



Lessons gleaned from infusing innovation into local economic development in the Vhembe District Municipality of South Africa

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Abstract

Infusing innovation into Local Economic Development (LED) is crucial for fostering sustainable economic growth and resilience. This study explores the integration of innovation into LED in Vhembe District, South Africa. Using a qualitative research approach, key informant interviews were conducted with 15 purposively selected participants, including government officials, LED managers, innovation champions, and academics. Data were analysed using thematic content analysis to identify key themes influencing LED. The findings highlight the critical role of governance, strategic planning, leadership, and multi-stakeholder collaboration in fostering innovation. Economic diversification, technological advancement, and capacity building emerged as crucial enablers, while resistance to change posed a significant challenge. The study emphasizes the importance of data-driven decision-making, investment in digital infrastructure, and participatory approaches to enhance LED outcomes. Sustainable resource utilization and ecotourism were identified as strategic opportunities for long-term economic growth. The research concludes that an integrated approach that incorporates innovation-friendly policies, strong leadership, and inclusive stakeholder engagement is essential to building a resilient, innovation-driven economy in Vhembe District.

Keywords: Capacity building, innovation, local economic development, multi-stakeholder, participatory action research, Vhembe District Municipality

Introduction

According to Swinburn et al. (2004), LED is defined as a collaborative process involving public, business, and non-governmental sectors to enhance economic capacity, growth, and job creation in a local area. It aims to improve the quality of life for all by strengthening local economic capacity, enhancing the investment climate, and increasing the productivity and competitiveness of local businesses and workers (Mandisvika, 2015). As economies become increasingly interconnected, LED strategies are progressively adopted by communities to adapt to dynamic local, national, and international markets. The implementation of LED policies varies globally, with some regions demonstrating success while others encounter challenges. In Bosnia and Herzegovina, for instance,

LED has been a central component of development policy for the past decade, enabling local communities to engage in reform processes and adapt to global market demands (Alić, 2023).

In South Africa, LED has been a critical strategy in the post-apartheid era, aimed at addressing poverty and fostering local-level development (Gray & Lombard, 2024). However, despite numerous initiatives by local governments and community groups, outcomes have been limited due to several structural challenges, including high poverty and unemployment rates, skills shortages, and limited administrative capacity, which have constrained the effectiveness of LED efforts (Kgobe et al., 2023). Government support mechanisms such as the LED fund have been established; however, the scale of local development needs remains substantial, necessitating the need for more extensive interventions (Coetzee et al., 2023). Rogerson & Nel (2016) further claim that LED policies have struggled to address deep-rooted spatial inequalities, particularly in distressed areas, referred to as "spaces of despair," which calls for new and more effective policy frameworks. This agrees with Kgobe et al. (2023), who argue that the overall weak state of LED in South Africa underscores the necessity for improved implementation strategies and enhanced policy alignment across all levels of government.

A significant milestone in South Africa's LED journey was the enactment of the Local Government Transition Act, 209 of 1993, which facilitated the decentralization of economic development responsibilities to municipalities. However, after more than two decades, many municipalities continue to grapple with resource constraints, both financial and human, hindering their ability to effectively drive LED initiatives (Department of Science and Technology (DST), 2018). Taking these challenges into cognisance, the DST committed to strengthening municipalities by integrating science and technology into LED strategies. To this end, the DST established the Innovation for Local Economic Development (ILED) directorate, which focuses on strengthening local innovation systems, catalysing community-owned industries and clusters, and enabling local governments to foster innovation-driven LED. Additionally, the Department of Cooperative Governance (DCoG) and the DSI collaborated on revising the National Framework for LED 2018–2028 (NFLLED) to incorporate innovation, aligning it with the DSI White Paper on Science, Technology, and Innovation (2019).

