

Knowledge Transfer and Entrepreneurship in Industrial Hubs in Nigeria



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by

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ABSTRACT

This thesis explores the utilisation of industrial hubs in Nigeria and their crucial role in fostering manufacturing and entrepreneurial capabilities required for economic development. Despite the increasing number of clusters and Special Economic Zones (SEZs) in Nigeria, significant gaps still exist in our understanding of their performance and the implications for an economic development strategy that prioritises their growth. To address this issue, extensive qualitative research was conducted on the Lekki Free Trade Zone, a Chinese SEZ, and the Yaba tech cluster, one of Africa's most dynamic tech clusters. The research aimed to provide insights into the operations and performance of these hubs by analysing learning and knowledge transfer mechanisms in the SEZ, the role of entrepreneurs and non-state actors in building institutions in the cluster and the state's role in these processes.

The study makes the following arguments. First, SEZs offer local workers and firms learning opportunities, but several obstacles, including the absorptive capacity of local workers and firms, motivations, and characteristics of SEZ firms, and the SEZ policy and incentive framework, have hindered knowledge transfer between the SEZ and the domestic economy. Second, the cluster's entrepreneurs and non-state actors have enabled the emergence of an entrepreneurial ecosystem by building critical entrepreneurship institutions to address resource gaps in human capital development, entrepreneurship support, and finance. Finally, state interventions in the ecosystem are more effective when there is active collaboration and engagement between the state and ecosystem actors, as opposed to top-down approaches where such engagement is minimal. The thesis draws from multiple data sources, including semi-structured interviews with various stakeholders, documentary sources and non-participant observation.

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ACRONYMS AND ABBREVIATIONS

AVDD	Aso Villa Demonstration Day
BOI	Bank of Industry
CAC	Corporate Affairs Commission
CALIL	China–Africa Lekki Investment Limited
CBN	Central Bank of Nigeria
CRCC	China Railway Construction Corporation Limited
DSS-	Department for State Services
ECTZs	Economic Cooperation and Trade Zones
EDC	Entrepreneurship Development Centres
EE	Entrepreneurial Ecosystem
EPZs	Export Processing Zones
ERGP	Economic Recovery and Growth Plan
FDI	Foreign Direct Investments
FEAP	Family Economic Advancement Programme
GDP	Gross Domestic Product
GPNs	Global Production Networks
GVCs	Global Value Chains
ICT	Information Communication Technology
IMF	International Monetary Fund
ISI	Import Substitution Industrialization
IT	Information Technology
LFTZ	Lekki Free Trade Zone
LFZDC	Lekki Free Zone Development Company
LSETF	Lagos State Employment Trust Fund
MAN	Manufacturers Association of Nigeria
MCDE	The Federal Ministry of Communications and Digital Economy
MDAs	Ministries, Departments and Agencies
MITI	The Federal Ministry of Industry, Trade and Investment
MOFCOM	Ministry of Commerce, China
MSMEDF	Micro, Small and Medium Enterprises Development Fund
MSMEs	Micro, Small and Medium Enterprises
MSTI	The Ministry of Science, Technology, and Innovation

NACB	Nigerian Agricultural Cooperative Bank
NACRDB	Nigerian Agricultural Rural Development Bank
NAFDAC	Nigerian Agency for Food and Drug Administration
NBCI	Nigerian Bank for Commerce and Industry
NCS	Nigerian Bank for Commerce and Industry
NEEDS	National Economic Empowerment and Development Strategy
NEPZA	Nigeria Export Processing Zone Authority
NERFUND	National Economic Reconstruction Fund
NGOs	Non-Governmental Organisations
NIDB	Nigerian Industrial Development Bank
NIRP	National Industrial Revolution Plan
NIS	National Innovation System
NIS	Nigeria Immigration Service
NITDA	National Information Technology and Digital Economy
NPF	Nigeria Police Force
OECD	Organisation for Economic Cooperation and Development
OGFTZ	Ogun Guangdong Free Trade Zone
PPP	Public-Private Partnership
PWC	Price Waterhouse Coopers
RIS	Regional Innovation System
SAPs	Structural Adjustment Programme
SAPs	Structural Adjustment Programmes
SARS	Special Anti-Robbery Squad
SEZs	Special Economic Zones
SMEDAN	Small and Medium Enterprises Development Agency of Nigeria
SMEs	Small and Medium Enterprises
SMIEIS	Small and Medium Industries Equity Investment Scheme
SON	Standards Organisation of Nigeria
TNCs	Transnational Corporations
WTO	World Trade Organization
YoUWIN	Youth Enterprise with Innovation in Nigeria

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Map of Nigeria



Source: [Nations Online Project](https://www.nationsonlineproject.com)

1. Introduction

1.1 The importance of studying industrial hubs

In recent years, many developing countries have embraced the development of industrial hubs as part of their strategies for catch-up and structural transformation. These hubs are defined as a ‘generic expression of economic agglomeration and industrial clusters of economic activities that have evolved since the industrial revolution resulting in reduced transaction costs, external economies of scale, learning and innovation, and linkages in the development of industrialisation and capitalism’ (Oqubay and Lin, 2020, p. 4). Different hubs have been developed depending on the country, including industrial clusters, industrial parks, science and technology parks, and Special Economic Zones (SEZs).

