

A Systematic Review of Entrepreneurial Infrastructure Scholarship in the last fifteen years (2010-2024)

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Abstract

Entrepreneurial Infrastructure (EI) is an emerging concept observed to be grossly under researched, hence the need to explore the phenomenon. This study therefore aimed to systematically review extant EI literature, published within the last fifteen years (2010-2024), in order to offer recommendations for future research based on identified research gaps. In order to answer the study's research questions, the Systematic Quantitative Assessment Techniques (SQAT) was adopted in identifying and analyzing 30 peer-reviewed journal articles on EI, downloaded from 4 high-quality academic databases: Emerald, Elsevier, Springer, and Sage. Furthermore, the articles were reviewed along 6 main groups, including: geographical distribution; time distribution; research methods; articles type; theories adopted; and thematic areas of the articles. Findings of the review revealed that: there is a dearth of EI literature in Africa, Australia and South American countries; there is need for more publications in the field of EI in order to make up for the low publications in 2014, 2016, 2017, 2018, 2020, 2021 and 2024. 77% of the articles reviewed were empirical in nature, only 23% were conceptual, 12 of the 30 articles reviewed used at least one theory to support their studies, however, 18 articles did not use any theory; there is limited adoption of mixed research, and qualitative research methods; and, infrastructure investment is the most explored EI theme. The study significantly highlights the geographical gaps in EI literature, emphasizing the need for more diverse research methodologies and theoretical frameworks, and identifying the predominance of empirical over conceptual studies in EI literature.

Keywords: Entrepreneurial infrastructure, entrepreneurial initiatives, entrepreneurial education, infrastructure investment

1.0 Introduction

In 1994, a group of scholars (Teck-Meng T., Wee-Liang T., and John Y.) were interested in knowing why entrepreneurial ventures thrive more in some geographical regions than observed in some other regions of the world. It was found that the presence of some special kind of infrastructure were responsible for the higher degree of entrepreneurial activities in those regions, hence the conceptualization of those special kind of infrastructure as Entrepreneurial Infrastructure (EI) (Tan *et al.*, 1994; Usman *et al.*, 2022;

Bodolica *et al.*, 2024). The scholars therefore described EI as the facilities, resources, and services which are present in a geographic area and support the creation and expansion of entrepreneurial ventures (Usman *et al.*, 2022; Klingler-Vidra & Chalmers, 2023; Bodolica *et al.*, 2024). EI includes physical components like industrial parks, transportation infrastructure, communication systems, and utilities, as well as the nonphysical infrastructure components like financial support services, business clusters and incubators, access to market, networking opportunities and access to entrepreneurial training among others.

Bridging these EI gaps and nurturing entrepreneurial initiatives are essential steps to reducing unemployment and alleviating poverty, particularly in developing nations. Investing in EI therefore is key to cultivating an environment where entrepreneurial activities can thrive and flourish in a manner that drives productivity and foster inclusive economic development. EI plays an important role not only in fostering entrepreneurial development, but also in creating an environment conducive for new venture creation and growth (Chronopoulou *et al.*, 2024; Weerasekara and Bhanugopan, 2023). In developing nations, where these resources/facilities are mostly limited, having access to a robust EI can significantly enhance productivity, innovation, and competitiveness of an enterprise, as it offers entrepreneurs with the necessary support systems needed to stimulate sustainable economic progress (Ramakrishna *et al.*, 2024).

Most EI related studies have focused more on empirical examination of the phenomenon, hence the need for a systematic review of the concept in order to provide a clearer understanding of how EI fosters entrepreneurial development and venture growth. This study also highlights research gaps, guiding future studies to address these deficiencies and contribute to a more robust body of knowledge. The remaining part of this study is arranged as follows: The next section is methodology section, which presents the method and processes adopted in the systematic analysis of the papers reviewed in this study. The succeeding section shows findings of this study, and further highlights suggestions for

further studies, lastly, limitations of the study, conclusion and recommendation section concluded the paper.

