Article

The role of urban planning for Nelson Mandela Bay's entrepreneurial ecosystem

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Abstract: The success of a city's entrepreneurial ecosystem (EE) depends on a combination of interconnected factors that foster innovation, collaboration and growth. Urban planning, infrastructure management and an entrepreneurial culture are essential factors for the success of cities' Entrepreneurial Ecosystems (EEs). Land use and infrastructure management create opportunities for growth and industry expansion. EEs are local, social, business, institutional and cultural stakeholders that encourage and enhance the formation and growth of new businesses, which are supported by enabling infrastructure. The objective of this study was to investigate how urban planning affects EEs in the metropolitan region, Nelson Mandela Bay (NMB), South Africa. NMB is known for poor land use management, which hinders the management of diverse spatial needs, as well as bureaucratic processes for land rezoning for commercial activity. In order to better understand the fundamental issues, a qualitative case study was conducted. The data were collected from fifteen economic development role players from NMB using semi-structured interviews combined with secondary data from the NMB Integrated Development Plan (IDP). The data analysis included thematic analysis using Atlas.ti and Claude 2.0. In order to validate the findings, qualitative data were cross-referenced with secondary sources from the NMB IDP. The key themes that emerged effect the NMB metropole's management of infrastructure to support the EE. These include, Land use issues, Poor oversight by metropolitan leadership, Lack of infrastructure maintenance and pushing out potential investment and economic growth. The results highlight that the NMB metropole fails to prioritise land use and infrastructure challenges, impacting the NMB metropolitan area's economic development and worsening inequality among different groups. The findings from this study add to the current research on cities' EEs and The Right to the City Theory, which supports the UN Sustainable Development Goals 8, 9 and 11.

Keywords: infrastructure; entrepreneurial ecosystem; urban planning; Nelson Mandela Bay; South Africa; AI tools

1. Introduction

Urban planning is the process of developing a city's design and structure and the use of infrastructure and land. Urban planning focuses on regulating the design of services, transportation infrastructure, open space and land usage (OECD, 2019). The main aim of urban planning is the development of spaces to promote sustainable growth and create functional environments to improve the quality of life for residents (Glaeser and Gottlieb, 2006; Miles, 2012). The Organisation for Economic Co-operation and Development (OECD) (2019) indicates that the design and structure of a place is essential for start-up businesses, as well as Small and Medium Enterprises (SMEs) for the development of commercial activities and the provision of services.

Investment in local infrastructure creates an economic advantage over other urban areas, also known as urban entrepreneurialism, which requires the management of urban areas to use their resources to attract entrepreneurs, industries and investment (Xiong, 2018). In addition to the economic benefit, investment in local infrastructure links to the United Nations Sustainable Development Goals (SDGs), specifically SDG 8, which highlights decent work and economic growth. SDG 9 highlights industry, innovation and infrastructure and SDG 11, sustainable cities and communities (United Nations, 2024).

Entrepreneurs encourage urbanisation, but urbanisation also enhances entrepreneurship (Naude, 2017). Glaeser (2007) posits that entrepreneurial cities are more successful. The location of the city is important, but entrepreneurs are equally important as entrepreneurs are involved in cultural, economic, political and social processes of change. Entrepreneurs constitute and drive innovations in cities, promoting urban sustainability transformations and economic growth and development (Luederitz et al., 2023).

Entrepreneurial ecosystems (EEs) are broadly explained as an organised set of interdependent components that enable productive entrepreneurship within a specific spatial location (Isenberg, 2011; Stam, 2015; Stam and van de Ven, 2019). EEs are dynamic local, social, institutional and cultural processes and actors that encourage and enhance the formation and growth of new businesses, which are supported by enabling infrastructure (Dubou et al., 2022). For EEs to flourish, it is argued that the location requires a set of place-based assets, notwithstanding the heterogeneous nature of disparate locations (Spigel, 2015; Stam, 2015; Stam and van de Ven, 2019; Woolley, 2017;). The EE is a social and economic environment that affects local or regional entrepreneurship and expands its concept in different ways, using various governance mechanisms (Roundy et al., 2017). However, limited EE literature on the development of the entrepreneurial process limits the adequate exploitation of resources for a sustainable competitive advantage. Despite the limited existing evidence on EEs development, EEs have emerged as leading regional economic development strategies, that emphasise temporal differentiation and enable value creation, driving socio-economic benefits (Brown and Mawson, 2019).

Strategic and efficient city design and structure implementation lead to value-added businesses, industries, services and skilled human capital. Therefore, a city must arrange and develop for local embeddedness, knowledge spillover and networking opportunities. This demonstrates that investments in urban planning are justified, as they foster co-creation, generate value and legitimise new ventures, spinoffs and market access (Brown and Mason, 2017; Bailey et al., 2018; Stam and Spigel, 2018; Stam and van de Ven, 2019). In this context, any barriers in the design and structure of a specific location limit the economic value that could be captured to build a place-based advantage ecosystem. Such ecosystems illustrate how innovation and competition are concentrated in a specific area through network interactions (Porter, 1990), highlighting urban planning as a key success factor. However, despite the growing prominence of EEs, they remain under-theorised and lack data at the sub-national level, making it difficult to analyse the specific success factors that contribute to fostering an economic entrepreneurial culture in a city or region.

