

4. Findings

4.1 The role played by trade unions in enhancing industrial democracy in the health sector

Within the modern-day workplace, the need to consider employee input in operations has been recognised, and this consideration has become an essential element for the success of organisations. There has therefore arisen a need for organisations to involve employees in their negotiations, deliberations, and other important decisions regarding workplace issues, particularly those that affect their work and welfare. Such a scenario can be attributed to the economic conditions, as well as the highly volatile business environments that tend to change constantly. Syed (2023) noted that employee involvement significantly enhances their engagement, motivating them to perform at their best and ultimately improving the organisation's overall performance. Therefore, when all employees within an organisation function at their best and maximum capacity, there tends to be an improvement in the organisation's performance, and this in turn makes a significant contribution to the organisation's overall performance. From this viewpoint, industrial democracy empowers employees with autonomy in decision-making regarding matters that have a direct impact on their work, while also enabling them to have control over their work.

The fact that the prevailing operating environment is volatile and is characterised by endless changes means that for organisations to remain competitive, there is a need to place increased emphasis on the management of employees with regard to their participation within an organisation's decision making, sharing responsibility as well as authority with them within the workplace. Labour-management cooperation is a crucial element towards an organisation's success. Therefore, if organisations can attract, retain, develop and engage with their employees, they can attain some level of sustainable competitive advantage. Such a view is strongly supported by Bašar (2024), who asserts that an engaged workforce not only enhances an organisation's competitive advantage but also fosters a positive environment in which employees can contribute meaningful value through innovative ideas and improved business practices. Emotional employee engagement in the workplace often stems from their participation in matters related to the workplace, either individually or through representative platforms, such as works councils. Such viewpoints notably support the need for organisations to promote industrial democracy within the health sector. For instance, there is a requirement within the current Zimbabwean economy for employees to perform at their level best to achieve maximum value and make a meaningful contribution to the health sector.

In addition, workers may be willing to work overtime and add extra hours to their work to achieve their objectives. They may also be willing to devise new and improved methods of carrying out their work for the benefit of the organisation. Similarly, other positive attributes of employee engagement involve higher productivity levels, job satisfaction, motivation, commitment, low attrition rates, increased passion and commitment to the organisation, a high-energy working environment, a greater sense of team, higher levels of customer satisfaction, and reduced absenteeism (Makumbe, 2016). Therefore, the successful participation of workers in negotiations as well as deliberations regarding workplace issues ensures that workers become more engaged, productive, and committed to the organisation compared to disengaged employees (Makumbe, 2016). Workers who operate in an undemocratic environment tend to be disengaged from their work and lose motivation, ultimately performing at their best. This has a significantly negative impact on organisational performance. When workers are excluded from issues about their welfare, they are likely to become resentful towards both their managers and their work (Makumbe, 2016). They will thus be less likely to have a positive response to their managers and or show an increased level of performance for the success of the organisation. Therefore, industrial democracy must be embraced within the health sector to ensure that there is the creation of value by employees working in collaboration and in harmony with management, because the best level of performance cannot be realised in chaos, in which there is an antagonistic relationship between management and labour, but instead where the parties co-exist harmoniously.

4.2 The impact of the role played by trade unions in enhancing industrial democracy in the health sector

The role played by trade unions has a significant impact, resulting in numerous benefits. Certain benefits can be attained through the existence of trade unions. For instance, the presence of shop-floor representation has been associated with an improved work environment (Madzime, 2016). The voice of employees often fosters a constructive and open relationship environment, which in turn results in a scenario where there is improved commitment, motivation, and teamwork, ultimately leading to increased productivity and a greater competitive advantage. Additionally, it promotes a sense of involvement of employees by management.

Industrial democracy within the health sector means that the contributions and wishes of employees are often represented during meetings. This, in turn, means that the attitudes and behaviours of such employees are improved. The result is that employees become better able to make a positive contribution towards the achievement of the organisation's objectives (Greer et al., 2017). Moreover, as a result of employees' involvement, they also become more willing to challenge issues and become more prepared for potential changes, which is a notably positive attribute for the organisation (Madzime, 2016). Effective worker representation also results in improvements in the organisation's performance. Good employer–employee relations thus result in a harmonious

working environment that leads to decreased levels of absenteeism, improved productivity, and a better level of health worker retention.

Trade unions are regarded as a form of democracy in themselves, owing to the characteristics they possess, which support industrial democracy. These characteristics include involvement and joint decision-making (Makumbe, 2016). An ideal democracy is a prerequisite for meeting the five criteria, and trade unions have the capacity to fulfil these criteria. This criterion encompasses effective participation, which includes parties possessing equal opportunities to advance their preferences and question the decisions of others, while justifying their own.

The idea that trade unions involve employer and employee representatives in deliberations meets the effective participation criteria that is entrenched in industrial democracy (Madzime, 2016). Another criterion for an ideal democracy is voting equality at the decisive stage, such as in trade unions. It has been noted that, in everyday practice, when voting on decisions, employer and employee representatives have assurances that their judgments will be regarded as valid and are further accorded an equal opportunity to participate in the voting process (Greer et al., 2017). Such equality to vote for both sides on matters of mutual interest seemingly makes trade unions an effective unit when it comes to promoting industrial democracy, as industrial democracy encompasses the participation of all individuals who are affected by decisions in the decision-making process.

Another essential element is enlightened understanding, which is well-reflected in trade unions, where all parties are given equal opportunities to decide what best serves their interests without undue interference from others (Syed, 2023). In addition, an ideal setup for industrial democracy is one where workers have control of the agenda, and this is notably evident in trade unions, where both employee and employer parties are allowed to make decisions regarding the issues that must be discussed (Makumbe, 2016). Additionally, industrial democracy is inclusive, with the workers having a legitimate stake in the entire process. Trade unions have been observed to promote inclusiveness. This is because, before any workplace decisions are made, employers take the necessary and requisite steps to include employees in deliberations, decision-making, and the final implementation of proposed decisions (Madzime, 2016). (Makumbe, 2016) However, it argues that the ideal of a democracy is a utopian objective, and trade unions are not always effective in promoting industrial democracy.

All the same, trade unions have the capacity to make meaningful contributions towards the organisation through the creation of a culture of cooperation between management and labour at the workplace (Madzime, 2016). Grillos (2021) thus assert that increased consultation allows for efficient decision-making, as parties contribute equally and engage in deliberations regarding the decisions that need to be made. Armstrong (2014) asserts that the best decisions are those that can be arrived at through consultation and continuous interaction between management and employees.

In addition, trade unions serve as an effective communication channel between management and workers, where both parties play a role in speaking as well as listening to one another before attempting to reach a mutually agreed-upon decision (Makumbe, 2016). This evidently serves as an indication that trade unions are actually an effective platform for consultation, which leads to industrial democracies capable of advancing organisational interests. Therefore, in their quest to promote industrial democracy, trade unions result in improvements, as well as joint decision-making, that, in turn, lead to quantitatively improved workplace decisions. The reason is that the decisions are made in the best interest of both parties, with conflict having been resolved.