A key initiative within the NFLLED 2018–2028 was the implementation of Innovation Champions (ICs), which were strategically positioned in local municipalities. In Vhembe District Municipality (VDM), the ICs were central to driving inclusive, innovation-led local economic development. They were placed within the LED offices and worked under the supervision of LED managers and the project manager at the University of Venda (UNIVEN). The role of ICs was to facilitate the development of an innovation-led LED strategy, among others. Their primary responsibilities encompassed coordinating the mapping of local innovation systems utilizing a decision-support tool, the Local Innovation Assessment Toolkit (LIAT), ensuring its integration in municipal development planning, incorporating innovation into LED strategies, facilitating linkages among key actors in local innovation ecosystems, and procuring funding and expertise from the National System of Innovation (NSI) to support LED interventions. Participatory Action Research tools, such as Design Thinking workshops, photovoice, storytelling, and community theatre, among others, were adopted to ensure that community voices, especially those of vulnerable or marginalised social groups, were fairly represented throughout the implementation of the Innovation Champions for Local Economic Development (IC4LED) project. Participants were engaged in reflection circles in 21 nodal areas within VDM. These were facilitated by well-trained facilitators, including academics, postgraduate students, and UNIVEN interns.

Building on this framework, the DSI funded the IC4LED pilot project in VDM from 2019 to 2024. The project was administered by the Technology Innovation Agency (TIA) and implemented through a collaboration between VDM and the UNIVEN's Institute for Rural Development (IRD). In this context, this study aimed to examine lessons from integrating innovation into LED initiatives in Vhembe District. The article presents a structured approach comprising an introduction and background, a theoretical framework, materials and methods, results and discussion, a conclusion, recommendations, and implications for LED.

Theoretical Frameworks

Based on the review literature, several theories/approaches, and models are relevant to the study of the infusion of innovation into LED. However, ED theory is most closely connected to this study. Endogenous development theory was originally conceptualised in the 1970s by the sociologist Kazuko

Tsurumi. It emphasises local agency, resource utilization, and cultural sustainability as key drivers of development (Nishikawa, 2022). However, a decade later (1980s), ED emerged as a powerful idea in development thinking (van der Ploeg, 1995). Haverkort & Rist (2007) define ED as a bottom-up approach to development that emphasises the use of local knowledge, resources, and capacities to drive the socioeconomic growth of communities. Unlike traditional development paradigms, which often rely on external inputs such as foreign aid, technology, or expertise, ED emphasises local determination, control, and retention of benefits within the local area (Jones, 2022). It is rooted in the notion that development should emerge from within local communities and be shaped by their specific cultural, social, and environmental contexts (Dodzi, 2018). It contrasts with exogenous development, which is externally determined. Endogenous development promotes self-reliance and sustainability by leveraging local assets and empowering communities to define their own development trajectories. Endogenous development theory aligns with participatory planning, as it involves communities in the co-design and co-implementation of development interventions, ensuring these interventions align with local needs and aspirations (Eversole & Campbell, 2023). Mattila & Nummi (2022) define participatory planning as a new paradigm in development planning, grounded in a set of principles, notably the willingness to involve local people in development decisions that affect their lives. This contrasts sharply with top-down development models that impose external solutions without adequately considering local realities.

In contrast, LED focuses on enhancing the economic well-being of a specific locality, often through a combination of public, private, and community efforts to improve the local economy (Calzada, 2023). LED further emphasises job creation, investment attraction, and the development of local industries to stimulate economic growth. Moreover, LED can encompass a wide range of strategies, from supporting small and medium-sized enterprises (SMEs) to investing in infrastructure, education, and skills development. Based on the above, both ED and LED share a focus on sustainability and community empowerment, although they approach these goals from slightly different perspectives. ED is more concerned with the cultural and social dimensions of development, while LED focuses on the economic aspect, as indicated earlier. By aligning ED principles with LED strategies, this study argues that VDM can cultivate innovation-driven, sustainable economic progress that is both community-empowered and globally competitive.