In a manifesto developed by Ben Spigel, he highlighted that national data

regarding entrepreneurial development did not highlight variations between cities and regions (Spigel et al., 2020). The limited engagement with questions about the dynamics of urban planning within EEs highlights a significant research gap. Specifically, the role of urban planning from the perspective of developing economies is underexplored, with research on resource-constrained economies, particularly in African and sub-Saharan African contexts, still in its early stages. This paper, therefore, offers an in-depth critical inquiry into urban planning as a key success factor for EEs within a sub-national context.

The entrepreneurship process is shaped by the presence of contextual entrepreneurship environmental support factors, which include social, cultural, financial, economic and infrastructure (Nguyen, 2020). Qian et al. (2024) call for increasingly important research at the intersection of entrepreneurship, sustainability and urban development. Infrastructure services and the maintenance thereof are central to economic production and urban growth. Park et al. (2024) propose that the meaning of infrastructure has expanded to a broader one that includes topics that were not traditionally considered infrastructure. It now includes factors such as finance and digital platforms. The additional factors include social dimensions, which assess the relationship between infrastructure and residents (Kanoi et al., 2022).

Urban planning is a discipline, which considers the design, management and regulation of the infrastructure for the built environment and the use of public space in urban areas (Urban Design Lab, 2023). Various theories have emerged to guide urban planning practices. These theories include the Garden City Movement, the Theory of the City and the Concentric Zone Model amongst others. The expanded definition of infrastructure brings urban planning theories that incorporate social dimensions and view the city as a co-created space to the forefront. Lefebvre (1968) developed the Right to the City Theory, in an attempt to ensure better access to and opportunities for everyone living in cities (Lecoq, 2020). The theory focuses on infrastructure as well as factors, such as participation, work/livelihood and equality (Urban Design Lab, 2023). The Right to the City Theory is supported by SDGs 8, 9 and 11. This paper explores the effect of urban planning on EEs through the perspectives of fifteen economic development agents from one of the eight metropolitan regions in South Africa, namely Nelson Mandela Bay.

The paper proceeds as follows: The following section provides the theoretical underpinning and literature review about the importance of urban planning. This is followed by a brief background on the case study region: Nelson Mandela Bay, South Africa. Thereafter, the methodological process followed and findings from the interviews corroborated by secondary data are provided. The remainder of the paper discusses the theoretical contributions and implications for practice before presenting the overall conclusions and avenues for future research.

A review of urban planning as a success criterion for entrepreneurial ecosystems

Businesses competing in a location are influenced by the quality of their surrounding space, land use and infrastructure (Audretsch et al., 2015; OECD, 2019). This implies that businesses in a specific geography choose how much to innovate and

can trade based on a city's design and structure. The OECD (2019, p. 2) states that 'Creative (re-) use of underutilised centrally located space, for example, former factories, railway arches or structures, yields a double dividend of urban regeneration and economic activity'. Entrepreneurs can contribute to innovations within businesses and city-wide change processes (Luederitz et al., 2023).

EEs stem from locations with place-specific resource endowments, institutional arrangements and proprietary functions (Carvalho, 2017). These place-specific resource endowments develop local and regional capacity (Porter, 1990; Spigel, 2015). It can be argued that planning for the diverse spatial needs within a specific geographic area is crucial for maximising returns from land use (Fainstein, 2024). This approach can foster diversity and meet the economic needs of entrepreneurs (Global Sustainable Development Report, 2016). For example, in the United Kingdom, only 20% of commercial space is used for retail purposes, and the balance is used for office and industrial purposes. The OECD (2019, p. 2) suggests that 'single-use or segregated developments create traffic and hinder entrepreneurial opportunities'. Therefore, strategic development areas for commercial activity, such as investment into mixed-use nodes that support business and community services are considerations for the viability of starting a business.

Infrastructure is generally understood as a local public good and a component of the aggregate regional production function (OECD, 2016). Investment in roads and communication infrastructure raises labour mobility, access and information, stimulates rural economies and reduces poverty (Global Sustainable Development Report, 2016). Digital infrastructure has the added advantage of easing market entry, improving information symmetry and reducing production costs, while other forms promote productivity. Conversely, infrastructure plays a key role in diversifying production, expanding trade, supporting population growth and reducing poverty. For example, an inefficient transportation system can adversely affect the supply of inputs and access to consumer markets, limiting market reach (Tonelli and Dalglish, 2012). A study on the City of Johannesburg, South Africa, emphasises that market access was a significant barrier for entrepreneurs (Msimango and Majaja, 2022). In a separate study, it was reported that entrepreneurs based in townships in South Africa struggle with market linkages and face challenges related to infrastructure beyond what the country generally faces, highlighting the importance of infrastructure to create connections for value creation.