Marshall (1890) highlighted key benefits to agglomeration, including the (i) availability of specialised input in the region, (ii) availability of a specialised labour force in the region, (iii) flow of ideas and information through face-to-face communication and (iv) existence of infrastructure and public goods. Several empirical studies, including those conducted on the California wine cluster by Porter (2000) and on Silicon Valley by Saxenian (1996) have provided evidence confirming the existence of these Marshallian externalities. As a result of this evidence, developing these hubs has become a priority for many countries seeking to build critical industrial and entrepreneurial capabilities.

Asia has led the world in developing these hubs; in 2019, there were about 5383 Special Economic Zones (SEZs) in 147 economies, of which about 75 per cent were in Asia alone (UNCTAD, 2019). These hubs have helped Asian countries build critical capabilities and facilitate export-led industrialisation, inspiring other developing countries to build similar hubs. Nigeria has historically experimented with industrial clusters as part of its industrial

development strategy; the use of clusters known as ‘industrial estates’ dates to the 1960s, and in 1992, the first SEZ, the Calabar Free Trade Zone, was established by the federal government.

While the number of operational SEZs in the country currently stands at about 25 (NEPZA, 2024); spontaneous clusters have continued to emerge in different parts of the country. Some of the more popular clusters include the Otigba ICT cluster (Oyelaran-Oyeyinka, 2014), the Nnewi automotive cluster (Abiola, 2008) and the Aba fashion and garments cluster (Meagher, 2006), amongst others.

The development of these hubs continues to be articulated as part of the country’s industrial development strategy as policymakers promote them as platforms for job creation, export generation, and capability development. However, significant gaps still exist in our understanding of the effectiveness of these industrial hubs in Nigeria, especially their contribution to the development of critical manufacturing and entrepreneurial capabilities.

Studies on using Special Economic Zones (SEZs) in Nigeria have mainly focused on their performance in terms of static economic outcomes such as exports, employment, taxes, and other short-term indices (Bräutigam and Tang, 2011; Zeng, 2016; Adunbi and Stein, 2019). However, while these indicators are essential, they do not fully capture the potential of SEZs to generate more dynamic benefits such as skills and capability development. This perspective is particularly relevant when considering Chinese SEZs, established to help African economies acquire the dynamic manufacturing capabilities required to transform their economies, as China did (Bräutigam and Tang, 2011; Bräutigam and Tang, 2014).

More so, while there is increasing evidence of the emergence of service-oriented ‘tech clusters’ in African cities such as Lagos, Nigeria (Partech, 2022), there is limited analysis of how these spontaneous clusters have come into being and supported the rise of start-up entrepreneurship. In contrast to places like Silicon Valley (USA), Waterloo Hub (Canada), and Cambridge

Research Triangle (UK), these African tech clusters have not been extensively discussed in academic literature, creating knowledge gaps on how entrepreneurship institutions are established, especially in the face of significant resource constraints.

This exploratory thesis aims to enhance our comprehension of the characteristics and performance of industrial hubs in Nigeria. To do so, I shall examine two hubs - the Lekki Free Trade Zone, a Special Economic Zone (SEZ), and the Yaba Cluster, a technology cluster in Lagos, Nigeria. The Lekki Free Trade Zone was established in 2006 as part of the inaugural six Economic and Trade Zones (ECTZs) the Chinese government committed to developing in Nigeria. As of 2019, it had 45 registered firms, most of which were involved in manufacturing and assembly activities. When it was established, the expectation was that by attracting Chinese FDI, local firms and workers would be exposed to learning and knowledge exchange opportunities to enhance their capabilities. This thesis seeks to understand the extent to which this SEZ has supported the development of critical manufacturing capabilities and the implication this has for the viability of SEZs as an industrial development tool in Nigeria.

The SEZ is contrasted with the Yaba cluster, considered one of Africa's most vibrant tech clusters. It has given rise to a thriving entrepreneurial ecosystem and is the focal point of Nigeria's tech industry. The cluster includes the tech start-ups, coworking spaces, incubation hubs, and other critical institutions. Within the cluster and its surrounding areas, there are approximately 400 start-ups primarily engaged in providing software development and other related services for sectors such as financial services, ecommerce, health, and education. The cluster is also home to various entrepreneurship support organisations, such as co-working spaces and incubation hubs, which provide entrepreneurs with access to training, funding, mentoring, and networking opportunities.

However, given the existence of significant resource gaps, there are knowledge gaps in our understanding of how the critical domains of this ecosystem were developed. Therefore, this thesis aims to understand the role of entrepreneurs and other non-actors in building critical entrepreneurship institutions. It also analyses different types of state intervention in the ecosystem and its implications for the cluster's development.