Methods

Research Design

The qualitative study was conducted in VDM, South Africa. The qualitative approach was employed because it can capture the richness and depth of human experiences, beliefs, attitudes, and behaviours (Creswell & Creswell, 2017). Moreover, the approach provides complex textual descriptions of how people experience issues, focusing on the "human" side (Odongo & Ntara, 2024). This approach is inductive, interpretative, and flexible, allowing researchers to adapt their process as results emerge (Thompson et al., 2021). Moreover, the design was used because the researchers aimed to uncover insights from various stakeholders involved in or affected by LED efforts, providing a comprehensive understanding of lessons learned from infusing innovation into LED in VDM. A positivist approach was adopted for this study, as the researchers prioritised systematic data collection and objective interpretation, in line with the principles outlined by Remenyi et al. (1998:32). This paradigm supports the researcher's detachment from the research process, thereby maintaining objectivity and independence from the phenomena under investigation (Collins, 2010:38).

Population and sampling techniques

The population comprised stakeholders who participated in the IC4LED project as indicated above. Before engaging participants in the data collection process, an email was sent through the IRD secretary's office requesting their participation in the survey. A purposive sampling technique was used to select fifteen participants with specific knowledge or expertise relevant to a research topic (Creswell & Poth, 2018). Among these were two officials from the provincial government, three local government LED managers and four innovation champions for LED. Six participants were academics drawn from tertiary institutions of higher learning, viz, two from the UNIVEN, two from Vhembe Technical and Vocational Education and Training (TVET), and two from Madzivhandila Agricultural College. Although the sample size was limited, Fleishman (2012:1) acknowledges that small samples

can be utilised in research; however, their findings cannot be generalised to the broader population. In the context of this study, the objective was not to generalise the findings, but to obtain in-depth insights from key stakeholders regarding the lessons learned from integrating innovation into LED initiatives within the Vhembe District. The study adhered to ethical guidelines for research involving human subjects. Prior to its implementation, the project was approved by the UNIVEN Ethics Committee and by the VDM Council. Informed consent was obtained from all participants, who were assured of the confidentiality and anonymity of their responses.

Data Collection Methods and Techniques

Data were collected through key informant interviews borrowed from Taylor & Blake (2015). Key informant interviews were employed because they provide in-depth, expert insights from individuals with specialised knowledge or first-hand experience on a particular subject, which can lead to a more comprehensive understanding of complex issues (Luetke-Lanfer et al., 2024). These insights are often nuanced and context-specific, offering valuable perspectives that may not be available through other data collection methods. All participants deliberated on the same research question: "What key lessons have you learned from integrating innovation into LED initiatives in the Vhembe District of South Africa?" The interviews were conducted in English. However, Tshivenda, the vernacular language of VDM, was also used to enhance communication and engagement. An interview guide was employed to ensure consistency in the questions asked. Data saturation was reached at the 10th participant (Creswell & Creswell, 2018). However, the researchers continued until all 15 participants were interviewed. During the interviews, a scribe recorded the answers in a notebook. Each interview lasted 40-45 minutes and was recorded with participants' consent. Field notes were also taken to capture non-verbal cues and contextual information that might enhance the analysis. The qualitative data were subsequently consolidated, ensuring all responses were recorded and stored for further processing.

Data Analysis

The collected data were analysed using thematic content analysis (Creswell & Creswell, 2018). Thematic content analysis was deemed appropriate as it enabled researchers to systematically utilise various types of information. Braun & Clarke (2019) define thematic content analysis as the interpretative identification, categorisation, and elaboration of themes through systematic scrutiny. The recorded interviews were transcribed verbatim to facilitate detailed analysis. The analysis process involved several stages, commencing with familiarisation with the data, which entailed reading the transcripts to comprehensively understand the content and context. Key concepts and ideas were identified and coded systematically. This process involved labelling text segments related to the themes of interest. Codes were grouped into broader themes based on their relevance and relationships. The identified themes were reviewed and refined to ensure they accurately represented the data. This included examining the consistency and coherence of the themes. The final themes were defined and named to capture the essence of the data and provide clear insights into the research questions.