2.0 Methodology

This current study utilized the "Systematic Quantitative Assessment Technique" (SQAT) formulated by Pickering and Byrne (2014) to analyze existing peer reviewed journal articles on EI. This technique's step-by-step approach enabled the researchers to pinpoint gaps in the reviewed articles on the basis of geographic distribution, theories adopted by the studies, methodologies used, thematic areas of focus, as well as the nature of the articles reviewed (conceptual, or empirical). This review is aimed at identifying research gaps, and offering guidance for future studies in this domain. From a managerial standpoint, recognizing these gaps will highlight issues that need prompt attention. Table 1 presents a description and application of SQAT as employed in this study, showing the steps followed in conducting this study.

Table 1: Description and application of SQAT

S/N	Steps	Application in current study
1	Define topic	Entrepreneurial Infrastructure related literature
2	Formulate research questions	Five research questions: <ol style="list-style-type: none"> In the context of which countries and continents were the articles written? What is the year of publication of the reviewed articles? What is the nature of the reviewed EI related articles (Conceptual or Empirical)? Which theories were adopted in the reviewed articles? What research methodologies were adopted by the reviewed articles? What are the EI themes examined in the articles?
3	Identify key Words	"Entrepreneurial Infrastructure" (EI)
4	Identify and search Databases	<ol style="list-style-type: none"> Four databases utilized: Emerald, Elsevier, Sage, and Springer. "All in title" search using the exact phrases below: <ol style="list-style-type: none"> "Entrepreneurial infrastructure" Entrepreneurial + infrastructure Entrepreneurship + infrastructure
5	Read and assess Publications	<ol style="list-style-type: none"> Abstracts of the journal articles found were read by the researchers to be sure they were very related to EI. All articles that were literature reviews, book chapters as well as conference proceedings were not included; only peer reviewed conceptual as well as empirical papers were considered in this systematic review.

Source: Authors (2024)

A total of 30 peer-reviewed journal articles (all in English language) on EI met the selection criteria. The articles are all of high-quality, and were sourced from 4 various databases, including Emerald, Elsevier, Sage, and Springer. Focus was on articles published within the last fifteen years (2010–2024). This time frame was to ensure that a lot more EI related studies are captured in the study, considering the dearth of studies in the field of EI. The broader range of studies related to EI will help in addressing the scarcity of research in this field. It will also enable researchers to examine the progression of literature over the years and capture recent advancements. It is important to note that all the articles were downloaded on 10th June, 2024. Table 2 presents all the articles downloaded from the different databases searched.

Table 2. Number of articles downloaded

S/N	Database	Number of articles
2	Emerald	5
3	Elsevier	19
4	Springer	4
5	Sage	2
Total		30

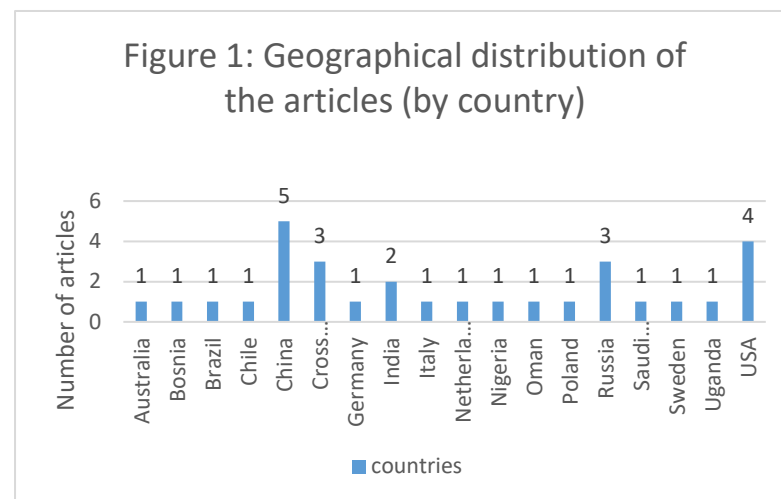
Source: Authors (2024)

3.0 Findings, discussions and suggestions for future research

This section presents the findings of the systematic review conducted by the researchers, involving the review of 30 peer reviewed journal articles downloaded from various high quality journals.