The OECD (2019) contends that connectedness allows for positive externalities, such as social inclusion and increased land values. Direct benefits are experienced by both businesses and society as the cost of production decreases, increasing local business profits, leading to increased wage rates because of higher local demand. In developing economies, micro-enterprises struggle to reduce logistic costs as there are no alternative transport substitutes and undergo trade-offs between activities in the supply chain. The poor spatial design limits the ability to access markets, which causes entrepreneurs to reduce their frequency and volume of purchases and reduce unit costs, which affects the affordability of their goods (Goedhuys and Sleuwaegen, 2010). Thus, there is the opportunity to raise equality through infrastructure investment (Ferreira, 1995; Global Sustainable Development Report, 2016). Rural roads, for example, are commonly described by inadequate conditions and if revitalised, may

proportionally raise non-agricultural wage rates, which would reduce the dependency on that sector due to improved accessibility (Global Sustainable Development Report, 2016). Infrastructure and amenities are therefore underlined as stimulators of a location's attractiveness (Audretsch et al., 2015; Glaeser et al., 2001).

2. Materials and methods

2.1. Case study context—Nelson Mandela Bay, South Africa

Nelson Mandela Bay is one of the eight metropolitan regions in South Africa and includes the towns of Gqeberha (formerly Port Elizabeth), Kariega (formerly Uitenhage) and Despatch (Municipalities of South Africa, 2022). Besides being a major seaport and automotive manufacturing centre, it is recognised as the economic hub of the Eastern Cape. Similarly, the metropole has several world-class recreational facilities and stretches over 15 km along Algoa Bay.

Although Nelson Mandela Bay is anchored as the economic hub, its EE struggles with low levels of innovation, inability to scale to access markets and is comprised of approximately 87,4% of businesses falling into the micro-enterprise category (Dobbin, 2019). The metropole also has a slow growing labour market compared to other metropoles and low levels of investment (NMBM, 2021). This is consistent with the low level of development as per the Human Development Index and Gini Coefficient of 0.63 (Department of Cooperative Governance and Traditional Affairs, 2020). The poor growth capacity is aligned with most small businesses being informal, which causes a disproportionate concentration of employment.

Businesses operating in the informal sector are generally own account workers. High levels of own account workers are attributed to high unemployment rates and do not contribute significantly to gross domestic product (GDP) (Herrington and Coduras, 2019). In Nelson Mandela Bay, South Africa the unemployment rate stands at 40,4%, which is also attributed to high levels of necessity-driven entrepreneurship (Kimberley et al., 2020). In developed economies, generic entrepreneurial activity stimulates economic growth, however this works in the opposite direction for developing economies (Almodóvar-González et al., 2020). A qualitative and exploratory study was carried out, operationalised through a case study.

2.2. Data collection

Data were collected from fifteen economic development role players using one-on-one, semi-structured interviews. Secondary data were derived and analysed to supplement the interview data. This included a comprehensive review of the Nelson Mandela Bay Integrated Development Plan reports. Combining data from multiple sources helped to reduce bias inherent in relying solely on one type of data.

The sampling method is best labelled as purposeful as qualified candidates were selected for the interviews, which increased the likelihood of obtaining credible information to address the research objective (Creswell, 2007). The economic development agents are characterised as individuals who have an active role in promoting socio-economic development and support the creation of an enabling environment that facilitates linkages for entrepreneurs. These stakeholders form part

of the leaders and role models who provide direction and oversight to ensure co-operation and competition (Feld, 2012; Stam, 2015; Stam and Van De Ven, 2019). Isenberg (2010) and Feld (2012) underscore the importance of their inclusion, as they provide insights to understand the needs of entrepreneurs.

The number of participants selected was based on the concepts of thematic saturation and information power (Malterud et al., 2015) and a sample size of 15 satisfies the requirement for a single case study (Vasileiou et al., 2018). The researchers interviewed until saturation was achieved and a total of 15 interviews were conducted as the data collected gathered similar patterns to address the research objective, which was to explore the effect of urban planning on EEs through the perspectives of fifteen economic development agents from one of the eight metropolitan regions in South Africa, namely Nelson Mandela Bay. To ensure the patterns were meaningful, the researchers used topic modelling techniques on the secondary data for validation.

Table 1 shows the descriptive information about the participants in the qualitative inquiry. The names of the participants have been left out because of anonymity.

Table 1. Descriptive information.