Measures to ensure trustworthiness

To maintain the integrity of the research, the team implemented measures to improve data collection accuracy and reporting transparency. Emphasis was placed on establishing credibility, transferability, dependability, and confirmability to ensure that the findings accurately reflected participants' lived experiences. To promote transferability, the researchers provided rich, contextual descriptions of the study's procedures and compared the findings with other relevant settings. Standardized protocols were followed, and thorough documentation was maintained, supporting dependability and enabling potential replication and consistent outcomes over time. Confirmability was addressed through reflexive practices, in which researchers critically examined and managed their own assumptions and potential biases to ensure that interpretations were grounded in empirical data. Credibility was strengthened through extended engagement with participants and the validation of findings, achieved through four separate reflective dialogue sessions. These served as a triangulation method by incorporating multiple perspectives. Finally, core themes and associated sub-themes were developed, and the inclusion of direct participant quotations reinforced the authenticity of their views.

Results

Table 1 presents the eight major themes and 16 sub-themes distilled from participants' responses. The major themes included: 1) governance and strategic planning, 2) leadership and management, 3) multi-stakeholder engagement, 4) entrepreneurship and economic diversification, 5) technological advancement, 6) capacity building and skills development, 7) sustainability and local resources, 8) resistance to change and building resilience mechanisms. The presentation of the responses includes select verbatim quotations to emphasize the participants' perspectives.

Table 1:

Themes and sub-themes of lessons gleaned from infusing innovation into LED

Responses	Frequency	Sub-themes quoted verbatim
Governance and strategic planning	21	<i>We need local governments that are not just functional, but pro-innovation. They need to foster environments where new ideas can take root.</i> <i>We don't have enough localised data to make informed decisions. How can we truly measure progress if we don't have the numbers to back it up?</i>
Leadership and management	20	<i>Strong leadership is the key. You need leaders who can set aside personal agendas and focus on the bigger picture.</i> <i>When so many different groups are involved, you need leaders who can navigate these waters without alienating anyone.</i>
Multi-stakeholder engagement	19	<i>Collaboration between the public, private, and academic sectors is the glue that binds innovation-driven initiatives.</i> <i>When we engage communities at the grassroots level, we unlock their immense potential to drive solutions.</i>
Entrepreneurship and economic diversity	17	<i>Supporting local entrepreneurs means creating the foundation for long-term economic growth.</i> <i>We should focus on value-added products, especially in agriculture, where we have a natural advantage.</i>
Technological advancement	16	<i>Without reliable internet, we are stuck. We can't fully tap into the global markets or provide our communities with access to modern education and healthcare services.</i> <i>The right technology could change everything. From drone technology in farming to digital marketplaces.</i>
Capacity building and skill development	15	<i>The only way to ensure sustainability is to continuously invest in skill development. Innovation is not a one-time event; it's an ongoing process that requires a steady pipeline of trained leaders.</i> <i>Co-facilitating workshops helped create a shared sense of ownership.</i>
Sustainability and local resources	13	<i>We must be careful not to exploit our natural resources in ways that harm future generations. Sustainability must be at the core of our strategy.</i> <i>Vhembe's biodiversity is its gold mine. We need to promote ecotourism not just for economic benefits but also to preserve our environment.</i>
Resistance to change and building resilience mechanisms	11	<i>Change is never easy. At first, there was this underlying resistance, almost like people were waiting for us to fail.</i>

We realised that dealing with resistance wasn't just about pushing forward; it also meant listening, addressing concerns, and converting skeptics into supporters.

Governance and Strategic Planning

According to the frequency counts, governance and strategic planning were the most frequently mentioned themes. Effective governance was perceived as fundamental to innovation-driven LED, as revealed by one participant who noted that: *"we need local governments that are not just functional but pro-innovation. They need to foster environments where new ideas can take root."* Of equal importance was data-driven decision-making, which many participants perceived as lacking. This was attested by one of them who stated that: *"We don't have enough localised data to make informed decisions. How can we truly measure progress if we don't have the numbers to back it up?"* The research further recommended governance that incorporates regular feedback and continuous strategy refinement, as these are crucial to sustainable local economic development initiatives.