Moreover, trade unions reduce the information gap between employers and employees by encouraging the smooth transition in times of organisational transformation, which leads to an increase in faith and trust between the parties. Such a viewpoint is supported by the perception that organisations tend to be increasingly vulnerable to change, which may lead to new ways of conducting business, as well as the need to ensure quality for customers (Greer et al., 2017). Therefore, uninterrupted information exchange between management and workers means that

the organisations become continuously ready for change and can thus easily adapt to the constantly evolving environment. Johnson & Howsman (2018) state that a climate of industrial democracy, supported by strong trade unions, provides significant economic benefits for the organisation.

In their strongest form, trade unions tend to enjoy unified decision-making rights on certain key matters related to work processes. Machado & Silva (2019) are of the view that, within the broader context, trade unions play a role in assisting to diffuse industrial relations conflicts and thereby promoting a peaceful work environment. This is because, at times, workers and management representatives are unable to reach an agreement on specific critical issues, and such a scenario can be remedied through an internal special committee comprising representatives from both the employer and the employees. It should thus be noted that industrial democracy can only thrive where parties share a similar perspective and, in the absence of conflict, which disrupts the relationship.

If embraced for the purpose of promoting industrial democracy, trade unions also play a significant role in reducing stress and enhancing the well-being of employees, as they have a greater say in the overall organisation of work (Makumbe, 2016). Employees are therefore empowered through industrial democracy, particularly about matters that directly affect their work, enabling them to exercise control over their work. The involvement of employees thus enhances their engagement in work, motivating them to perform at their best and improving overall organisational performance. It is widely acknowledged that when all workers within an organisation perform at their best, they can significantly enhance the organisation's productivity.

4.3 Challenges faced by trade unions in enhancing industrial democracy in the health sector

There are several challenges that trade unions encounter within the health sector. A review of the literature reveals that trade unions lack significant legislative backing, which hinders their ability to challenge management. For instance, their meetings must be conducted outside working hours, and their decisions are not binding on management (Madzime, 2016).

Additionally, in most instances, employees are allowed to participate in the decision-making process regarding issues related to worker welfare; however, management holds the power to either make the decision binding or not (Makumbe, 2016). Another challenge faced by trade unions is the involvement of the state/ government in labour matters. The state/government notably affects the effectiveness of trade unions and their activities in aspects such as legislated minimum wages or salary caps. Such a scenario partially contributes to the effective representation of workers, and these parameters tend to limit participation, thereby restricting industrial democracy.

Another challenge arises from the fact that workers tend to choose their preferred representatives, which means that in some instances, the chosen representatives may not be adequately qualified or up to the task (Greer et al., 2017). For example, the most skilled and better-educated shop-floor employees tend to be promoted to supervisory positions and therefore become ineligible to represent their fellow workers as per guidelines set out in the Labour Relations Act.

Trade unions face several challenges, including the untimely implementation of resolutions or agreements. Makumbe (2016) states that such a scenario originates from the fact that employers provide the funding for the majority of the resources required for successfully implementing the agreements. Therefore, when they do not totally agree with them, they tend to delay implementing such agreements (Safaei, 2015). Such a scenario results in tension within the workplace and further leads to employee representatives losing trust in the forum as a representative democracy.

Therefore, the prevailing scenario is one in which US employers, in the majority of cases, largely determine the outcome of agreements agreed upon in trade union organs (Safaei, 2015). It has also been noted that management

tends to accept contributions from employee representatives only as a courtesy for their presence in the trade unions (Machado & Silva, 2019). The organisations have been noted to have predetermined decisions before the holding of, for instance, works councils. They have control over all deliberations, as well as the agenda, and matters they deem unnecessary can be removed from the agenda to be deliberated (Safaei, 2015). Even though such perceptions have been argued against for a long time, the existing scenario is one in which management still maintains an iron grip over the things that must be in organisations (Greer et al., 2017). Such a scenario is the direct opposite of the concept of industrial democracy, which encompasses total involvement and inclusiveness of employees in the decision-making process, overlapping with the implementation of agreements.

One other challenge which is experienced by trade unions in their bid to promote industrial democracy is that management tends to consider them and similar voice mechanisms to be a channel of communication, operating in either a top-down or occasionally a bottom-up direction, as compared to being a more complex and less linear arrangement involving employees in active discussion (Makumbe, 2016). Such a viewpoint is supported by Kadungure (2015), who notes that communication to and from both sides is regarded as providing the employees with more power above the consultative part that is played by trade unions, in instances where their arguments are in support of a transition which is regarded as unfavourable by the employer. In such cases, management representatives have the authority to override the wishes expressed by the trade unions, even without providing a complete or satisfactory explanation (Makumbe, 2016). Hence, the lack of understanding on the part of management regarding what effective consultation encompasses hinders the effectiveness and success of trade unions in their quest to promote industrial democracy.

It has been observed that the quality of worker representatives has an impact on worker participation. Greer et al. (2017) suggest that in several organisations, employees have been observed to select members who are vocal and outspoken but lack a thorough understanding of labour laws or those without representational experience. The result of this is challenges in that the chosen members will mostly be dominated by management representatives who have an increased level of skills (Safaei, 2015). Kadungure (2015) thus notes that, in the modern-day era, workers are still ignorant in terms of choosing their representatives, and these may lack relevant knowledge and information regarding the concepts that may need to be discussed, as well as the laws which bind the process and are therefore unable to match their management counterparts. As a result, the worker representatives end up agreeing with the majority of the proposals that would have been presented by management, meaning that decisions would have essentially been made by management.

Additionally, the limited knowledge which worker representatives may possess has a negative effect on their ability to negotiate with management representatives. Kadungure (2015) states that the argument often presented is that trade unions may not be able to interpret technical documents, such as the Labour Act itself, and may at times fail to understand the main economic terminologies used by management. This undermines the entire process of representative democracy, as employee representatives' participation in decision-making is limited to areas where they are fully aware that management controls the process. The employee representatives' limited knowledge about the topics being discussed hinders their ability to play a meaningful role. Another challenge observed in the literature is that trade unions often disagree with management (Machado & Silva, 2019). There are several instances where trade unions deliberately choose to stifle management initiatives, even if these are reasonable (Safaei, 2015). In other cases, trade union meetings have been transformed into battlegrounds, where workers have taken aim and rejected management's proposals (Greer et al., 2019). Such behaviour has been noted to affect the success of trade unions in their quest to promote as well as sustain industrial democracy, because trade union members wish to be perceived as doing something which their counterparts at the workplace and thus, they take part in different forms of tactics, to stifle the ideas introduced by management even in instances where they make good business sense (Makumbe, 2016).

Conclusions and recommendations

This study's findings showed that the government has not been offering remuneration that is adequate for the prevailing living standards. Remuneration issues have been a key issue behind industrial action by healthcare workers. The current level of remuneration for doctors in the healthcare sector was significantly higher than what was required to maintain prevailing living standards. One of the most visible issues was the poor remuneration packages being offered to health sector employees in Zimbabwe. Their unions have thus further failed to improve these remuneration packages. It was also noted that employees felt the employer did not highly regard issues related to their safety.