1.2 Research questions

The core research question of this study is 'how can industrial hubs be utilised to develop manufacturing and entrepreneurial capabilities in Nigeria?' To answer these questions, the following sub-questions are examined:

1. To what extent does knowledge transfer and learning occur in the Lekki Free Trade Zone?
2. What is the role of entrepreneurs and non-state actors in building entrepreneurship institutions in the Yaba cluster?
3. What are the implications of different state interventions in developing the Yaba entrepreneurial ecosystems?

1.3 Importance of the study

This study has significant implications for various stakeholders, including policymakers in Nigeria and other developing countries, as well as scholars interested in understanding this phenomenon. In Nigeria, there has been a drive at the federal and state government levels to increase the number of industrial hubs given their role in job creation, skills development, and overall economic growth. However, there seems to be limited knowledge of the necessary conditions for these hubs to deliver these benefits and the role of policymakers in creating those conditions given that different clusters may be better suited for specific sectors and may require certain institutional arrangements.

Overall findings for this study can play a role in informing policies for attracting FDI, improving the competitiveness of the business environment, skills development and upgrading the participation of countries in Global Value Chains (GVCs). These concerns are relevant to Nigerian policymakers and other developing countries as the number of industrial hubs continue to increase. This study addresses these issues, and its findings can contribute to developing more productive industrial hubs in developing countries, particularly those with similar structural characteristics to Nigeria.

Additionally, this study contributes to current debates on the role of industrial hubs in developing countries especially given the increasingly popular consensus that these hubs can deliver not only static benefits like jobs, exports etc. but also support the development of dynamic capabilities like skills that are needed for catch-up and structural transformation. It brings into sharp focus critical areas of scholarship that may require further investigation, including the viability of the Chinese model of SEZ development in Africa and new models of skills acquisition and development in clusters. It also contributes to ongoing debates on the potential that the services sector can offer for industrialisation through its analysis of a services-focused cluster.

1.4 Summary of findings

This thesis has made several significant contributions to current thinking on industrial hubs such as SEZs and clusters. Concerning the SEZs, the primary argument is that their contribution to capability development via skills upgrading and linkage development has been limited because of the type and motives of the SEZ firms, the existing capabilities of local workers and firms in the host country and the SEZ incentive framework and policy environment. Its analysis of a Chinese SEZ revealed that while the SEZ firms employed local workers, their limited representation in managerial ranks limits the potential of knowledge spillovers via labour mobility.

The primary training and skill development mechanism was via on-the-job training, as there were no formal training programmes. This can be attributed to the type of Chinese firms in the zone. Many were small with limited integration into Global Production Networks (GPN), making them less likely to prioritise worker training investments. Moreover, skills development was undermined by the low skill base of local workers and the language and cultural barriers between them and their Chinese counterparts. There was limited evidence of linkages between SEZ and local firms because of the type and motive of the Chinese firms and Nigeria's weak SEZ programme that has failed to prioritise investments in value chain development.

Concerning the cluster, the main argument advanced is that entrepreneurs and non-state actors have responded to the resource gaps in the cluster by building institutions in the areas of (i) human capital development, (ii) entrepreneurship support organisations and (iii) finance. In human capital development, training institutes, software developer communities and experience from large companies have emerged as critical sources for skills development. Entrepreneurship support organisations, such as co-working spaces, have helped bridge market and government failures in infrastructure, funding, mentorship, training, and networks. Also, entrepreneurs have been able to unlock additional sources of financing from the ecosystem by leveraging their networks to access foreign venture capital and reinvest in the ecosystem as venture capitalists.

The thesis also contributed to current debates on the state's role in developing entrepreneurial ecosystems in clusters by arguing against the dichotomy between a wholly 'bottom-up' and 'top-bottom' approach. Instead, it proposed three ways of thinking about the state's intervention in the ecosystem: (i) the state-led, (ii) helping-hand and (iii) ecosystem-led approaches. It argued that they differ in the extent to which entrepreneurs are organised and the existence of platforms for interaction between them and the state's agencies. The state-led

approach had minimal success due to its limited engagement with entrepreneurs and a lack of political commitment that undermined the programme's continuity. By contrast, the helping-hand and ecosystem-led approaches had more successful outcomes, given the existence of platforms that encouraged robust engagements between the state and entrepreneurs, ensuring that these programmes effectively addressed the ecosystem's problems.