Participant and code reference	Age range (years)	Gender	Position
Participant 1 (P1)	26–35	Male	Not for profit: business chamber
Participant 2 (P2)	56–65	Male	Political Party
Participant 3 (P3)	56–65	Male	Government entity
Participant 4 (P4)	46–55	Male	Business owner/member of business chamber
Participant 5 (P5)	36–45	Male	Incubator manager
Participant 6 (P6)	26–35	Male	Government entity
Participant 7 (P7)	36–45	Female	Private sector: banking
Participant 8 (P8)	36–45	Male	Incubator Manager
Participant 9 (P9)	46–55	Female	Business owner/director of incubation association
Participant 10 (P10)	56–65	Male	Higher Education: university
Participant 11 (P11)	36–45	Male	Business owner/member of Business Chamber
Participant 12 (P12)	56–65	Female	Government: municipality
Participant 13 (P13)	26–35	Female	Government: municipality
Participant 14 (P14)	18–25	Male	Higher education: university
Participant 15 (P15)	26–35	Male	Business owner/member of business chamber

The interview topics were (1) city planning and its support for entrepreneurial development; (2) spatial development as it relates to socio-economic conditions; (3) the metropole's infrastructure efficiency; and (4) efforts to develop infrastructure in Nelson Mandela Bay. An example of interview questions included, "To what extent has the current city spatial development framework improved the socio-economic conditions of the Nelson Mandela Bay residents?" and "Does the Nelson Mandela Bay Metropolitan City Planning support entrepreneurial development?"

2.3. Data analysis procedure

The data analysis was multi-faceted and included data triangulation and thematic

analysis using Atlas.ti and Claude 2.0. Claude 2.0, a large language model, exhibits a high degree of analytical ability, enabling it to identify patterns and trends, draw insights and synthesize information from various sources (Rathinasabapathy et al., 2023). The use of AI tools, such as ChatGPT and Claude, to analyse vast datasets, recognise patterns and generate predictive models, has led to more informed analysis (Uppalapati and Nag, 2024). Claude was used to conduct a thematic analysis by using a thematic analysis prompt and providing a file, containing the text to be analysed.

Two data sets were used and analysed in the study, namely the interview data set and the Integrated Development Plan (IDP) for Nelson Mandela Bay (NMBM, 2021). The IDP Strategy aims to ensure that the people of Nelson Mandela Bay are at the centre of planning and development in the city. A thematic analysis was performed on the interview data and codes were applied using the participant perspective coding schema underpinned by the reductionist nature of qualitative data management (Vaismoradi et al., 2016). The data analysis applied Braun and Clarke's (2006) approach.

Before beginning the analysis, the transcripts were anonymised. The authors read the interview transcripts independently and coded segments of the text data using the participant perspective coding schema (Vaismoradi et al., 2016). Due to the involvement of three coders in the coding process, an inter-coder agreement was established to ensure consistent coding across different coders and created reliability in the coding process. Using Atlas.ti, a qualitative data analysis software application, codes were created and organised and allocated to a Code Group (Friese, 2016). Through the modification and reduction of codes and applying the participant perspective, four main themes emerged from the authors' Atlas.ti analysis of the interview data, namely Land use issues (T1), Poor oversight by metropolitan leadership (T2), Lack of infrastructure maintenance (T3) and pushing out potential investment and economic growth (T4). To increase the validity of the themes, the authors discussed potential biases and the analytical procedure and thereafter conceptualised each theme (**Table 2**).

Table 2. Theme definition by authors.

Theme	Theme definition/conceptualisation
Land use issues (T1)	Land use issues encompass the challenges and inefficiencies in the management and regulation of land designated for various purposes, such as residential, commercial, and industrial activities. These issues can include bureaucratic delays in land rezoning and planning approvals, inadequate management of diverse spatial needs, and policies that discourage economic development and investment. Effective land use management is crucial for promoting economic progress, attracting investment and enhancing labour mobility.
Poor oversight by metropolitan leadership (T2)	Poor oversight by metropolitan leadership refers to the inadequacies and inefficiencies in managing and maintaining urban infrastructure, such as utilities, transportation, and communication systems. This includes the failure to adequately invest in and maintain essential services, non-compliance with financial regulations, and the hiring of partially qualified suppliers, which results in substandard service delivery. Such oversight issues hinder economic development, reduce labour mobility, and perpetuate social inequalities within the metropolitan area.
Lack of infrastructure maintenance (T3)	Lack of infrastructure management refers to the insufficient and ineffective oversight and maintenance of essential urban infrastructure, including utilities, transportation systems, and public facilities. In the context of the Nelson Mandela Bay metropole, participants expressed significant dissatisfaction with the state of infrastructure, citing issues such as neglected repairs, prolonged development projects, and inadequate service provision, particularly in disadvantaged areas. This mismanagement hampers sustainable economic growth, labour market expansion, and investment, undermining the overall quality of life and economic potential of the region.

Table 2. (*Continued*).

Theme	Theme definition/conceptualisation
Pushing out potential investment and economic growth (T4)	Pushing out potential investment refers to the deterrence of local and foreign investors due to bureaucratic inefficiencies and underinvestment in infrastructure. Investment will provide economic growth. In the Nelson Mandela Bay metropole, participants highlighted how prolonged approval processes and poor infrastructure reduce investor confidence and hinder business operations, ultimately impeding economic growth. Addressing these issues is crucial to creating an attractive environment for investment and fostering a thriving EE.