Additionally, employees have not been allowed to express their views on safety issues. There have been no efforts made towards addressing employee concerns regarding safety issues in terms of SHEC policies. In terms of the SHEC policies, several issues of concern arose, including the lack of prioritisation of SHEC issues, funding challenges, and the Government of Zimbabwe, as the major employer of the country's health workforce, turning a deaf ear and a blind eye to the plight of its health workforce. In terms of the platforms established to advance the interests and rights of employees, these platforms have not been effective. As a result, employees indeed face challenges in asserting their interests and rights. The paper further revealed that trade unions indeed faced challenges in enhancing industrial democracy in Zimbabwe's health sector, and these challenges have had a negative impact. Some of the most notable challenges that the respondents noted included political interference, unfair labour laws, unfair labour practices, lack of sincerity on the part of the employer, infiltration of some of the senior membership in such organisations and lack of adequate funding to carry out the mandate of representing and advocating for the interests and rights of healthcare workers.

Based on the above conclusions, the paper recommends that the government improve the access and functioning of the platforms put in place to advance their interests and rights. The platforms that were in place for employees to advance their interests and rights were no longer effective in Zimbabwe due to factors such as political interference in trade union operations. This means that the platforms used by healthcare workers in advancing their interests and rights are ineffective.

Additionally, the government of Zimbabwe should ensure that the healthcare workers are adequately remunerated. The Trade Unions should thus engage the government and actively lobby for fair compensation that is in line with the prevailing living standards. Negotiations for improving the remuneration of healthcare workers should be conducted in good faith.

There is a need for safety issues to be prioritised by the employers and responsible authorities within the healthcare sector. Additionally, healthcare sector authorities should consider entering into Public-Private Partnerships (PPPs) as a way to address and compensate for missing resources that are essential in ensuring the safety of their employees aligns with SHEC policies. Additionally, the respective trade unions should actively lobby for safety issues to receive more attention and prioritisation. Therefore, a proactive policy or strategy is needed to address safety issues.

Trade unions must be recognised as essential players in the promotion of workplace democracy. As a result, their suggestions and proposals should be considered objectively by the responsible authorities. To that end, the responsible authorities must ensure the creation of an enabling environment that is suitable for ensuring the representation activities of trade unions can thrive.

Challenges such as chronic underfunding combined with the social, economic as well as political challenges which were being experienced within Zimbabwe's public health system mean that there is need for the government to come up with find the political will required for meeting the commitments which were made

under the Abuja Declaration, that is setting aside at least fifteen percent (15%) of the national budget towards funding the health sector.

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Author Contributions: Conceptualisation: Victor Kudakwashe Mapuvire, Ricky Munyaradzi Mukonza; methodology: Victor Kudakwashe Mapuvire, Ricky Munyaradzi Mukonza; data analysis: Victor Kudakwashe Mapuvire, Ricky Munyaradzi Mukonza, writing—original draft preparation: Victor Kudakwashe Mapuvire, Ricky Munyaradzi Mukonza, writing; review and editing: Victor Kudakwashe Mapuvire, Ricky Munyaradzi Mukonza; visualisation: Victor Kudakwashe Mapuvire, Ricky Munyaradzi Mukonza. All authors have read and agreed to the published version of the manuscript.

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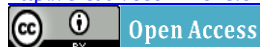
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EVALUATING THE SOCIOECONOMIC CONSEQUENCES OF TRADE LIBERALISATION AND PRIVATISATION (1994–2024) IN POST-APARTHEID SOUTH AFRICA**Cwenga Mayekiso¹, Musawenkosi Lamla^{2*}**^{1,2*} *Walter Sisulu University, Nelson Mandela Drive, Mthatha, 5100, South Africa*¹ cmayekiso@wsu.ac.za; ^{2*} mlamla@wsu.ac.za (Corresponding author)*Received 25 August 2025; accepted 10 December 2025; published 30 December 2025*

Abstract. This paper examines the impacts of trade liberalisation on employment, manufacturing production, and inequality in South Africa between 1994 and 2024. Since the democratisation process started, South Africa has been undergoing market-based reforms to open up its economy to the global system, lower tariffs and increase the competitiveness of its exports. Nevertheless, liberalisationliberalisation has been accompanied by a reduction in manufacturing capacity, unemployment, and growing inequality. The study employs a qualitative research approach, combined with trend analysis. The authors utilised statistical data and semi-structured interviews with 15 master students of political science. The manufacturing industry lost nearly 309,000 working places from 2005 to 2021, and its contribution to the GDP decreased to 13.2%, compared to 19.1% in the past. The Gini coefficient increased from 0.63 to 0.67, indicating entrenched inequality during the considered period. The causes of these trends, as identified by the qualitative insights, are: premature deindustrialisation, competition caused by imports, and poor industrial policy. The authors conclude that trade liberalisation, in the absence of vigorous state-directed industrial and labour policies, enhanced South Africa's structural vulnerability. It is suggested that a mixed economic system can balance openness and strategic reindustrialisation, the development of skills, and redistributive policies facilitating inclusive and sustainable economic growth.

Keywords: trade liberalisation; employment; manufacturing; inequality; premature deindustrialisation; South Africa

Reference to this paper should be made as follows: Mayekiso, C., Lamla, M. 2025. Evaluating the socioeconomic consequences of trade liberalisation and privatisation (1994–2024) in post-apartheid South Africa. *Insights into Regional Development*, 7(4), 262-277. <http://doi.org/10.70132/j4269338243>

JEL Classifications: F14

Additional disciplines: Sociology, Political Science

1. Introduction

Since the advent of democracy in 1994, South Africa has embarked on a massive trade liberalisation mission, seeking to reintegrate the nation into the global economy following decades of protectionism and sanctions. The initial post-apartheid reforms were based on the Growth, Employment and Redistribution (GEAR) strategy, which focused on transparency, reducing tariffs, and promoting market competition as key variables for growth, industrialisation, and job creation. It was hoped that global value chain integration would contribute to improving performance in exports, driving productivity, and generating employment opportunities (Bezuidenhout, Zhanje & Van Heerden, 2020; Bezuidenhout, Matthee & Rankin, 2021).

However, 30 years on, it has become apparent that liberalisation of trade may not yield inclusive economic outcomes. The number of manufacturing jobs has consistently declined, from 1.4 million in 2005 to 1.09 million in 2021, and the sector's share of GDP has dropped from 19.1% to 13.2% (Engineering News, 2023).

Concurrently, unemployment remains at a high level, at 32.9% in total and 45.5% among young people at the beginning of 2024 (Statistics South Africa, 2024). It is the paradox of liberalisationliberalisation versus labour absorption that has made South Africa appear to be prematurely de-industrialised, a state in which the economy was deprived of the manufacturing capacity in the first place, and will not reach a sustainable level of industrial growth (Rodrik, 2015, 2016, 2021; Lepelle & Edwards, 2024).

The 21st century has witnessed new trends in global production and trade. The impact of liberalisationliberalisation on the developing economies has been altered by automation, offshoring, and the fragmentation of the global value chain (Monyela & Saba, 2024; Kutu & Ohonba, 2024; Philip & Desai, 2025). The fact that capital-intensive and export-oriented firms dominate in South Africa has not led to widespread job creation; on the contrary, it has benefited the high-skilled and high-wage segments, which has strengthened inequality (Bezuidenhout Zhanje & Van Heerden, 2020; Choga, Dundu & Khobai, 2024). Therefore, although the country is experiencing positive growth indicators, income disparity, with a Gini coefficient of 0.67, is among the worst in the world (World Bank, 2024).