1.5 Implications for policymakers in Nigeria

These findings have important implications for policymakers in Nigeria on how to use industrial hubs for economic development. The first is that the state is vital in hub development, but its specific role depends on the hub type. For SEZs, this goes beyond the provision of industrial spaces and fiscal incentives but should include deliberate efforts to (i) attract high-quality FDI, (ii) improve the skills base of local workers, (iii) provide reliable and high-quality infrastructure and (iv) invest in value chain development. Fiscal incentives can attract high-quality FDI, but this is insufficient as the skills base and quality of institutions in the host country also determine FDI inflow. Thus, improving the skills base and infrastructure and investing in value chain development will help attract better FDI and support the development of linkages between the SEZ and the domestic economy. Additionally, concerted efforts must be made by SEZ authorities and Chinese SEZ firms to increase investments in worker welfare. Concerning the state's role in supporting entrepreneurial ecosystems, it was found that top-down approaches where the government attempts to replace market actors without engaging ecosystem actors are less likely to be successful. Government interventions are more successful when entrepreneurs and policymakers have distinct yet complementary roles. Direct government interventions may be relevant for providing public goods like investments in universities and the digital economy, as this can reduce entry barriers to participation in the cluster. However, to address issues unique to the ecosystem, the dynamism and complexity of

entrepreneurial ecosystems require platforms that encourage extensive collaboration and engagement between the state and ecosystem actors.

More so, current policymakers need to prioritise the implementation of the Nigerian Start-up Act and view it as an opportunity to offer targeted support to entrepreneurial firms in the country. It can also support the upgrading of Nigeria's participation in the global services value chain, moving it away from non-tradeable, technologically stagnant activities towards the production of knowledge-based high-value services. Additionally, efforts should also be directed towards strategic coordination with big tech companies, NGOs and donors whose participation in the ecosystem have helped to plug significant resource gaps.

1.6 Contributions to debates on industrial hubs in developing countries

The findings from this thesis also have broader implications for current thinking on the use of industrial hubs in developing countries. First, the performance of this Chinese SEZ in Nigeria raises concerns about the effectiveness of the Chinese SEZ model in developing countries. It reveals critical areas for improvement, i.e., addressing human resources practices as well as language and cultural barriers, if this model is to deliver its desired outcomes. African countries also must apply greater selectivity in terms of its Chinese FDI attraction strategy. Concerning the cluster, the role of local actors in building the critical domains of the ecosystem reveals important distinctions between entrepreneurial ecosystems in developed and developing economies. Therefore, policymakers need to recognise that not all ecosystems are the same and should therefore consider their local context in policy development.

Furthermore, while hubs can play an essential role in the development of capabilities, the performance of the SEZ reveals the need for host countries to invest in local capability development for firms and workers as well as institutional learning for SEZ authorities responsible for implementing the SEZ programme. Concerning clusters that emerge more organically, local entrepreneurs and ecosystem actors are often responsible for building

institution revealing the inherent limitations of attempts to replicate ecosystems developed elsewhere without considering local contexts.

Moreso, while SEZs have historically been used to implement manufacturing-based industrialisation, the current ‘race to the bottom’ between developing countries in the provision of fiscal incentives has increased the competition for high-quality FDI and limited the effectiveness of these incentives. This thesis has highlighted the importance of place-based attributes such as strong institutions, skilled labour force, infrastructure, and a stable macroeconomic environment, amongst other features that make the business environment more enabling for countries seeking to use SEZs to build manufacturing capabilities. By contrast, the relatively lower barriers to entry for tech-focused start-up entrepreneurship have revealed opportunities for countries to catalyse services-based industrialisation by making critical investments in skilled labour, finance, and other entrepreneurship-supporting institutions.

Finally, the thesis offers some crucial reflections the state's role in developing hubs. While it acknowledges the critical role of the state, it argues for the need for pragmatism based on the type of hub in question. It is also imperative that these hubs are part of national or state development plans to ensure that they are a strategic government priority. Additionally, the long-term success of these hubs is highly dependent on policy consistency across successive government administrations.

1.7 Summary of methodology

This study employs a qualitative approach as it is a research design that allows for a rigorous analysis of the various actors, themes and perspectives presented in the study (Maxwell, 2012). A case study approach was chosen for this project as it allows for a detailed investigation of a particular phenomenon and its description using various data sources (Zainal, 2007). Nigeria was selected as the focus of this study due to the country's increasing number of industrial hubs - particularly clusters and SEZs. As a developing country with weak skills and capabilities,

developing these hubs has been seen as a means to address these issues. However, only a few studies have evaluated how these hubs have effectively achieved this goal, making Nigeria an ideal case for this project. Therefore, this thesis aims to fill this gap by analysing two industrial hubs in Lagos State, Nigeria - the Lekki Free Trade Zone (LFTZ) and the Yaba cluster.

The data collection methods used include (i) Semi-structured interviews, (ii) Non-participant observations, and (iii) Documentary methods. Semi-structured interviews were used because they provide the flexibility required for an interview to unfold conversationally, allowing participants to explore issues they consider essential (Longhurst, 2003). I conducted at least 81 interviews with 74 people for this study, as some were interviewed more than once. The first phase of interviews, conducted in 2019, was in-person, while the second set of interviews, conducted in 2021/2022, were virtual because of restrictions on fieldwork caused by the COVID-19 pandemic. The primary sampling method I used to select interview participants was purposive because I needed to interview only individuals with knowledge and experience of the issues I was investigating (Creswell et al., 2011).