In order to further validate and enrich the analysis, triangulation with secondary data, was conducted. This included applying topic modelling techniques to analyse secondary data sources such as the Nelson Mandela Bay IDP reports. Topic modelling was used to uncover additional themes and validate those identified from the interview data. Thus, the study gained a comprehensive understanding of the textual data through text data mining (i.e., topic modelling) and thematic analysis, which were used as complementary techniques to address the research question. Text data mining was chosen because it easily responds to quantitative and qualitative data to identify textual patterns in unstructured data (Antons et al., 2020).

By comparing the topics and themes extracted from the secondary data with the interview insights, the analysis confirmed the issues raised by interviewees, such as inefficiencies in land use management, infrastructure maintenance and systemic oversight. This cross-referencing of themes with documented strategic plans not only enhanced the credibility of the findings but also provided a more comprehensive view of the issues from both individual perceptions and official policy perspectives.

3. Results

The thematic analysis conducted by the authors on the interview data highlighted the four themes discussed below.

3.1. Land use issues (T1)

The Nelson Mandela Bay Metropole's Integrated Development Plan (IDP) outlines that strategic development areas for commercial activity support commercial activity (NMBM, 2021). The interview data suggested that interviewees' perception of land use was negative. Furthermore, their responses indicated that land use did not stimulate economic progress, neither investment attention nor labour mobility. The following excerpts provide data evidence, which are the responses from participants P3, P4 and P5 when probed about land use.

> The issue of land use management and, and the cost of doing business, the relationship is difficult. Let me give you an example. It will take you, let's say you want to start a factory of some sorts, or a business of some sorts, and you want to be completely legal about it. It can take you up to two to three years to get your rights, right down to approval of the building plan, where is your economic incentive there (p. 3, lines 103–103).

> No, definitely no…the town planning would understand that you cannot take 18 months to two years to rezone land from let's say residential to business use or whatever else the category of business is (p. 4, lines 145–145).

> If anything, the bylaws discourage it, if you wanted to set up a small little kiosk

on the road… Just the fact that you just have your mobile business standing somewhere there is an issue and I think that in itself is very, very discouraging (p. 5, lines 118–118).

In 2020, the National Spatial Development Framework Draft was published (South African Government, 2020). In this draft, the spatial transformation focuses on (1) reducing segregated spatial patterns; and (2) correcting social injustice and inequality to access opportunities based on segregated spatial patterns. According to the IDP, land use is supposed to promote the development and use of efficient public transformation (NMBM, 2021). In 2021, the IDP provides the direction given by the Business Chamber. Herein, the Business Chamber expresses that the municipality needs to apply sound turnaround strategies to address the delays in planning and rates clearance as it pertains to land use (NMBM, 2021). Notably, the impact on entrepreneurs is substantial. Entrepreneurs locate their businesses where the resources are made available. Therefore, strategic development areas for commercial activity are vital. However, the draft 2023–2027 IDP reported that interventions are still required to improve the ease of doing business, by prioritising land transactions and land use applications (NMBM, 2023).

3.2. Poor oversight by metropolitan leadership (T2)

A pattern regarding the poor oversight by the metropole's leadership emerged. This specifically pertained to the efficiency of the infrastructure, inter alia, information and communication, utilities, roads, electricity, water, sewerage and transport. Investment into roads and communication infrastructure raises labour mobility, access and information and stimulates economies and reduces poverty (Global Sustainable Development Report, 2016). Their responses acknowledge that repairs and maintenance of the metropole's infrastructure are not undertaken by the municipality. The claims made by the participants contradict objectives of the IDP, which specifically seeks to ensure that the infrastructure of the metropolitan is adequately maintained and supported (NMBM, 2021, p. 199). In fact, the political leader (P2) explains that the municipality underspent on its budget for infrastructure maintenance and underscores the municipality's non-compliance with the National Treasury Regulations. He (P2) comments as follows:

So, we have a serious problem with first of all infrastructure spending, new infrastructure, but we also have a problem of maintenance of infrastructure. We spending too little. I mean, that's a treasury regulation, where you must spend 8% and we not spending that, so it's a problem (p. 2, lines 354–354).

In line with the poor oversight, participant P15 revealed that the municipality hires partially qualified suppliers that do not complete their service to the region. This means that their service falls short in terms of the definition of an overall good-quality service delivery. He comments as follows:

On the digital side, installing fiber optics. They're getting companies that's partially qualified, and they dig up trenches in Port Elizabeth, install the fiber optics, but they don't refill the trenches and finishes it up to standard (p. 15, lines 324–324).

The assertion made by P15 shows that the objectives of the Standard for

Infrastructure Procurement and Delivery Management are not being met. Moreover, the South African National Treasury states that 'the effective and efficient functioning of the supply chain management system for the procurement and delivery of infrastructure will realise value for money and good-quality service delivery. Value for money may be regarded as the optimal use of resources to achieve the intended outcomes' (National Treasury, 2015, p. iii). Similarly, to support the participants' perspectives, the financial performance audit outcomes for the period 2018/2019 showed as outstanding for Nelson Mandela Bay (Municipal Money, 2020). The auditor general gave a qualified opinion about the financial statements of the municipality. A qualified opinion means that the Auditor-General has reservations about the fair presentation of the financial statements.