The mixed outcomes of trade liberalisation highlighted above underscore the complexity of its effects. According to some studies, there are improvements in export diversification and productivity, whereas others note a decline in jobs, firms, and wage inequality within labour-intensive industries (Ngepah, Saba, & Kajewole, 2024). Policymakers have responded by revitalising industrial policy, localisation, and inclusive reindustrialisation policies (Department of Trade, Industry and Competition (DTIC), 2024). However, it remains challenging to precisely determine how liberalisationliberalisation has impacted employment, manufacturing output, and inequality over time.

The research examines the impacts of trade liberalisation on employment, manufacturing production, and inequality in South Africa from 1994 to 2024, based on empirical evidence and qualitative analysis. It locates these results within broader arguments about economic openness, structural change, and inclusive growth.

2. Problem Statement

South Africa has failed to achieve inclusive industrialisation despite 30 years of market-oriented reforms. There is evidence that trade liberalisation was associated with job losses, a decline in manufacturing capacity, and an increase in inequality (Lepelle & Edwards, 2024; Choga, Dundu, & Khobai, 2024). Municipalities that were more vulnerable to tariff cuts experienced a lower rate of job growth, and exporting companies became more capital-intensive, paying higher wages to skilled labour without considering low-skilled labour (Bezuidenhout et al., 2020). The ongoing lack of connection between openness and job creation poses a research problem of vital concern: Why has South Africa, in the post-1994 trade liberalisation, not experienced broad-based labour-absorbing industrialisation and income equality? This has been augmented by structural pressures on the world system of technological change, foreign competition, and policy fragmentation, which have constrained the developmental gains of trade liberalisation. To fill this gap, a comprehensive study combining trade policy, changes in sectoral production, labour market shifts, and changes in inequality over the 1994-2024 period is necessary.

The aim of research is to examine the effects of trade liberalisation on employment, manufacturing production, and inequality in South Africa from 1994 to 2024.

Research objectives:

- To test the impacts of trade liberalisation on the labour absorption and employment trends in South Africa.

- To measure the effects of trade liberalisation on the production of manufacturing and the performance of the sector.
- To examine the effects of trade liberalisation on the distribution of income and inequality.
- To determine policy interventions which can foster inclusive and sustainable industrial development.

Research Questions:

- What has been the impact of trade liberalisation on the South African labour market and employment generation in South Africa since 1994?
- How has liberalisation affected the output of manufacturing, its competitiveness and structural change?
- How did the trade liberalisation affect the inequality and wage dispersion?
- What policy instruments can strike a balance between transparency and inclusive and labour-absorbing growth?

3. Literature Review

South Africa's Trade Liberalisation and Macro-Structural Performance

The empirical and policy literature indicates a continued weakening of the manufacturing sector in the South African economy, accompanied by a significant decline in manufacturing sector jobs following South Africa's trade liberalisation that began in 1994. The manufacturing surveys by Statistics South Africa indicate that the number of manufacturing jobs decreased significantly between 2005 and 2021, resulting in approximately 309,000 jobs lost. The contribution of manufacturing to GDP has also declined considerably during the same period. These tendencies form the empirical basis of the discussion on trade policy and structural change (Engineering News, 2023). At the same time, labour market and distributional indicators are also dire: the official unemployment rate was 32.9% in Q1 2024, and youth unemployment (15-34) was 45.5% - numbers that point to the low level of labour absorption of the economy and raise the issue of the inclusiveness of growth. Additionally, South Africa has one of the most significant levels of inequality among countries in the world (Gini coefficient of 0.66-0.67), which predisposes it to the distributional impacts of liberalisation (Stats SA, 2024).

Trade Liberalisation - Employment: Mechanisms and Empirical Findings (2020-2025)

Trade liberalisation may impact employment by increasing competition in imports (replacing domestic producers), exports (creating jobs in the export trades), and technology/skill composition effects (shifting demand to skilled labour). Recent cross-country and regional research on Africa and SADC documents that openness has been frequently linked with the loss of manufacturing jobs, whereby industrial upgrading was not concomitant with liberalisation. Notably, the panel analysis within SADC suggests that openness to trade is associated with unemployment in the absence of compensating structural measures (World Bank, 2024, for South Africa). Empirical research based on South Africa's specifics and sectoral reviews (2020-2024) highlights sharp declines in labour-intensive manufacturing subsectors (textiles, apparel, and metal products), despite capital-intensive industries (chemicals, parts of the automotive industry) maintaining their output. These trends were exacerbated by the COVID-19 shock, which particularly impacted manufacturing production and employment in 2020 and 2021. Such sectoral trends can be used to explain why greater trade integration failed to yield significant employment gains.

Premature Deindustrialisation: Conceptualisation and Applicability to South Africa

The idea of premature deindustrialisation, suggested by Rodrik (2015), in which developing nations lose jobs and production shares in lower-income stages than previously industrialised nations, has become one of the most popular theoretical approaches to studying the case of South Africa. Recent syntheses and country evaluations indicate that South Africa is positioned in trends that are in line with premature deindustrialisation: a shrinking labour market absorbing manufacturing growth, faced with worldwide rivalry and technological transformation.

This is the kind of lens that explains why a combination of openness and weak industrial upgrading can lead to manufacturing deterioration and restrict job creation (Ngepah, Saba & Kajewole, 2024).

Distributional Results: Inequality and the Division of The Labour Market

The literature highlights that the distributional implications of trade liberalisation are linked to labour market institutions, skill composition, and state redistribution. High Gini coefficient in South Africa suggests that the benefits of trade and growth have been unequally distributed. Research highlights that unless liberalisation is accompanied by vigorous redistribution, social protection, and skills policies, returns to capital and skilled labour tend to increase. Empirical studies conducted between 2020 and 2024 have established that trade-related structural change has been inclined towards perpetuating wage dispersion, particularly in the presence of high structural unemployment (DTIC, 2024).

Policy Responses: Industrial Policy, Localisation and Active Labour Measures (2020-2025)

There has been a revival of the industrial policy approach in policy literature and governmental reviews, aimed at stemming the decline in manufacturing and generating labour-intensive growth. Recent Industrial Policy and strategy reviews, as well as sectoral white papers in South Africa (such as the EV and automotive policy documents of 2023-2024), focus on localisation, specific incentives, government procurement, and skills training as possible means to reconstruct local value chains and create employment opportunities. These prescriptions are supported by academic work and are advised to ensure that policy design and implementation align with incentives for labour absorption and competitiveness (DTIC, 2023).

Methodological Approaches in the Contemporary Literature

The recent research typically integrates macro and sectoral statistics, firm surveys, and qualitative interviews to represent the aggregate patterns and lived experience of labour displacement (skill mismatch, job insecurity). This mixed evidence approach is consistent with the approach used in the current study, i.e., triangulating documentary statistics with qualitative interviews. The analysis of both the distributional results and the institutional processes that mediate the effects of trade is well-suited (Gonese et al., 2023).

The decline in manufacturing jobs by approximately 309,000 positions between 2005 and 2021, along with the decrease in the proportion of manufacturing GDP to the overall economy, is a strong empirical indicator in conceptualising the research problem. There is evidence to suggest that trade liberalisation without conducive industrial and labour policies can be linked to deindustrialisation and negative employment performance, especially among low-skilled and young workers. A high unemployment rate (32.9% in Q1 2024; youth: 45.5%) and the level of inequality (Gini coefficient: 0.66-0.67) suggest that growth has not been inclusive, and policies should focus on labour absorption and redistribution. The literature demands a concerted policy action (industrial policy, skills, social protection, and explicit localisation) if trade openness leads to the so-called good jobs and more equitable results.