Non-participant observation was used to understand better the interpersonal relationships between workers in the SEZ factories. By spending hours on the factory grounds, I could engage in more focused observations and gain invaluable insights into the dynamics of the working relationships between foreign and local actors and the underlying meanings of some of their actions. I also relied on an extensive catalogue of documentary sources for important secondary data. These include corporate reports and publications, blog articles, websites, video interviews, government publications, media articles, etc. These sources complemented data obtained through interviews and non-participant observation, thus enhancing the depth of the research.

Thematic analysis was the primary methodological approach used to analyse the data collected as it allows for identifying and analysing patterns of meaning in a dataset (Braun and Clarke, 2006). The first stage of this process was to familiarise myself with the data, after which I started generating codes to enable data reduction. The data reduction process allowed portions of texts to be classified into different categories, allowing for better analysis. Once I completed the process, theme development, which can be referred to as an active process of pattern formation and identification, commenced. Afterwards, I started developing a narrative about the data that made sense of the diversity of meaning. The writing process involved weaving together data and analysis and connecting them to the research questions to ensure the emerging narrative was focused and relevant.

1.8 The relationship between the Mphil and Dphil thesis

The Mphil thesis explored the effectiveness of SEZs as industrial development tools in Nigeria. Using a Chinese SEZ, the Lekki Free Trade Zone, it showed the limitations of Chinese SEZs in Nigeria in employment, skills development, and linkages development. While most of this analysis is in chapter four, it contains additional research conducted during the DPhil program. The Mphil research piqued my interest in other forms of industrial hubs used in Nigeria and their implications for Nigeria's economic development.

As a result, I decided to broaden the research project's focus by trying to understand one of Nigeria's most vibrant clusters that has received relatively little attention. Studying these hubs provided an avenue to analyse how they emerge, operate and function in a developing country context, their role in developing critical capabilities and institutions, their implications for manufacturing or services-focused industrialisation and the state's role in these processes. While the Mphil thesis provided the foundation for this study, the latter includes substantial

additional research on SEZ and clusters, carried out during the DPhil, with original and significant contributions required of a thesis at the Dphil level.

1.9 Thesis structure and plan

This thesis comprises eight chapters. Chapter two presents the methodology for this study. It justifies the research design selected for this study, i.e. a qualitative approach, and presents the data collection methods used – semi-structured interviews, non-participant observation and documentary methods. It presents thematic analysis as the data analysis method and describes the processes and stages involved. It also discusses some challenges encountered in the research, in the areas of research design, data collection, access, and virtual interviews. It discusses some of the ethical considerations for the study.

Chapter three presents the theoretical and conceptual underpinning and relevant empirical literature for the key themes of this study – industrial hubs, technological capabilities, and the state's role. It examines the historical evolution of the industrial hubs concept, including seminal contributions by Marshall (1890), Porter (2000) and more recent contributions. It discusses the two types of hubs examined in the study – SEZs and clusters- that present existing gaps in the current literature and how the thesis intends to address them.

It examines the technological capabilities approach and argues that industrial hubs are ideal platforms for transmitting tacit knowledge that supports the development of these capabilities. It discusses the importance of the manufacturing and services sectors in industrialisation and the role of industrial hubs. It analyses the experience of industrial hubs in Africa and in other regions Asia, Latin America, and Africa. The chapter also examined relevant theories on the state's role and the implications this may have for our understanding of how states implement industrial hubs.

Chapter four analyses Nigeria's challenges with industrial development and its experience with industrial hubs. It discusses Nigeria's industrial development performance from 1960 to the

present, including the performance of the manufacturing and services sectors. It examines historical attempts at developing industrial hubs, starting with developing industrial estates in the 1960s, clusters and, more recently, Chinese SEZs. It discusses the similarities and differences between the two hubs in the study.

Chapters five, six, and seven contain the empirical analysis. Chapter five analyses the issue of learning and knowledge transfer in the Lekki Free Trade Zone (LFTZ). Its central argument is that the SEZ's contribution to capability development via skills upgrading and linkage development has been limited because of the type and motives of the SEZ firms, the existing capabilities of local workers and firms in the host country and the SEZ incentive framework and policy environment. It arrives at this conclusion by looking at the performance of the SEZs via knowledge exchange mechanisms, including (i) employment, (ii) skills development and (iii) linkages development.

In terms of employment, it finds that while the labour force of SEZ firms significantly comprises local workers, they are hardly represented in managerial positions. In terms of skills development, it argues that on-the-job learning is the primary means of skills development, and the process has been undermined by the weak absorptive capacity of local workers and the language and cultural barriers between them and the Chinese workers. The analysis also reveals how the type and motive of the Chinese firms have limited the possibility of linkages development between SEZs and the local economy.

Chapter six analyses how an entrepreneurial ecosystem emerged in the Yaba cluster. It begins by presenting the entrepreneurial ecosystem concept, showing how the resource gaps in developing countries may undermine the development of critical ecosystem domains. It introduces the institutional theory, showing how entrepreneurs may develop the institutions required to overcome the resource gaps. The remainder of the chapter presents the findings

from the study. It reveals how entrepreneurs and other non-state actors have built institutions to close the resource gap in the areas of (i) human capital development, (ii) entrepreneurship support and (iii) finance.