Leadership and Management

Leadership and management emerged as the second common and recurring theme, especially the need for leadership that transcends individual interests and focuses on the broader community good. Considering this, one participant mentioned that: *"strong leadership is the key. We need leaders who can set aside personal agendas and focus on the bigger picture."* Moreover, the participants noted that navigating the complexities of multi-stakeholder expectations required skilled leadership to balance competing priorities. This was reiterated by another participant who said that: *"When so many different stakeholders are involved in LED initiatives, we need leaders who can navigate these waters without alienating anyone."*

Multi-stakeholder Engagement

Multi-stakeholder involvement brings together diverse perspectives and expertise, leading to more innovative and effective solutions. Different stakeholders, such as government entities, businesses, educational institutions, and community organizations, each contribute unique insights and resources. In line with this, the findings of this study revealed that multi-stakeholder engagement was key to creating thriving, sustainable economies that are responsive to the needs of all community members. In support of this, one of the participants indicated that: *"Collaboration between the public, private, and academic sectors is the glue that binds innovation-driven initiatives. When all sectors work together, we see real change."* The study further noted that the collaborative ecosystem would enable grassroots involvement, ensuring that community voices are central to decision-making. Considering this, another interviewee emphasised the fact that: *"when we engage communities at the grassroots level, we unlock their immense potential to drive solutions. They have lived through these challenges and know what might work best."* While another one added that: *"It's not enough to just consult the community. They have to be active participants in shaping the future they want."* This reinforces the value of participatory techniques and tools for empowering stakeholder-driven decision-making.

Entrepreneurship and Economic Diversification

Another theme that attracted participants' attention was entrepreneurship and economic diversification. Local entrepreneurship was identified as a key driver of LED, with a focus on job creation and economic diversification. In support of this, one of the participants said: *"Supporting local entrepreneurs means creating the foundation for long-term economic growth. They are the ones who will be in charge of diversifying the economy beyond traditional sectors."* Moreover, stakeholders highlighted the importance of linking entrepreneurship with local resources. One participant emphasised the need for agro-processing facilities and markets. This is what he said: *"We should focus on value-added products, especially in agriculture, where we have a natural advantage."*

Technological advancement

Participants in the current study were concerned about the lack of high-speed connectivity, which was identified as one of the greatest barriers to the adoption of LED innovation in the district. Several participants expressed frustration, with one of them saying: *"Without reliable internet, we are*

stuck. We can't fully tap into the global markets or provide our communities with access to modern education and healthcare services." There was unanimous agreement that technology holds transformative potential for local businesses, particularly in the agricultural sector, as noted by one of them who stated that: *"the right technology could change everything. We just need the infrastructure to implement these solutions, from drone technology in farming to digital marketplaces."*

Capacity Building and Skill Development

The findings of this study consistently highlighted the critical need for ongoing capacity development, particularly for local leadership tasked with spearheading innovation-driven LED initiatives. Concerning this, one participant highlighted the fact that: *"The only way to ensure sustainability is to continuously invest in skill development. Innovation is not a one-time event; it is an ongoing process that requires a steady pipeline of trained leaders."* The participants also appreciated the co-facilitated workshops during the project's implementation, indicating that they promoted co-learning and co-creation of knowledge, as well as helping create a shared sense of ownership among all participants. This was echoed by one of the participants who stressed that: *"Our people are our greatest resource. We need to invest in training and education that aligns with the actual needs of our economy."*

Sustainability and Local Resources

Participants in the current study emphasized the importance of leveraging local resources sustainably. They repeatedly mentioned that the district is rich in biodiversity and has untapped potential for ecotourism. This is what they said: *"We must be careful not to exploit our natural resources in a way that harms future generations. Sustainability must be at the core of our strategy."* While another one reiterated that: *"Vhembe District Municipality's biodiversity is its gold mine. We need to promote ecotourism for economic benefits and to preserve our unique environment for future generations."*