Investigating the spatial design of the metropole, participants explained that the spatial design of Nelson Mandela Bay has not addressed social exclusion. Thus, the efforts towards equality in terms of the city's spatial design has burdened transformation.

For instance, P2 brings attention to the living conditions of the citizens. Here he highlights that people 'are still living in shacks…people still have to walk for water'. The metropole's spatial strategy is based on three strategic documents, one being the Sustainable Community Planning Methodology (NMBM, 2021). This methodology explains that housing is a functional element to promote a minimum standard of living. However, P2 indicates that the disparities have widened by commenting as follows:

> If you look at the conditions that our people are living under, it's nothing to write home about. So, I would say hasn't done much. It hasn't done much to improve this spatial development. Definitely not. Yeah, when you see in 2020, that people are still living in shacks. People still have to walk for water (p. 2, lines 348–348).

The statements made by P2 are supported in the following three excerpts. The participants reveal how the current structure of the city has major disparities in standards of living. In fact, as mentioned in the IDP, the existing pattern is based on historical segregation (NMBM, 2021, p. 106). Participants P5, P7 and P8 qualify their statements as follows:

> Show me a picture from 1986 of townships. Show me a picture from today of the same country. And I'll give you a nice game of spot the difference. Because there'll be none and that's basically where we are, you know, It's exactly the same, if not worse (p. 5, lines 125–125).
>
> Not much. I have been here for five years now, I have not seen, apart from Bay West. Look, the Northern Areas itself is not a priority (p. 7, lines 83–83).
>
> We have Historical problems. So, this Stanford Road, let's say this is the entrance to the township, to Motherwell and so on, there was always one way in and one way out. It was designed like that specifically from a military perspective, for control (p. 8, lines 241–241).

3.3. Lack of infrastructure maintenance (T3)

In South Africa, National Treasury broadly defines infrastructure as the "spending on new assets; replacements; maintenance and repairs; upgrades and additions; and rehabilitation, renovation and refurbishment of assets" (National

Treasury, 2021, p. 139). However, when asked about the infrastructure in the metropole, the participants felt very negative about the state of infrastructure. Excerpts from participants P7, P9, P10, P14 and P15 are provided as data evidence.

There's a little informal it's just a square, and people have little stalls in there, there are herbalists, people making these big pots for Incomboti …So let's call it a mini mall probably hosting about 10 entrepreneurs in very basic structures …it's so full of potholes and holes that that now either run off of water (p. 7, lines 95–95).

But the problem is the servicing of any the infrastructure is very poor. Very, very, very poor. For example, if you look at this bus, rapid transport system, it took us so many years from one mayor to the other to get where we are… it's almost 15 years that we are sitting with this thing (p. 10, lines 249).

Utilities, a lot can still be done. Roads, not a really great job. Water and sewerage are terrible in the townships, I don't know why they don't pay attention to it (p. 14, lines 149–149).

If you look at the city planni–149ng in Port Elizabeth, the industrial infrastructure need attention. We are a blue-collar city in Port Elizabeth. Upgrading of industrial areas like, Markman Township, around the Airport, Industrial Park at Walmer...If businesses there can be supported to ramp up the infrastructure for industrial parks, they can essentially feed the community with work and upskill the community right next to it (p. 15, lines 318–318).

The access to and maintenance of infrastructure is vital for sustainable economic growth, labour market expansion and foreign investment. Businesses competing in a location are influenced by the quality of their surrounding space, land and infrastructure (Audretsch et al., 2015; OECD, 2019). It is evident from their responses that the city suffers from poor efforts to maintain the infrastructure, in terms of repairs and maintenance. Furthermore, this ties in with the T2 "Poor oversight by metropolitan leadership" since townships and so-called Northern Areas of Nelson Mandela Bay have seen limited reform. The Draft 2023–2027 IDP reports multiple issues related to infrastructure, which must be addressed from a backlog of tarring gravel roads, ageing infrastructure, and economic infrastructure for development, amongst others (NMBM, 2023).

3.4. Pushing out potential investment and economic growth (T4)

Local and foreign investment are argued as essential for local economic development and a product of an efficient entrepreneurial ecosystem. Participants felt that the poor focus on urban planning reduced foreign investors' appetite to do business in the city. The excerpts taken from participants P3, P4 and P15 highlight how (1) bureaucracy impedes on growth opportunities and (2) infrastructure underinvestment affects the logistics of a business to easily access its value chain of suppliers and customers. The responses from participants P3, P4 and P15 are as follows:

The issue of land use management and, and the cost of doing business, the relationship is difficult. Let me give you an example... let's say you want to start a factory of some sorts, or a business of some sorts, and you want to be completely

legal about it. It can take you up to two to three years to get your rights, right down to approval of the building plan, where is your economic incentive there (p. 3, lines 103–103).

I know two German investors here that bought land down in the Seaview area where they were going to do huge developments. Because it took so long, both actually sold the land at less their cost price. They just got frustrated. Now, there's very, very fundamental decisions in business and the local government are in control (p. 4, lines 199–199).