Regarding human capital, it revealed the role of training institutes, software developer communities and large firms in helping entrepreneurs and software developers develop their skills. Regarding entrepreneurship support, it examined the role of co-working spaces and other entrepreneurship support organisations in providing entrepreneurs with infrastructure, training, mentoring, and networking opportunities. It also discussed the role of successful entrepreneurs in leveraging foreign networks and building venture capital funds to improve access to finance.

Chapter seven analyses the state's role in developing entrepreneurial ecosystems. It begins by reviewing current debates on the state's role in developing the entrepreneurial ecosystem, i.e., the top-down versus bottom-up approaches. It proposes three new ways of thinking about the state's role in the ecosystem, including the (i) state-led, (ii) helping hand and (iii) ecosystem-led approaches and advocates for the need for robust engagement between the state and ecosystem actors given the dynamism and complexity of the ecosystem. It uses examples of different interventions of the state and federal governments in the Yaba cluster to illustrate each approach. It concludes with a public policy discussion on these approaches including their potential trade-offs, the role of global linkages and their implications for skills development.

Chapter eight is the concluding chapter of this thesis. It summarises all the findings from previous chapters and presents their implications for Nigerian policymakers on using industrial hubs for economic development. It also proposes areas for future research.

2. Methodology

2.1 Introduction

This chapter outlines the methods used to answer the research questions. It starts with a justification for using a qualitative research design and a case study approach. It then discusses the data collection methods, which include semi-structured interviews, non-participant observation, and documentary methods. Additionally, it explains the data analysis method used, which is thematic analysis, and how it was implemented for the study. The chapter also highlights some of the challenges faced during the study and how they were addressed. Finally, it concludes with a discussion of the ethical considerations for the research.

2.2 Research design

A qualitative approach was considered appropriate for this study because it allows researchers to understand the participant's perspectives on events, situations and actions and how these perspectives influence their behaviour (Menzel, 1978; Maxwell, 2012) . Second, it explains the context within which these participants act and how it influences their behaviour. Third, it enables us to understand the process(es) through which events occur, as one of the strengths of qualitative research is its focus on processes that lead to outcomes (Britan, 1978). All these considerations were necessary for this study because multiple stakeholders were involved; therefore, understanding their perspectives and contexts enabled me to develop a nuanced understanding of the issues I was investigating.

The main form of qualitative method I used was a case study approach. A case study approach was used here because it is a 'robust research method particularly when a holistic, in-depth investigation is required' (Zainal, 2007, p. 1). It helps to understand and explain the processes and results of a phenomenon as it allows for observation, reconstruction, and analysis of the cases of study. Also, 'rigorous qualitative case studies afford researchers opportunities to explore or describe the phenomenon in context using a variety of data sources' (Baxter and

Jack, 2008, p. 544; Yin, 2009). More so, as data was collected from multiple sources, case studies were helpful as they allow researchers to explore or describe the phenomenon in context using various data sources.

The case sampling procedure was opportunity- and theory-driven (Ghauri, Grønhaug and Strange, 2020). An opportunity-driven approach implies a case that is easy to access, and theoretical sampling means deliberately selecting information-rich cases to quickly reveal the research phenomenon (Dubois and Gadde, 2002). The case selection comprised a single case study, i.e., Nigeria, and two primary comparative within-case studies, i.e., a cluster and a SEZ. The objective was to represent two types of industrial hubs that Nigeria has chosen as part of its industrial development strategy. These cases can be seen as exploratory (Yin, 2009) since the central purpose of this study is to gain insights into how these industrial hubs have performed over time.

In the first instance, Nigeria was selected as a case study given the country's increasing number of industrial hubs, especially clusters and SEZs. As a developing country with weak skills and capabilities, these hubs have been seen as instruments to address these issues. However, only some studies have evaluated the extent to which these have been achieved, making the country an ideal case for this project. Therefore, this thesis addresses this gap by analysing two industrial hubs in Lagos State, Nigeria – the Lekki Free Trade Zone (LFTZ) and the Yaba cluster.

The decision to focus on two industrial hubs in Lagos state, Nigeria, was deliberate as it is the country's largest state economy with the largest concentration of hubs. Although the state's commitment to businesses remains contested, it has aligned with the federal government's prioritisation of developing industrial hubs nationwide. This is evident in its decision to enter

a joint venture with Chinese zone developers to build the LFTZ and its various initiatives under the Lagos State Employment Trust Fund (LSEFT) to support the growth of the Yaba tech cluster. More so, focusing a state allows for a more targeted analysis of the dynamics of knowledge exchange in these two hubs.