Resistance to Change and Building Resilience Mechanisms

The least mentioned yet central theme was resistance to change and building resilience mechanisms. The participants revealed that innovation often stemmed from a lack of understanding or fear of the unknown. One participant attested that: *"change is never easy. At the beginning of the project, there was this underlying resistance, almost like people were waiting for the project to fail."* To overcome this, the participants suggested that those involved in LED initiatives should be creative and persistent. In support of this, one of the participants indicated that: *"We realised that dealing with resistance wasn't just about pushing forward but also listening, addressing concerns, and converting sceptics into supporters."* Lastly, the research revealed that resilience-building mechanisms, such as establishing open communication channels and developing trust, may have played a crucial role in neutralising the opposition.

Discussion

The research findings provide a comprehensive understanding of the key factors influencing innovation-driven LED in the study area. These insights emphasised the importance of sustainable governance, multi-stakeholder approach, entrepreneurship and economic diversity, technological advancements, and capacity building, among others. The findings align with and extend the existing literature on LED, highlighting the need for context-specific strategies, particularly in rural and marginalised areas. Importantly, these findings reinforce core principles of ED theory, which prioritise local knowledge, resources, agency, and cultural values in driving sustainable development outcomes. Sustainable governance and strategic planning, characterised by pro-innovation policies and systematic feedback mechanisms, were identified as essential for sustaining innovation-driven LED. In view of this, Sørensen & Torfing (2017) claim that a specific governance strategy is required when the purpose of networking is to improve public performance through disruptive innovations rather than incremental improvements of existing practices. Moreover, the scholars emphasise that an innovation-enhancing governance strategy should explicitly seek to include actors with different backgrounds and perspectives who together possess the relevant innovation assets. It should also assist network actors in creative destruction by encouraging joint development and testing of new and bold solutions and

supporting the diffusion of successful innovations to relevant audiences. In line with this, Kuhlmann & Rip (2018) argue that innovation governance should be dynamic and responsive to local needs, and should incorporate continuous feedback from those affected. Without strategic governance, local innovation is stifled, slowing economic development. The study's emphasis on the lack of local data as a barrier to informed decision-making is echoed by Ghosh (2024), who also highlights the challenges of data scarcity in rural areas of Southern Africa. This could hamper decision-making, making it difficult to measure progress and adapt innovative strategies effectively. Thus, the study recommends that local governments invest in collecting relevant data and conducting proper analysis to make informed, effective decisions that accelerate LED efforts. The emphasis on tailoring governance structures to local realities reflects ED's assertion that change must originate within communities and institutions that are familiar with their own constraints and potential.

Leadership was another major focus, with most participants emphasising the need for strong, visionary leaders. This is not surprising, given that leadership is seen as a key aspect of organisational change. In view of this, Hartley & Knell (2022) indicate that leadership is a key organisational driver and a key theme related to innovation in general. In addition, Danquah et al. (2024) claim that leadership plays a critical role in balancing competing stakeholder expectations. These findings support the work of De Vries et al. (2019), who argue that transformational leadership is crucial in multi-stakeholder settings. In line with this, Meyer & Overen (2021) argue that effective leadership is vital for rural development initiatives, especially when resources are limited. The study also highlighted adaptive leadership, which mediates conflicting interests and responds to evolving project needs, echoing Sørensen & Torfing's (2016) emphasis on inclusive leadership. The centrality of local leadership underlines the ED principle that transformation should be community-led, rooted in lived experience, and responsive to local socio-cultural dynamics.