Foreign Direct Investors is not going to come to a city that got potholes, and their logistics can't drive to the areas to service their suppliers or their clients (p.15, lines 324–324).

If you drive into Deal party, there are potholes as big as a house, everything is going backwards. So that's why businesses don't want to move in there anymore (p. 15, lines 320–320).

The IDP for Nelson Mandela Bay seeks to promote investor and public confidence (NMBM, 2021). Therefore, addressing the varying spatial needs is vital for sustainable economic growth, labour market expansion and foreign investment. For instance, Rwanda has become a strong case study for its ease of doing business. The country ranks 38th out of 190 countries in the world in terms of ease of doing business (The World Bank, 2019a). Rwanda is recognised as a one-stop-shop for investors, where a company is registered in less than six hours. They also rank second on the African continent. The country's success is attributed to its supportive ecosystem for businesses. However, the Nelson Mandela Bay Municipality IDP indicated that the cost of doing business in the city was high compared to other cities in South Africa (NMBM, 2021). Subsequently, South Africa's National Treasury is attempting to lower the cost of doing business in the city to improve the scores and the current draft Nelson Mandela Bay IDP for 2023–2027 outlines that the key priorities of the Chamber include a resurgence drive to get the city working again, leading to unlock the Bay's potential as a world-class port city and investment destination (NMBM, 2023).
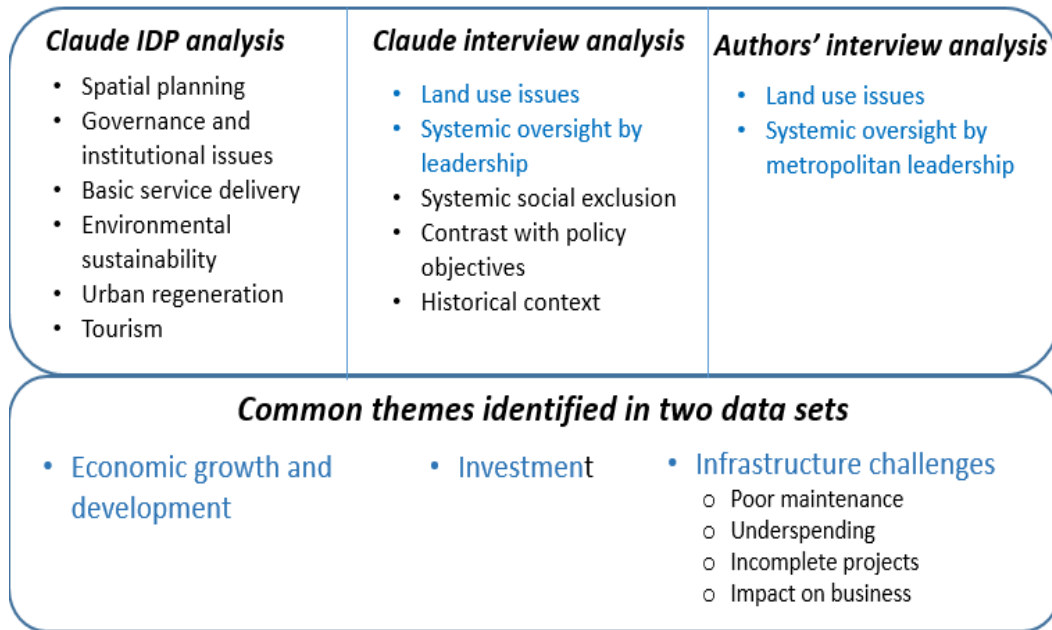
Figure 1. Thematic analyses of the two data sets.

The triangulation of the data produces common themes, which validate the findings (Weyers et al., 2008). Data triangulation is the process of using multiple methods and data sources to gain a more comprehensive understanding of the data. The two data sets analysed were the interview data set and the NMB IDP. **Figure 1** illustrates the themes from the analyses that were conducted on the two data sets, the interviews and the NMB IDP by the authors and Claude. The common themes identified in all three data analyses are presented at the bottom of **Figure 1**. All three sets of analysis identified the importance of economic development, investments and infrastructure challenges that Nelson Mandela Bay faces. The Claude IDP analysis highlighted special planning and institutional issues. The analysis by the authors and Claude using the interview data collected in the study, highlighted similar themes, namely land issues and poor oversight by leadership, as well as the three common themes identified, namely Investment, Economic growth and infrastructure challenges.

4. Discussion

This research builds upon existing studies that assert the benefits of effective spatial design, land use and infrastructure in leveraging agglomeration economies for organisations (Azmi and Azmi, 2023; Dubou et al., 2022). Urban planning's primary role is to foster commercial activity and service provision, thereby contributing to sustainable development and an enhanced quality of life. Efficient use of land, space, trade networks and settlement structures are crucial for achieving these objectives. By creating a competitive urban landscape, cities can attract entrepreneurs, investors and human capital, driving economic growth and innovation.