3.1. Geographical Distribution of Articles

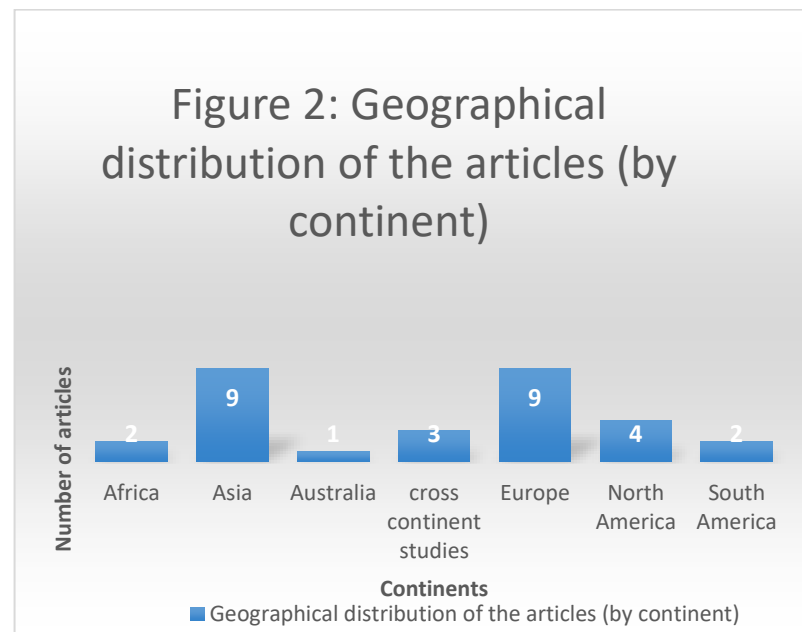
This section begins with the geographical distribution of EI related articles, presented from both country and continental perspectives as seen in Figures 1 and 2. Figure 1 presents the geographical distribution of the 30 entrepreneurial infrastructure related articles reviewed.



Source: Authors' review (2024)

A systematic review of the articles from country perspective revealed that 17 countries were represented in 27 articles, while 3 of the articles were cross country based (conducted in the context of various countries). As seen in Figure 1, the top 4 countries represented in the review included China with 5 publications, USA with 4, and then Russia with 3 publications. The cross country based studies were also 3, while India had 2 publications. The remaining countries which included Australia, Bosnia and Herzegovina, Brazil, Chile, Germany, Italy, Netherland, Nigeria, Oman, Poland, Saudi Arabia, Sweden, Uganda all had one publications each, which points to a dearth of EI-related literature in many countries, which may impede the development of effective entrepreneurial strategies and policies tailored to their unique economic and cultural contexts. The review further reveals the significant disparities in the representation of countries in the field of EI research, highlighting the top four countries being at the forefront of EI research. However, the limited contributions and lack of robust EI literature from the remaining underrepresented countries could negatively affect entrepreneurship development by limiting access to valuable insights and innovative practices derived from EI research. Without a strong foundation of EI knowledge, policymakers and educators in these countries may struggle to develop effective programs that foster entrepreneurial skills and mindsets. To address this situation,

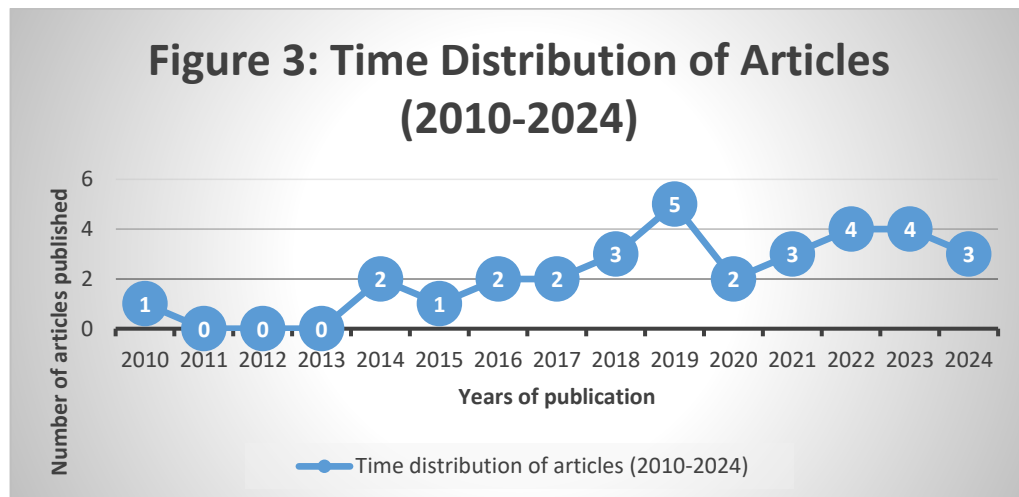
concerted efforts should be made to encourage and support EI research across a broader-range of countries.