Multi-stakeholder engagement emerged as another critical factor in the success of innovation-driven LED in the study area. Involving grassroots communities, local governments, private-sector actors, and academic institutions in the current study created an inclusive ecosystem in which diverse perspectives informed decision-making. Wolfram & Frantzeskaki (2016) emphasise the role of such collaborative governance in fostering resilience and innovation, particularly in rural areas. In view of this, Geyer & Naudé (2021) note that engaging multiple stakeholders in development initiatives promotes community ownership and ensures that interventions align with local needs. The participatory techniques employed in this study, such as workshops and dialogues, aligned with Mansuri & Rao's (2021) recommendation to include local communities in policy formulation to enhance legitimacy and societal impact. Similarly, Hassenforder et al. (2019) argue that participatory governance enhances the legitimacy of development outcomes. This participatory model aligns well with ED theory by reinforcing the role of local agency and collective learning in shaping solutions tailored to local needs and traditions.

The research further revealed that entrepreneurship, particularly in agriculture and tourism, was a key driver of economic diversification. Diversification is crucial for reducing dependence on a few economic sectors and enhancing resilience against external shocks. The establishment of incubators and accelerators to support local entrepreneurs revealed in this study, aligns with Mack & Mayer's (2016) argument that fostering local entrepreneurial ecosystems is critical to addressing economic disparities. In this regard, Rogerson (2020) emphasises the importance of supporting small businesses and promoting value-added agricultural products to enhance rural incomes. This study's focus on value-added agriculture and creative tourism approaches reflects recent shifts toward experiential and sustainable tourism models (Richards, 2020). This study leveraged locally available resources and cultural practices. This supports the ED's notion that innovation is most impactful when embedded in local economies and traditions.

In line with Tomer & Kane (2020), participants in the current study reported that limited internet connectivity posed a significant barrier to innovation-driven LED in the Vhembe District. This reflects the broader digital divide, in which rural areas lack the infrastructure needed for digital transformation. In view of this, Conradie et al. (2021) argue that inadequate infrastructure hampers rural development,

limiting access to markets, education, and healthcare. The study underscores the need for investment in high-speed internet as a catalyst for digital transformation, a call echoed by Shahiduzzaman & Alam (2015) in their work on the importance of digital infrastructure for rural development. This study recommends targeted policies to address these inequalities and improve digital infrastructure in underserved areas, as well as adopting various digital technologies, such as big data and cloud computing, to enhance service delivery. Although technology is often seen as an external driver of change, this study indicates that meaningful adoption and use depend on how well innovations are internalised within local contexts, a key tenet of ED.

Another key finding was the need for robust capacity building and skill development to drive innovation-led LED. This confirms earlier findings of a study conducted in VDM on challenges of public participation in improving service delivery (Matloga et al., 2024). The researchers report that municipal councillors and LED managers should be supported and capacitated through workshops to acquire skills to encourage public participation and improve basic service delivery. The earlier study by Davids & Esau (2012) also found that municipalities in South Africa are generally in crisis, a clear case of a capacity gap, which impacts their ability to fulfill their constitutional mandate in many respects. Matloga et al. (2024) argue that insufficient killings by municipal officials may be a contributing factor to waves of service delivery protests, especially in rural townships in South Africa. To address capacity/skills gaps, the South African government has introduced the *Intergovernmental Relations Act (IGRA) of 2005*, which provides a framework on how to show up and build capacity at the local level by institutionalising cooperative governance between and among the three tiers of government, namely, the national, provincial and local. In line with the above, Hamidi & Zandiatashbar (2019) underscore the importance of investing in human capital to sustain innovation ecosystems. Moreover, Marais & Nel (2020), in their study conducted in South Africa, reported that equipping local leaders with the necessary technical and managerial skills is crucial for successful LED implementation. The use of participatory action research, coupled with multi-stakeholder workshops and co-designed training sessions, ensured that training was contextually relevant and aligned with Reason & Bradbury's (2015) principles of co-created knowledge. A study conducted in South Africa (Rogerson & Nel, 2016) also stressed the importance of building local government capacity to effectively implement LED strategies, a point this study underscored. In view of the above, local governments should embrace an innovation-friendly approach, creating an enabling environment for new ideas and initiatives. The participants further suggested that vocational training should be aligned with the local industry to build human capital. In support of this, Billett (2020) argues that education systems should be tailored to be responsive to labour market demands in specific areas and/or regions. Such locally attuned training and skill development is at the heart of ED, which promotes community-driven capacity building to harness innovation from within.