4. Theoretical Framework

Premature Deindustrialisation / Structural Change (Analytic Core)

Decline in manufacturing employment occurred earlier in most developing nations than in historical industrialisers due to globalisation, import competition, and labour-saving technology. This prism is applied to explain the loss of manufacturing share and jobs in South Africa (2005-2021) and formulate the question of whether trade liberalisation increased the dynamic. In practice, the job losses and the lowered value-added in manufacturing are consistent with the anticipations of this theory. Operationalisation: To test whether the pattern of South Africa is reflected in premature deindustrialisation patterns, various indicators are used, including sectoral employment and value-added trends (2005-2021), import penetration measures, and the timing of tariff liberalisation.

Political-Economy of Labour and Distribution (Mediation Lens)

A political-economy approach emphasises that the results of trade are mediated through domestic institutions (i.e., labour market, bargaining structure, social protection), power relations and policy decisions. This is the lens through which we understand why liberalisationliberalisation can have divergent impacts within groups (capital vs. labour; skilled vs. unskilled) and why policy design can be crucial in achieving distributional outcomes. Liberalisation is likely to be concentrated in the capital and higher-skilled labour markets unless redistributive and labour-market policies are implemented, as inequality is entrenched and labour markets are segmented in South Africa. Operationalisation: Break down labour performance by skill, age, and industry; qualitative data can be used to track perceptions of displacement, privatisation, and job insecurity.

State-capability / New Industrial Policy (Prescriptive Lens)

Considering the combination of deindustrialisation and poor distributional consequences, the literature asserts that active state intervention (focused industrial policy, localisation, procurement policies, and investment in skills) can alleviate the adverse impacts of job losses and recover labour-absorbing functions. This prism informs the judging and prescriptive parts of the study - are the policy levers that can be brought to bear since the 2010s, and which have been most elucidated in recent DTIC reviews and white papers, adequate to reverse or reduce manufacturing decline? Operationalisation: Compare policy documents (industrial strategy, EV white paper) with the needs established in the structural labour diagnosis and apply evidence from the interview processes to measure policy reach and perceived effectiveness.

Conceptual Model (Integrative)

The research takes the following causal chain:

Trade liberalisation and global shocks (import competition, tariff cuts, automation) - Sectoral reallocation and manufacturing contraction (premature deindustrialisation) - Labor market outcomes (employment loss, skill bias, youth unemployment) mediated by institutional/political economy factors can be changed with correct targeting and success - Can change outcomes with correct targeting and success - Sectoral reallocation and manufacturing contraction (premature deindustrialisation) - Trade liberalisation and global shocks (import competition, tariff cuts, automation). According to this model, macro policy is associated with macro-outcomes, and policy interventions (state capability) can be incorporated to alter the direction of these outcomes.

Conclusion and Findings in Reference to The Study

South Africa has witnessed high manufacturing job losses and a declining manufacturing share (2005-2021), along with a continued high unemployment rate and extreme inequality. These results align with the premature deindustrialisation thesis and are aggravated by the lack of active policies to support industry and labour. The hybridised theoretical framework (premature deindustrialisation, political economy, and state capability) offers an explanatory and prescriptive framework for analysing the effects of trade liberalisation on employment, manufacturing production, and inequality between 1994 and 2024. This framework will be employed in the empirical chapters that follow, where documentary statistics and qualitative interview data (from 15 MA Political Science students) will be applied to diagnose causal mechanisms and policy implications.

5. Research Methodology***Research Design***

The proposed study will employ a qualitative research design, complemented by documentary research, to answer the question: How has trade liberalisation impacted employment, manufacturing production, and inequality in South Africa during the 1994-2024 period? It can be designed to provide an integrated interpretation of both empirical (secondary) numeric data and the lived perceptions of postgraduate Political Science students regarding neoliberal economic reforms and their socioeconomic implications (Driver, 2019; Bastos & Santos, 2022).

Research Approach

The study employs an interpretivist method of qualitative research, where attention is paid to social and economic phenomena through the lens of the participants' lived experiences. The two-pronged approach is a method of studying both an empirical trend (e.g., the decline of manufacturing jobs) and the experiences of participants themselves regarding the effects of trade liberalisation and neoliberalism. Notably, previous research has shown that in South Africa, municipalities more exposed to tariff cuts experienced slower job growth (Sebake, 2013).

Further work on the structural changes in South Africa reveals the effects of the recession in manufacturing and deindustrialisation, which have entrenched consequences for inequality. This study aims to provide a more interpretive insight into the role of trade liberalisation in interaction with employment and inequality by matching secondary numeric data with the processes of interview-based perceptions (Andreoni & Tregenna, 2021; Bastos & Santos, 2022).

Population and Sample

The sample size for this research included postgraduate learners in the master of Arts in Political Science Program at one of South Africa's universities. The sample was purposive, and a total of 15 students were selected, ensuring that they possessed knowledge of the problems in economic policy, governance, and development. This sampling method is consistent with purposive sampling, a method commonly used in qualitative research designs (Milsom, Friel, & Swinburn, 2022).

Data Collection Methods*Interviews*

The respondents (15) were interviewed (semi-structured interview). The key questions included:

- What is neoliberalism, and what has it done to the South African economy since 1994?
- What is your perception of trade liberalisation and its effect on employment and inequality?
- How have privatisation and market reforms impacted service delivery by the government and employment security?

The responses of participants contained the following remarks:

R3: *"The neoliberal ideology assumes that the market will fix it, even inequality. However, in actuality, it handed over the state to corporations."*

R6: *"Liberalisation in trade was what killed jobs in the manufacturing and textile industry. It was capitalistic and appalling to labour."*

R10: *"And neoliberalism was elite because it did not involve many ordinary people."*

R15: *"These reactions are critical responses that associate neoliberal policy with job insecurity, inequality, and elite-driven growth."*

Documentary Analysis

Simultaneously, a secondary quantitative data review was conducted in the documentation. This involved the production of data on employment loss (e.g., published studies of the decline of the manufacturing sector in South Africa) and inequality data (e.g., Gini coefficient trends, indicators of deindustrialisation). Empirically, sources have shown that employment in the South African manufacturing sector has been declining in the context of trade liberalisation and deindustrialisation (Driver, 2019; Andreoni & Tregenna, 2021).

Data Analysis

Thematic Analysis: Coding of interview transcripts into themes was conducted to identify recurring themes related to neoliberalism, privatisation, and inequality. Themes that emerged included;

- Market-driven exclusion

- Unemployment and deindustrialisation.
- Privatisation and service availability.
- Persistence of inequality

Descriptive Trend Analysis of Documents: Secondary sources contained numerical information that was converted into graphs and tables to illustrate the trends in employment, manufacturing as a factor of GDP, and unemployment and inequality. To illustrate this case, trade liberalisation in South Africa, according to empirical research findings, is related to slower job growth in areas more open to tariff reductions (Milsom et al., 2022).

Equally, the decline in manufacturing and the analysis of the middle-income trap highlight the decrease in the share of manufacturing in South Africa's employment, which is an indicator of deindustrialisation as well as increased inequality.