Source: Authors' review (2024)

The review showed that Asia and Europe has the most number of Entrepreneurial Infrastructure related articles published within the period under review, with each of them having 9 publications, followed by North America with 4 publications, then 3 publications were cross continental (cutting across various continents). South America and Africa both had 2 publications each, then Australia had the least number of articles in this area of investigation. This finding further highlights a geographical research gap in entrepreneurial infrastructure research, with Australia, South America, and Africa having minimal publications. It further highlights the need to address these identified gaps, through the promotion and funding of more research projects in these underserved continents by providing grants, establishing partnerships with local institutions, and hosting awareness events.

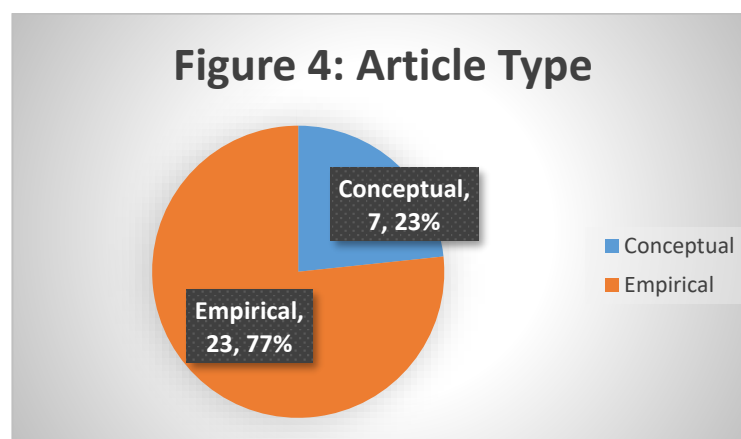
3.2 Time Distribution of Articles (2010-2024)



Source: Authors' review (2024)

Following this systematic review of 30 journal articles published within the last 15 years (2010-2024), findings highlight significant research gaps, particularly in the uneven distribution of studies over the years as presented in Figure 3, which revealed that a peak was attained in 2019 when 5 articles were published, followed by 2022 and 2023 with 4 publications in each of the years. Low publications were recorded in 2018, 2021 and 2024 with 3 publications in each of the years, while only 2 publications were recorded in the years 2014, 2016, 2017, and 2020. However, the sparse output in certain years, notably 2010 and 2015 with only one publication each, and the complete absence of publications in 2011, 2012, and 2013, underscores a critical inconsistency in EI research focus. This inconsistency points to serious research gaps in exploration and development of the field of EI.

3.3 Article Type



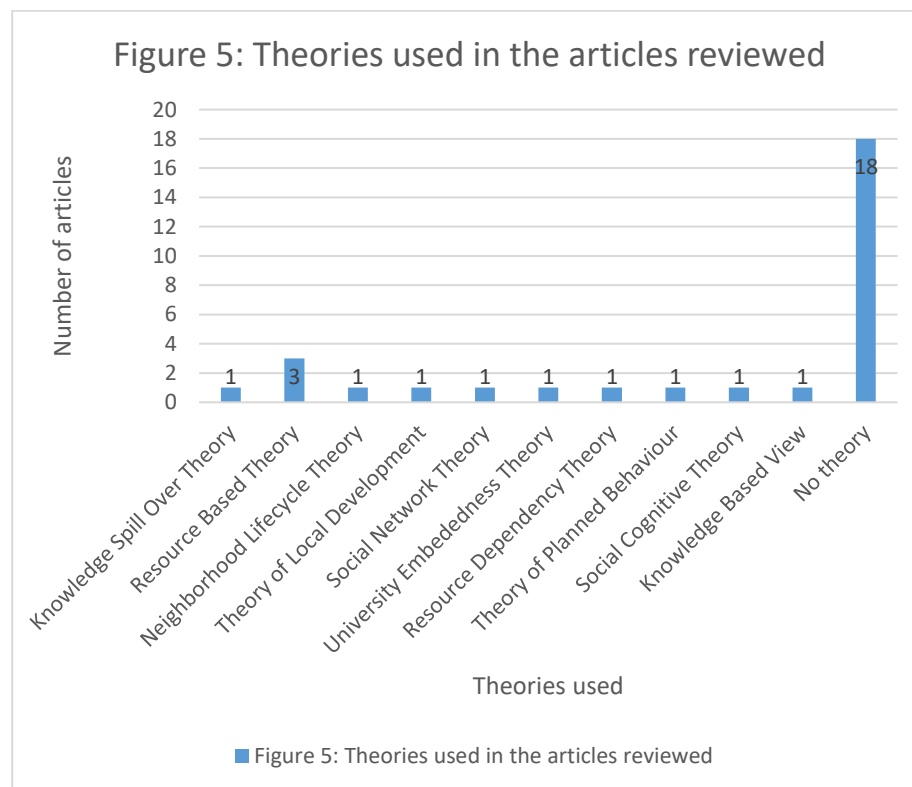
Source: Authors' review (2024)