Sustainability was a central theme, particularly in the use of local resources for agriculture, tourism, and renewable energy. The emphasis on local resource stewardship reflects ED's environmental ethic and its commitment to sustainability rooted in indigenous knowledge systems. In this regard, Kabeyi (2019) asserts that prudent management of natural resources is crucial for long-term economic viability, especially in rural areas. This study underscores ecotourism's potential to drive economic growth and environmental conservation, a finding supported by Powell & Ham (2020). Additionally, promoting renewable energy to reduce dependence on non-renewable sources is critical, as highlighted by Verma & Raghubanshi (2018). A study conducted in South Africa found that renewable energy plays a crucial role in reducing rural poverty and enhancing economic resilience. Resistance to change, characterised as a 'conspiracy of silence,' was a notable challenge in implementing innovation-driven LED in the study area. This reluctance, often driven by fear of the unknown, aligns with Hassan & Lee's (2015) findings that rural communities frequently resist new governance models. Ndlovu-Gatsheni (2015) notes that South Africa's socio-political legacies may also contribute to skepticism toward new development approaches. However, this study demonstrated that resilience mechanisms, such as constructive engagement with criticism, could help maintain

momentum, aligning with Chibba & Moyo's (2021) observation that adaptability and persistence are essential to overcoming opposition in challenging environments.

Conclusions

The study on infusing innovation into LED in Vhembe District has revealed key insights into the challenges and opportunities that shape the region's economic trajectory. The findings highlight that effective governance and strategic planning, coupled with strong leadership and multi-stakeholder engagement, are fundamental for fostering an innovation-driven LED ecosystem. Furthermore, economic diversification, technological advancements, and capacity building are critical enablers of LED initiative sustainability. However, resistance to change and the need for resilience-building mechanisms remain barriers that must be addressed to ensure the smooth implementation of innovative strategies. Ultimately, a holistic approach that integrates governance, leadership, entrepreneurship, sustainability, and technology will be essential in driving long-term, inclusive economic growth in Vhembe District.

Recommendations

To foster innovation-driven LED in Vhembe District, governance structures should be strengthened to support data-driven decision-making and continuous refinement of development strategies. Leadership development programs should emphasize ethical governance, accountability, and multi-stakeholder collaboration to navigate complex economic challenges. Multi-sector partnerships, including grassroots engagement, should be prioritized to leverage collective expertise and ensure community ownership of development initiatives. Entrepreneurship and economic diversification should be encouraged through targeted support for local enterprises and value-added industries, as well as inclusive economic policies. Investment in digital infrastructure and emerging technologies should be expanded to unlock economic potential and enhance service delivery. Capacity-building efforts should focus on vocational training and ongoing skill development to create a resilient workforce. Sustainability should be embedded in all LED initiatives, with a focus on ecotourism, biodiversity conservation, and responsible resource utilization. Lastly, addressing resistance to change requires proactive community engagement, transparent communication, and resilience-building mechanisms to foster trust and adaptability.

Implications

The study underscores the need for pro-innovation policies that foster a business-friendly environment, promote digital infrastructure, and support local entrepreneurship. Strengthening public-private partnerships and community participation will enhance inclusivity and drive economic diversification. Investment in skills development and capacity building will ensure a future-ready workforce. Additionally, sustainability should be a core principle of LED initiatives, with natural resources used responsibly and sectors like ecotourism promoted. Overcoming resistance to change requires open communication, transparency, and long-term trust-building with stakeholders. By addressing these areas, Vhembe District can build a resilient, innovation-driven economy that balances growth with sustainability and inclusivity.

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