To understand the performance of SEZs, I selected the Lekki Free Trade Zone because it is one of the two inaugural Chinese SEZs in Nigeria, and it has been in operation for about ten years; it was well suited for the study as it contained all the parameters needed to answer the research questions. Supplementary SEZ data was collected from the Ogun Guangdong Free Trade Zone (OGFTZ), where I interviewed the zone and government officers. To understand the performance of clusters, I selected the Yaba tech cluster because it is the country's largest concentration of knowledge-intensive tech firms; despite being in active existence for at least ten years, it has yet to receive significant attention from scholars. The selection of this cluster was theoretically driven as it allowed for the application of existing theories on clusters and entrepreneurship ecosystem development to this case.

As the central focus of this study is to understand the role of industrial hubs in economic development, a multiple case study approach involving different types of hubs was chosen to increase the methodological rigour of the study by strengthening the precision, validity and stability of the findings (Miles and Huberman, 1994, pp. 29), as "evidence from multiple cases are typically considered more compelling (Yin, 1994, pp. 45). A multiple case study approach enhances the study's external validity by making it easier to achieve analytical generalisation, that is, generalising a particular set of results to some broader theory' (Yin, 1994, p.36).

2.3 Data collection

In using a case study approach, I employed the following data collection methods:

- Semi-structured interviews (in-person and virtual)
- Non-participant observation
- Documentary methods

2.3.1. Semi-structured interviews

I used semi-structured interviews to collect data because whilst it is a method which allows one to define a set of pre-determined questions, it provides the flexibility required for an interview to unfold conversationally, thereby providing participants with the chance to explore issues which they consider essential (Longhurst, 2003). This method was preferred because it allowed me to combine predefined and open-ended explorative questions.

To implement this, I had an interview guide that contained an introduction to the purposes of the study, key issues that I wanted to focus on, suggested prompts and general closing comments. Approaching it this way allowed me to gather structured information about the topics I was interested in while allowing for the emergence of new issues. I conducted at least 81 interviews with 74 people for this study, as some were interviewed more than once. Of the 74 interviewees, 52% (39) had their first interviews online, while the rest were conducted in person. The interviews can broadly be divided into two phases. The first phase mainly focused on the SEZ actors and took place between June and July 2019 in Lagos, Ogun and Abuja states in Nigeria. These interviews were conducted in person, mainly semi-structured and open-ended, and some in-depth. All were conducted in person, in English or Nigerian pidgin¹ and ranged from as short as 20 minutes to as long as two hours.

¹ Some workers could not speak English fluently, so I often had to alternate between British English and Nigerian pidgin when engaging them.

The second set of interviews was conducted virtually between July and August 2021, and additional interviews were conducted between July and August 2022. These interviews were conducted with actors involved in the Yaba ICT cluster and were virtual because of the restrictions on fieldwork caused by the COVID-19 pandemic. They were held using videoconferencing platforms; all except one provided verbal consent for the interviews to be recorded. These sets of interviews typically ranged from 30 minutes to 1 hour, and there were follow-up interviews to delve deeper into some of the topics discussed. Like the first phase of interviews, they were primarily semi-structured, open-ended, and conducted in English.

The primary sampling method I used to select interview participants was purposive because I needed to interview only individuals with knowledge and experience of the issues I was investigating (Creswell *et al.*, 2011). Also, the individuals selected were the most willing and available to participate in the interviews, and most of them could share their experiences articulately and expressively (Spradley, 1979). I also relied on snowballing to gain access to participants as some of my first set of participants used their networks to introduce me to relevant individuals whom I subsequently interviewed. To identify my interviewees, I conducted a stakeholder mapping of the critical actors in these industrial hubs and set out to interview representatives of each group. The table below shows a breakdown of the main stakeholder groups in SEZs and the ICT clusters interviewed for this study.

Figure 1: List of interviewees

Stakeholder group	The number of people interviewed
Nigeria Economic Processing Zones Agency (NEPZA)	5
Chinese zone developers at the LFTZ and OGFTZ	3
Nigerian government officers	11 (5 from the federal government; 6 from the Lagos state government)
Nigerian SEZ factory workers and supervisors	15
Chinese Managers of SEZ firms	7
Nigerian entrepreneurs in the ICT cluster	10
Managers of Co-working space in the cluster	3
Entrepreneurship Non-profit organisations	1
Venture capital firms	1
Software developers	13
Training institutes for the ICT cluster	5
Total	74

Each stakeholder group provided insights into the operations of the respective hubs under study. For the SEZs, NEPZA officers, Chinese zone developers, factory workers and government officers were interviewed. The government and NEPZA officers provided the government's perspectives on the purpose of the SEZs, the application and implementation of the incentives and regulatory framework and their observations of the conduct of the firms occupying the SEZ. My questions to them were primarily focused on understanding the causes of the discrepancies between the stated objectives of these SEZs and their performance in practice. I typically interviewed some of them before I interacted with the Zone workers and Managers and interviewed others afterwards. This allowed me to understand how the implementation of the SEZ programme has accounted for its abysmal performance so far.

Concerning the cluster, I had an initial set of informal interviews and chats with former colleagues and friends active in the cluster to get a general sense of the scope of activities and critical actors. My first set of interviews were with entrepreneurs and software developers; discussions with them focused on the motivation for their growth, how they honed their skills, and the evolution of their businesses/careers opened my eyes to the critical actors in the cluster that have played a role in their development.