Figure 4 presents a breakdown of the articles reviewed in this study, grouped into two on the basis of the articles type (empirical or conceptual). Findings showed that a large

number of the articles reviewed (77%) were empirical in nature (Audretsch *et al.*, 2015; Burhan *et al.*, 2017; Peters *et al.*, 2018; Bennett, 2019; Morozova *et al.*, 2019; Orlandi *et al.*, 2021; Ma *et al.*, 2021; Huang *et al.*, 2023; Bodolica *et al.*, 2024). Empirical studies are research investigations that collect and analyze data from real-world observations or experiments to derive conclusions about specific phenomena. The empirical studies in this study provide evidence-based insights into the effectiveness of various support systems, such as funding mechanisms, policy or regulatory frameworks, educational programs, and networking opportunities, that facilitate entrepreneurship growth. However, the remaining studies were all conceptual in nature (23%), and highlight the limited number of conceptual articles reviewed in this study (Yarahmadi and Magd, 2016; Muñoz *et al.*, 2020). These conceptual studies explain complex phenomena, and provide theoretical foundations for better understanding of how various elements of the entrepreneurial infrastructure affect entrepreneurial activities.

3.4 Theories adopted

This section presents a review of the theories used in the extant Entrepreneurial Infrastructure scholarship covered in this study, which are here presented in Figure 5



Source: Authors' review (2024)

As observed in Figure 5, 12 of the 30 articles reviewed used a minimum of one theoretical underpinning their studies, and these theories include: Knowledge Based View, Knowledge Spill Over Theory, Neighborhood Lifecycle Theory, Resource Based

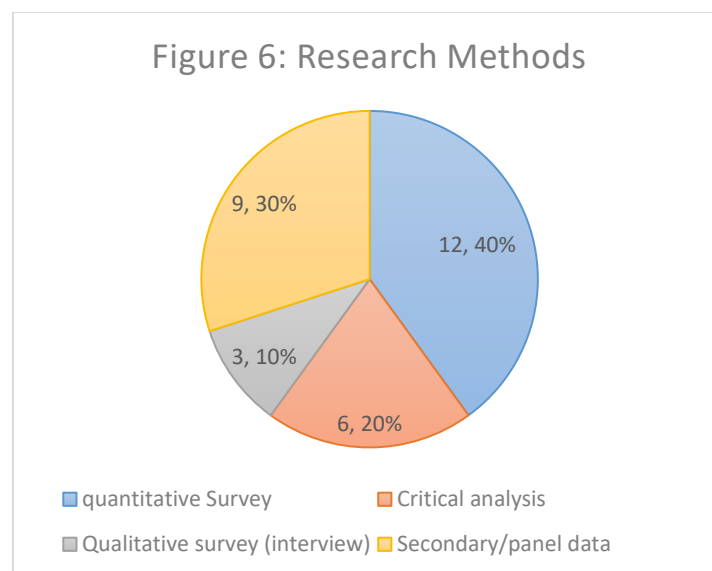
Theory, Resource Dependency Theory, Social Cognitive Theory, Social Network Theory, Theory of Local Development, Theory of Planned Behaviour, and University Embeddedness Theory (Fox, 2014; Ojha *et al.*, 2016; Krakowiak-Bal *et al.*, 2017; Peters *et al.*, 2018; Kumar and Das, 2019; Bennett, 2019; Schade and Schuhmacher, 2022; Wu *et al.*, 2023; Weerasekara and Bhanugopan, 2023; Rådberg and Löfsten, 2024; Bodolica *et al.*, 2024). However, majority of the articles reviewed (18 of them) did not use any theory in explaining the relationship between the variables investigated, and therefore had no theoretical underpinning their studies (Meijer *et al.*, 2010; Yarahmadi and Magd 2016; Medakovic and Vaskovic, 2018; Isichei *et al.*, 2018; Muñoz *et al.*, 2020; Orlandi *et al.*,