This study triangulates across qualitative and quantitative approaches because the thematic qualitative data is combined with descriptive quantitative patterns, which contribute to a more profound interpretive explanation of the impact of trade liberalisation on employment, manufacturing production and inequality in South Africa (Tregenna, 2011; World Bank, 2018; Bastos & Santos, 2022; Andreoni & Tregenna, 2022).

5. Data Presentation and Data Analysis

Statistical and policy data analysis of South Africa on trade liberalisation, and Qualitative studies on fifteen political science Master students.

The objective will be to assess the effects of trade liberalisation since 1994 on employment, manufacturing production and inequality. The presentation aligns with the three research objectives and incorporates both quantitative and qualitative evidence.

The impacts of trade liberalisation on employment, manufacturing production, and inequality within the period 1994–2024 in South Africa

Data Presentation

- Following 1994, the manufacturing jobs in South Africa lost their significance: the sector lost approximately 309,000 employment opportunities between 2005 and 2021 (1.4 million to 1.092 million). (Engineering, 2021);
- During the same time period, the contribution of manufacturing to GDP declined: one report, in fact, points to a decline in that contribution, which was 19.1% in 2005 and is now approximately 13.2%. (Engineering News, 2021);
- According to Q1 2024 estimates, the unemployment rate was 32.9 per cent, and youth unemployment (ages 15-34) was approximately 45.5 per cent. (Statistics South Africa, 2024);
- Income inequality is at an exceptionally high level: in 2018, the Gini coefficient in South Africa was approximately 0.67, and previous data indicate that it was around 0.63 in 2014 (World Bank, 2018) (see Figure 1 below).

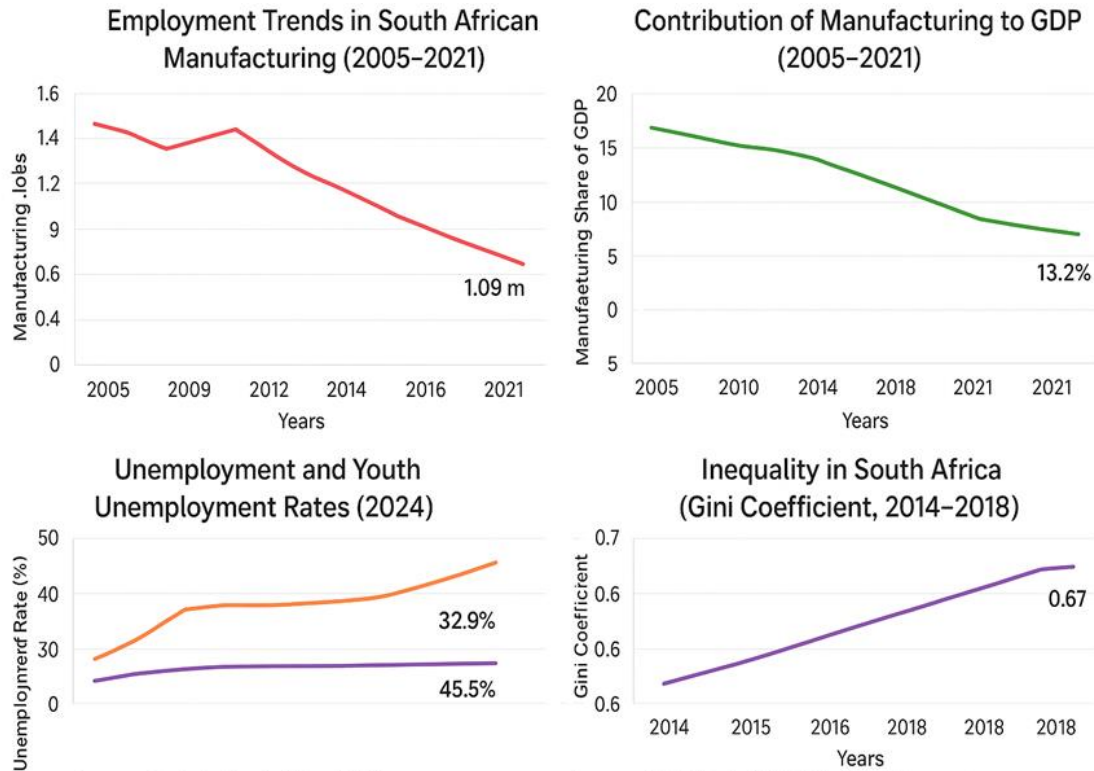


Figure 1. Employment trends in South African manufacturing (2005–2021); Contribution of manufacturing to GDP (2005–2021); Unemployment and youth unemployment rates (2024); Inequality in South Africa (Gini coefficient, 2014–2018)
Sources: Engineering News (2021), Statistics South Africa (2024), World Bank (2018)

Qualitative Insights

Results of the Interviews and Interview questions.

Q1: "How do you believe the liberalisation of trade has influenced the creation of employment in South Africa?"

R1: "It has freed our gates, and we have lost the guarantee of protection of our local industries. Most of the factories were too small to compete."

R3: "Exporting was going to create new jobs, but instead, the cheap imports came and replaced the exports. Manufacturing workers were the worst hit."

R5: "Liberalisation of trade did not favour workers, but investors. The rate of youth unemployment reveals the real story."

Q2: "How do you feel that the government policy contributed to the resolution of the employment issues following the liberalisation?"

R7: "Policies were reactive and not proactive. The industrial policy was not solid enough to aid domestic production."

R10: "There was macroeconomic policy, not employment policy. Privatisation as well as fiscal restraint only exacerbated job insecurity."

Analysis

The decline in manufacturing jobs and share is an indication that trade liberalisation and openness may not have translated into large-scale manufacturing or labour-intensive growth; this is consistent with the literature finding that South Africa was undergoing premature deindustrialisation (Growth Lab). (e.g., increase in import competition, tariff cuts, structural change in non-labour-intensive manufacturing) (Hausmann et al., 2023).

As manufacturing continues to contract and unemployment levels remain elevated (~32.9%), trade liberalisation growth does not provide the capacity to absorb labour, particularly since there is no way for low-skill or young labour to be absorbed. This is highlighted by the youth unemployment rate (45.5%). Statistics South Africa+1

The inequality level (Gini of about 0.63-0.67) is still very high, despite liberalisation and greater openness; a factor that indicates that the benefits of trade were not inclusive, and that structural conditions (labour markets, skills, capital intensity) limit inclusive benefits. This is supported by the fact that the Gini did not increase or only did so very slowly during the decades. World Bank+1

To investigate the Impact of Liberalisation of Trade on the production of manufacturing.