The qualitative analysis reveals that Nelson Mandela Bay faces significant challenges related to underinvestment and poor fiscal sustainability in the domains of space, land and infrastructure. These deficiencies result in lost economic opportunities, including diminished access to labour, suppliers and customers. The negative impact

on entrepreneurial development is evident through high unemployment, limited labour mobility and reduced innovation and investment. Industrial areas, which traditionally serve as key employment nodes, are deteriorating, leading to fewer employment opportunities and hindering business attraction. Furthermore, the metropole has not fully capitalised on the potential of land use, such as developing mixed-use nodes that could stimulate commercial activity. The delays and complexities associated with rezoning land further degrade the region's unattractiveness to both domestic and foreign investors. Infrastructure issues also emerged prominently.

The broader context of Sub-Saharan Africa, one of the world's poorest regions with an anticipated population doubling over the next twenty years (United Nations, 2018), underscores the significance of urban planning. The World Bank (2019b) reports that countries with limited financial resources exhibit a negative correlation with per capita income. As urbanisation and localisation economies are crucial drivers of development, accounting for over 80% of global GDP, focusing on effective urban planning can diversify supply chains, enhance labour mobility and attract both knowledge workers and investors.

This study identified four key themes through thematic analysis by the authors and Claude, namely land use issues, poor oversight by metropolitan leadership, lack of infrastructure maintenance and adverse impacts on potential investment and economic growth. These themes highlight the critical interplay between urban planning and economic development. The NMB covers an area of 1959km^2, which includes 338 167 formal households and 28 174 informal households in 156 informal settlements (NMBM, 2023), requiring extensive infrastructure maintenance. The findings extend the current literature by demonstrating how regressive land use and poor infrastructure management hinder entrepreneurial activity. Consistent with Porter's (1990), Isenberg's (2011) and Oladele and Bamkole's (2024) research, effective land use and infrastructure are vital for nurturing a supportive business environment and an EE.

To validate the findings, qualitative data were cross-referenced with secondary sources from the Nelson Mandela Bay Integrated Development Plan (MDBM, 2023). This alignment confirms that the systemic issues identified such as land use inefficiencies and infrastructure challenges are consistent with the strategic objectives outlined in the Integrated Development Plan (IDP). This validation not only supports the thematic findings but also provides a comprehensive view of the practical implications of urban design for entrepreneurs and existing organisations. AI analysis of the IDP emphasised Infrastructures Challenges and Development and Economic Development and Investment, which triangulate with the study's data analysis (**Figure 1**). Triangulation increases confidence in the findings by combining findings from two or more rigorous approaches (Heale and Forbes, 2013).

The analysis highlights the urgent need for strategic improvements in land use and infrastructure management. The IDP (NMBM, 2023), for example, indicates that roads maintenance backlogs amount to approximately R7 billion for 750 km. Metropolitan leaders should focus on optimising land use to develop mixed-use nodes that integrate residential, community and commercial elements, aligning with Nelson Mandela Bay's development plan (NMBM, 2021). Additionally, maintaining and enhancing industrial areas is crucial, as these zones significantly contribute to

employment and knowledge exchange, akin to successful EEs described by Porter (1990) and others.

Reducing bureaucratic inefficiencies is also essential for attracting investment. Simplifying zoning processes and expediting approvals can lower barriers for entrepreneurs and enhance the region's business appeal. The high costs and delays associated with building plan approvals create economic disincentives. Therefore, streamlining zoning regulations and addressing these inefficiencies are critical steps. This recommendation is supported by findings on the negative impact of regulatory delays (NMBM, 2021). Moreover, investing in infrastructure, particularly in transportation and communication, will alleviate supply chain constraints and bolster regional connectivity, thereby supporting overall economic growth and innovation (Brown and Mason, 2017; Global Sustainable Development Report, 2016). The Herald newspaper reported that the Nelson Mandela Bay municipality spent less than 40% of its annual budget and as a result, it would lose ZAR523 million in grant funding from national treasury. Most of this budget is allocated to infrastructure development (Bonani, 2024).

5. Conclusion

Urban planners should consider the challenges related to land use management highlighted by the negative perceptions of interviewees. Streamlining bureaucratic processes and improving land use management are essential to address issues such as lengthy rezoning procedures and inefficient land allocation. The key themes that emerged from the three analyses that influence the metropole's design and structure for the EE, were, Land use issues, Leadership oversight, Investment and Economic development and Infrastructure challenges. Infrastructural deficiencies and challenges are faced by other major African cities, such as Lagos in Nigeria (Oladele and Bamkole, 2024). The findings emphasise the urgent need for reforms to improve infrastructure maintenance, oversight and investment. The current deficiencies in infrastructure, as noted by participants, such as inadequate repairs and maintenance and the poor quality of services, are detrimental to the metropole's economic growth and investment attractiveness. The poor state of infrastructure directly impacts labour mobility, business operations and overall economic vitality. Integrating these considerations into urban planning practices will contribute to a more equitable and economically vibrant city, ultimately enhancing the overall quality of life for its residents, aligning with the Right to the City Theory and SDGs 8, 9, 11.

Conflict of interest: The authors declare no conflict of interest.

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