2021; Ngoma *et al.*, 2021; Panagariya, 2022; Kuebart, 2022; Huang *et al.*, 2023). The presence of a theoretical framework in research is important as it guides the research

design, methodology, and interpretation, ensuring consistency and coherence while facilitating the generalization of findings and contributing to knowledge. The lack of theory in many of the studies reviewed, as highlighted in this systematic review, signifies a significant research gap in entrepreneurial infrastructure literature that needs to be addressed. This gap hinders the ability of researchers to synthesize findings, develop robust evidence-based practices, and encourages descriptive rather than analytical research. Addressing this gap would improve the overall quality and coherence of research, thereby advancing scientific understanding and application.

3.5 Research Methods adopted

Figure 6 presents the research methods adopted by the entrepreneurial infrastructure studies reviewed

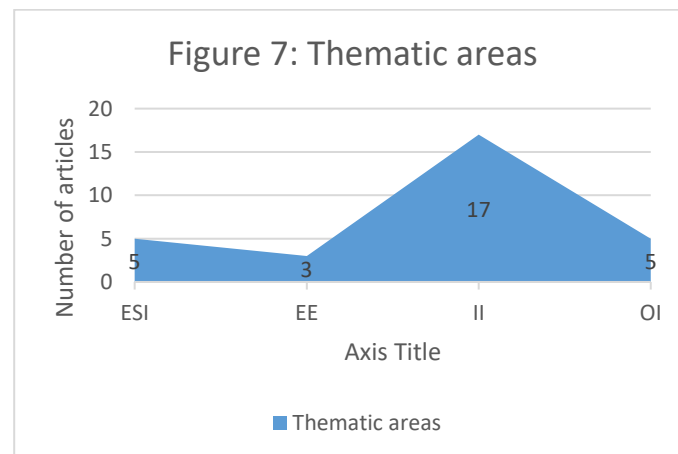


Source: Authors' review (2024)

The review of entrepreneurial infrastructure literature revealed four primary research methods including: quantitative survey, panel data analysis, critical analysis method and qualitative research method. 40% of the studies used quantitative survey research method, which involved collecting primary data through closed-ended questionnaires from stakeholders or respondents (Ojha *et al.*, 2016; Krakowiak-Bal *et al.*, 2017; Ngoma *et al.*, 2021; Bodolica *et al.*, 2024). Similarly, 30% of the studies used panel data analysis, recorded as the next most widely used method, which relied on secondary data from annual reports and other verifiably documented sources (Peters *et al.*, 2018; Bennett, 2019; Panagariya, 2022; Huang *et al.*, (2023). Furthermore, 20% of the articles reviewed were conducted using critical analysis method (Yarahmadi and Magd, 2016; Muñoz *et al.*, 2020). The last 10% of the articles reviewed are those that adopted qualitative research method, relying on interviews as means of primary data collection from study participants (Meijer *et al.*, 2010; Orlandi *et al.*, 2021; Rådberg and Löfsten, 2024). The review identified the limited use of mixed-method approaches, with most studies relying on either quantitative or qualitative methods alone. Second, qualitative research is underutilized, representing only 10% of the studies, suggesting a need for more in-depth, context-specific insights.

3.6 Thematic areas

Figure 7 presents the entrepreneurial infrastructure literature grouped into four (4) themes, namely: Entrepreneurship Education (EE), Infrastructure Investment (II), Organisational infrastructure (OI), Entrepreneurial Social Infrastructure (ESI).