Data Presentation

- The manufacturing value of GDP decreased from 19.1 to 13.2 between 2005 and 2021 (Engineering News, 2021). The shrinkage is a sign of abandoning value-creating production in favour of resource exports.
- Although the world was becoming increasingly integrated, the domestic industrial base was weakening, and South Africa became increasingly reliant on imports.
- Contribution of manufacturing to GDP (2005-2021)

Figure 2 below depicts the impact of trade liberalisation on South Africa's manufacturing sector (2005-2021)

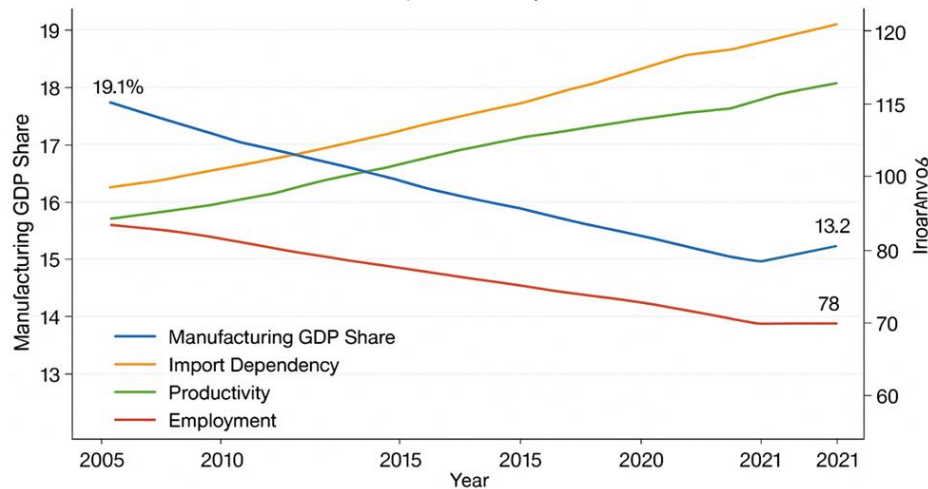


Figure 2. Impact of trade liberalisation on South Africa's manufacturing sector (2005-2021)

Sources: Engineering News (2021); Growth Lab (2022); Bureau of Statistics (2023)

Qualitative Insights

Interview Questionnaires and Responses.

Q3: "What are your experiences in the manufacturing industry in South Africa since the time of liberalisation?"

R2: "Local furniture and textile production plants vanished. We import those goods now."

R8: "The capacity in the industry was undermined by the cheaper and usually better foreign products."

R11: "We liberalised too fast. Affected industries did not have a transition plan."

Q4: Do you think that the manufacturing downturn is reversible?

R6: "Yes, the state should invest in reindustrialisation and skill training."

R12: "It is possible to re-establish manufacturing, but only by taking active care of strategic industries."

Analysis

In both the data and the narratives of the interviews, it is evident that deindustrialisation was promoted more by trade liberalisation and not industrial growth.

Growth Lab (2022) also suggested that competition in the importation business and tariff cuts were factors that led to the decline of labour-intensive manufacturing industries.

Though the growth in GDP was limited, the gains were localised in capital-intensive sectors (finance, mining), and manufacturing employment was not declining.

The respondents' opinions validate the element of hollowing out the local industry and the loss of domestic production capacity.

Testing the Relationship between Inequality and Trade Liberalisation

Data Presentation

- According to the World Bank (2018), the Gini coefficient in South Africa is 0.67, compared to 0.63 in 2014, which indicates that inequality remains a problem despite liberalisation.
- The data from GlobalEconomy.com (2020) proves that South Africa is among the most disproportionate societies in the world.
- Simultaneously, the GDP growth was not accompanied by a fair distribution of wealth (Figure 3).

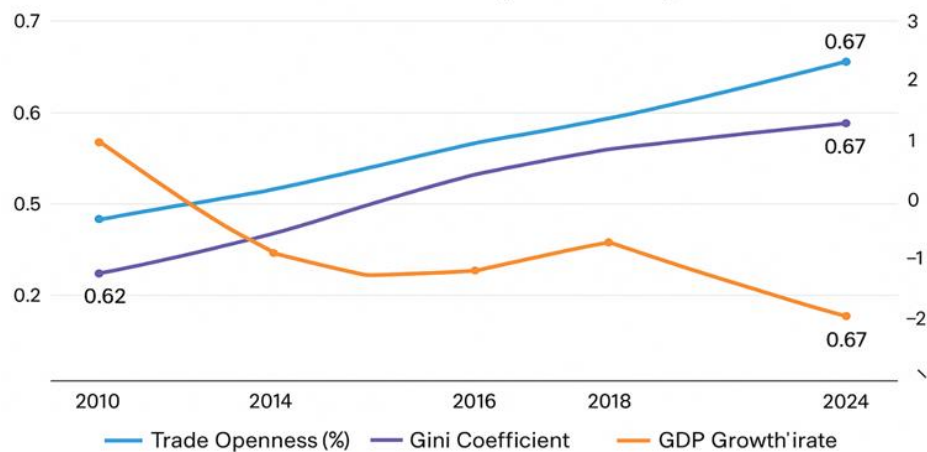


Figure 3. Trade openness, Gini coefficient, GDP growth rate (2014-2018)

Sources: World Bank (2018); TheGlobalEconomy.com (2020)

Qualitative Insights

During the interview, the following questions and their answers were used.

Q5: *Has trade liberalisation increased or decreased South Africa in terms of equality, of course?*

R4: *"It's more unequal. The wealthy benefited by investing and trading; the poor lost their jobs."*

R9: *"Liberalisation of trade increased the disparity. Export-led growth was not available to the rural and township regions."*

R13: *"The economic freedom was marketed as inclusive, but it delivered exclusion and the growth of the elite."*

Q6: *How can liberalisation be made more inclusive?*

R14: *"We must have more vigorous social policies--grants, professional training, industries."*

R15: *"The state must play a leading role. An openness-local job protection hybrid."*

Analysis

The inequality that persisted despite liberalisation is a support to the theories of neoliberal critique (Harvey, 2005; Stiglitz, 2018), which posit that without a redistributive policy, market reforms will result in unequal development.

The replies in the interview often refer to the capture of liberalisation gains and the minority of the working class. The large value of the Gini coefficient, along with a low increase in wages, suggests that economic liberalisation has been more equity-related than growth-related.

Cross-Objective Interpretation

The cross-objective interpretation is conducted based on the data collected by the researchers.

In all three objectives, the evidence concurs on several significant findings:

- Liberalisation in trade enhanced openness in the macroeconomic environment at the expense of industrial jobs.
- Fiscal restraint and privatisation lowered the state's ability to create job opportunities.
- Inequality was still deeply rooted, and growth was concentrated among capital holders.
- The respondents view neoliberalism as exclusive, top-down and market-fundamentalist.

These results demonstrate a mismatch between indicators of national growth and socioeconomic realities on the ground, confirming the need to adopt a hybrid economic model that balances market liberalisation, on the one hand, and state-led structural investment, skill formation, and redistribution, on the other.

6. Findings and Discussion

The paper examined the effects of trade liberalisation on employment, manufacturing production, and inequality in South Africa from 1994 to 2024, using both documentary data and qualitative interviews. The report shows that, although trade liberalisation has enhanced South Africa's globalisation, it has also resulted in job losses, deindustrialisation, and institutionalised inequality. These results align with the literature on premature deindustrialisation and political economy of inequality (Rodrik, 2021; Andreoni & Tregenna, 2021; Bastos & Santos, 2022).

Employment and Trade Liberalisation

This is supported by the fact that the level of employment in South Africa has remained low even after thirty years of trade liberalisation. Between 2005 and 2021, the manufacturing sector lost an estimated 309,000 jobs. In 2024, the unemployment rate was 32.9%, and youth unemployment reached 45.5% (Statistics South Africa, 2024). The data obtained during the interview supported this image, as the respondents attributed the increase in unemployment to the closure of small and medium-sized local enterprises that could not compete with cheap imports. This finding is consistent with the results of Bastos and Santos (2022), who observed that in South African local economies, the decrease in tariffs led to slower employment growth. Labour-intensive sectors of the economy, such as textiles and furniture, which have seen workers displaced well before an economy has reached adequate levels of industrial maturity, are synonymous with premature deindustrialisation (Rodrik, 2021). The respondents also condemned neoliberal policies for their focus on investor confidence and fiscal constraint, rather than job creation, which indicated a lack of compatibility between neoliberal macroeconomic liberalisation and labour market realities (Sebake, 2013). This suggests that the liberalisation that has occurred in South Africa, without corresponding interventions in industries and labour markets, has not yielded inclusive employment effects.

Liberalisation in Trade and Production in Manufacturing

The quantitative and qualitative statistics indicate that manufacturing production and the contribution of value added to GDP have decreased continuously since liberalisation. The manufacturing industry's share of GDP declined from 19.1% in 2005 to 13.2% in 2021 (Engineering News, 2021). The interviews also provided an extensive understanding that liberalisation drained local industries, as cheap imports pushed out local production. These results correlate with the empirical evidence from the Growth Lab (2022), which identifies import competition and premature liberalisation as the primary causes of South African deindustrialisation. This decrease

in production is further explained by Andreoni and Tregenna (2021), who argue that open-market reforms, inadequate state capacity, and a lack of industrial upgrading have exposed South Africa to the middle-income trap characterised by low productivity and poor diversification. The fact that respondents believe reindustrialisation is a possibility, achieved through specific investment and skill building, is based on the fact that ideas about revising industrial policy and establishing a new localisation agenda have been discussed in the South African policy community (DTIC, 2024). Therefore, when liberalisation increased openness to trade, it also eroded the country's productive base, further strengthening its dependence on imports and exports of raw materials.

Trade Liberalisation and Inequality

One of the themes that appears stable across both documentary data and the interviews with participants is that trade liberalisation has widened the gap in income disparity. In 2018, the Gini coefficient rose to 0.67, compared to 0.63 in 2014, indicating that economic gains have been accumulated in the hands of capital owners and skilled labour (World Bank, 2018). According to the respondents, liberalisation was biased in favour of investors and elites, with low-skilled workers and rural people being the groups that largely did not enjoy the gains. These views are consistent with Stiglitz (2018) and Harvey (2007), who observe that neoliberal globalisation is more likely to increase the distance between the rich and the poor in societies without well-developed redistributive institutions. The persistence of inequality even after liberalisation highlights the political economy aspect of South Africa's growth behaviour. Structural factors, including the causes of skills mismatches, the unequal distribution of wages, and limited social protection, actually exacerbated inequality instead of alleviating it, thereby mediating the impacts of trade reforms (Tregenna, 2011). Such results confirm that the openness of the market without redistribution, education, and labour inclusion policies cannot lead to fair growth.

Cross-Objective Interpretation

In all three purposes, namely, employment, manufacturing, and inequality, the results all lead to a few essential points:

Liberalisation made it more open and undermined domestic industries.

The significant loss of labour-intensive industries caused by import competition and the accelerated reduction of tariffs significantly affected the growth of new production capacities and the mass loss of jobs (Bastos & Santos, 2022; Driver, 2019).

The privatisation and financial discipline diminished the developmental potential of the state.

The respondents perceived government policies as responsive but too narrow in their employment creation, again in line with the criticism of the GEAR strategy, which has a narrow redistributive scope (Sebake, 2013).

Economic openness did not eliminate or improve inequality.

Capital concentration, skill bias, and weak social protection were structural conditions that ensured trade benefits were enjoyed primarily by the rich and highly skilled (World Bank, 2018).

It lacks policy coherence and an industrial strategy.

Although measures such as localisation and industrial revitalisation (DTIC, 2024) have been proposed, they remain unconsolidated and lack investment. The participants of the study also demanded serious actions of the state, namely in reindustrialisation, development of technical skills, and procurement locally. On the whole, the results substantiate the idea that South Africa has undergone the process of trade liberalisation, which has been accompanied by premature deindustrialisation and uneven growth, as macroeconomic openness has not been translated into inclusive development.

Theoretical Context Interpretation

The findings in the theoretical framework of the study confirm the theory of premature deindustrialisation, which demonstrates that developing countries are losing industrial capacity sooner in their development path due to trade exposure and technological transformation (Rodrik, 2021). At the same time, the political-economy of labour and distribution prism can be used to describe how the mediating role of institutional weaknesses and elite capture has contributed to these results, increasing inequality and labour marginalisation (Andreoni & Tregenna, 2021).

Lastly, there is the state-capability school, which highlights the lack of effective policy tools to mitigate the negative distributional impacts of openness, underscoring the need for a hybrid economic approach that combines liberalisation with strategic state-led reindustrialisation and redistribution (DTIC, 2024).

Summary of Discussion

Overall, the discussion shows that:

- The liberalisation of trade increased openness but led to job losses, industrial decline, and an increase in inequality.
- The absence of both industrial and social policies to complement the liberalisation undermined the possible developmental gains of liberalisation.
- The reversal of negative trends is crucial, facilitated by reindustrialisation, skills development, and social protection.
- The qualitative results of the study support the thesis that the liberalisation being implemented has not contributed to inclusive or sustainable development in South Africa.

Conclusion and Policy Recommendations

This paper aimed to analyse the impact of trade liberalisation on employment, manufacturing production, and inequality in South Africa from 1994 to 2024. The results show that, despite liberalisation intensifying integration in the global market and creating new opportunities to promote export-led growth, its socioeconomic effects have been highly exclusionary. Key findings indicate that:

- The manufacturing jobs were lost substantially, with some 309,000 jobs lost between 2005 and 2021, resulting in a low labour absorptive potential.
- The manufacturing share of GDP dropped to 13.2 per cent compared to 19.1 per cent, indicating that manufacturers were being prematurely de-industrialised and their capacity to produce was declining.
- The unemployment rate is also structurally high (32.9% total; 45.5% among youth), indicating that the economy has not been generating enough growth to require labour inputs.
- The level of inequality has worsened, with the Gini coefficient rising from 0.63 to 0.67, indicating that the benefits of the liberalisation process were disproportionately higher for skilled labour and capital owners.

The qualitative data supported the view that the participants perceived trade liberalisation as market-driven, elite-oriented, and not protective enough of workers, which is congruent with studies highlighting the political economy relations of inequality in South Africa (Sebake, 2013; Andreoni & Tregenna, 2021; Bastos & Santos, 2022). The paper concludes that without robust industrial policy and social policy, trade liberalisation has strengthened structural weaknesses, eliminated employment opportunities, and increased socioeconomic inequalities. The process of liberalisation will not be sufficient to bring about inclusive or sustainable development in South Africa without decisive state intervention.

Based on the findings, the short-term and long-term policy interventions that are recommended include the following:

A. Short-term (Immediate to 3 Years)

Policy Action	Rationale	Expected Outcome
Precise industrial safeguarding of labour-intensive industries (e.g., textiles, furniture)	Import rivalry has wiped out weak industries	Stabilisation of production.
Enhance localisation of procurement demands.	Weak local domestic connections eroded industrial development	Enhanced local production and development of suppliers

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