Source: Authors' review (2024)

A review of 30 EI articles in this study revealed that majority of the articles (17 of them) focused on Infrastructure Investment, which describes allocation of resources towards the development, maintenance, and improvement of structures and facilities that support entrepreneurial activities and general quality of life (Biygautane *et al.*, 2019; Bennett, 2019; Kuebart, 2022; Luo *et al.*, 2022; Wu *et al.*, 2023; Li *et al.*, 2023). These include investments in transportation networks, telecommunications services, regulatory

frameworks and other support systems that enable businesses to flourish. Such investments are critical for economic growth, and social well-being. This was followed by a group of 5 studies which centered their studies on entrepreneurial social infrastructure, which describes the network of socio-cultural, and institutional resources that support entrepreneurial activities within a community (Woolley, 2014; Kumar and Das, 2019; Peters *et al.*, 2018; Muñoz *et al.*, 2020). This comprises formal structures like business incubators, financial institutions, and educational programs, as well as informal networks such as mentorship, community support, and cultural attitudes towards innovation and risk-taking. Another set of 5 articles reviewed also focused on organizational infrastructure which explains the framework of systems, processes, policies, and resources within an organization that support its operations, and strategic objectives (Ojha *et al.*, 2016; Orlandi *et al.*, 2021; Panagariya, 2022). It includes both tangible elements like physical facilities, and equipment, as well as intangible aspects such as organizational culture, decision making processes, and human resources practices.

The last set of 3 articles reviewed explored the concept of entrepreneurship education, which describes imparting of knowledge, skills, and attitudes necessary for individuals to identify entrepreneurial opportunities, initiate and manage ventures, as well as navigate the challenges of business creation and growth (Yarahmadi and Magd, 2016; Rådberg and Löfsten, 2024; Bodolica *et al.*, 2024). This review reveals a research gap in the exploration of identified themes of entrepreneurial infrastructure, with the majority of the focusing on infrastructure investment, leaving only a few of them articles focusing on entrepreneurial social infrastructure, organizational infrastructure, and entrepreneurship education. This disparity indicates the need for deeper investigations into these under-explored areas to facilitate a holistic understanding and support of entrepreneurial development. Identifying and addressing this research gap is crucial as it ensures a well-rounded approach to fostering entrepreneurship by recognizing the importance of socio-cultural support systems, internal organizational frameworks, and educational initiatives alongside traditional infrastructure investments.

4.0 Conclusion and Recommendations

This study reviewed 30 peer-reviewed journal articles on EI along 6 main groups, including; geographical distribution, time distribution, research methods, articles type, theories adopted, as well as thematic areas of the articles. Findings revealed a dearth of EI-related literature in several countries, which may impede effective entrepreneurship development in such countries. Continentally also, the dearth of EI literature was more evident in Africa, Australia and South American countries. This study also highlights the need for more publications in the field of EI in order to make up for the low publications

in 2014, 2016, 2017, 2018, 2020, 2021 and 2024. Findings further showed that although a number of EI studies have been carried out, there is still substantial dearth of conceptual studies in this area. Also, a lack of theory was discovered in majority of the studies reviewed, which signifies a substantial gap in EI literature. Furthermore, the review highlighted the limited adoption of mixed-method approaches, with most studies relying on either quantitative or qualitative methods alone, also that qualitative research was

underutilized. Lastly, this review revealed a research gap in the exploration of identified themes of EI, with the majority of them focusing on infrastructure investment. This disparity indicates the need for deeper investigations into these under-explored areas to facilitate an all-inclusive understanding and support of entrepreneurial development.

Certain limitations that present opportunities for further research in EI literature were identified: firstly, this study only includes studies published between 2010-2024, which may miss valuable insights from earlier publications. Secondly, it used title search in four (4) high-quality, peer-reviewed databases, which may not cover all relevant literature. Future systematic reviews could expand their scope by including more databases. Additionally, the review focused solely on English journal articles, excluding potentially insightful book chapters and conference proceedings. Despite relying on title searches rather than keyword searches, this study presents a comprehensive overview of current EI research and highlights key areas for future exploration.

Based on the findings of this study, the following recommendations are hereby proposed: there should be increased research efforts in countries with a notable dearth of EI-related literature, particularly in Africa, Australia, and South America; there should be promotion and prioritization of EI publications to ensure continuous development in the field; more conceptual research should be encouraged to address the significant gap in theory within EI studies; integrate mixed-method approaches in future studies to enrich data and insights; enhance the use of qualitative research methodologies, which are currently underutilized,

to provide deeper, context-rich insights into EI; and lastly, diversify the thematic focus of EI research to include the under-explored areas, thus facilitating a more holistic understanding of EI.

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