I combined this with my own experience of working with entrepreneurs in the cluster, and through my network of entrepreneurs/software developers, I identified venture capitalists, training institutes, managers of co-working spaces and entrepreneurship non-profit organisations that I should interview. These actors played different roles in the institutional development of the cluster. Subsequent semi-structured interviews allowed me to have more focused discussions with each of these actors on the specific role that their organisations had played in the evolution and growth of the cluster.

Using the semi-structured interview method was advantageous because it opened my mind to perspectives that I had not previously considered, and this significantly influenced the direction and evolution of the research. Many of the people I spoke to were highly passionate about their work and quickly pointed out gaps in my information, flaws in my analysis and introduced me to people they considered better positioned to answer my questions.

2.3.2. Non-participant observation

Non-participant observation is a method used to understand a phenomenon by entering the community while staying separate from the observed activities. For the first phase of the interviews conducted in 2019, I engaged in non-participant observation by spending hours on the factory floors and SEZ grounds daily. I followed James Spradley's guidance on the three stage-funnel that should guide participant observation (Liu and Maitlis, 2010). First, during my

initial visit to the zone, I carried out a broad-scope observation of the environment to understand how to implement the method and the value it would add to my research. Next, I shortlisted the activities I thought should interest me. This included verbal and non-verbal interactions between Nigerian workers and Chinese factory supervisors as they carried out their tasks and informal conversations between workers and other actors outside the factory floors.

This allowed me to engage in more focused observations and gave me invaluable insights into the dynamics of the working relationships between foreign and local actors and the underlying meanings of some of their actions. It was only possible to gain this knowledge by constantly spending hours observing them in the factories while they were working and when they were on break. I did this every day I visited the zone throughout my three months of fieldwork; this continued visit allowed me to build trust and develop empathy with the participants and allowed for a more nuanced observation. However, I was careful to remain focused on my research objectives to avoid over-empathising with participants. At the end of each day, I dedicated some time to reflect on the experience and took notes on my phone to document the most important findings.

2.3.3. Documentary methods

Documentary methods refer to the analysis of documents that contain information on the phenomena we wish to study (Bailey, 2008), and they are used to gather supplementary secondary data needed for a more holistic understanding of the phenomena. It typically involves techniques used to categorise, investigate, interpret, and identify the limitations of physical sources (Payne and Payne, 2004). In implementing this method, I used the quality criteria recommended by Scott (2014, pp. 1–2). These are authenticity, credibility, representativeness and meaning. Authenticity refers to whether the evidence is genuine and from impeccable sources; credibility refers to whether the evidence is typical of its kind;

representativeness refers to whether the documents consulted are representative of the totality of the relevant documents, and meaning refers to whether the evidence is clear and understandable.

I relied on an extensive catalogue of documentary sources for important secondary data. These include corporate reports and publications, blog articles, websites, video interviews, government publications, media articles, etc. These sources complemented data obtained through interviews and non-participant observation, thus enhancing the depth of the research. As much as possible, I ensured that these documents were authentic, that the individuals or organisations that published them were of reliable and dependable origin and that the information presented was credible and verifiable. An advantage of this method was that it gave me insights into key informants, that is, people who were familiar with or knowledgeable about the topics I was interested in. This enhanced the quality of the purposive sampling method I used for the interviews and allowed me to capture specific perspectives, interpretations, and meanings that interviewees ascribed to specific events and situations, enabling me to detect any conflicting attitudes and interpretations of the same events.

2.4 Data analysis

Thematic analysis was the primary methodological approach used to analyse the data collected as it allows for identifying and analysing patterns of meaning in a dataset (Braun and Clarke, 2006). Thematic analysis was ideal for this study because its flexibility makes it suitable for analysing various data types, including interviews and documentary methods. To implement this method of data analysis, I followed the guidance offered by Braun and Clarke (2006) and Terry *et al.* (2017).

The first stage of this process was to familiarise myself with the data. This process began immediately after interviews when I would begin the transcription process. Whilst transcribing

interviews, I took notes of key findings and recurring ideas; such critical reading and analysis were also carried out for the documentary materials, i.e., reports, articles, and blogs. This active reading of data involved keen observation and taking notes of emerging patterns and topics to discuss in a second interview with the interviewee or with another interviewee entirely. This process was very helpful as it allowed me to make sense of what often felt like an overwhelming mass of qualitative data.

After this process, I started generating codes, ‘coding is the systematic and thorough creation of meaningful labels attached to specific segments of the dataset – segments that have meaning relevant to the research question. Coding involves ‘identifying the relevant data within each data item and then ‘tagging’ them with a few words or a pithy phrase that captures the meaning of that data segment to the researcher’ (Terry *et al.*, 2017, p. 15). Examples of some of the initial codes I identified include education, work experiences, linkages, etc. As much as possible, I coded all relevant data segments, but certain sections bore no relevance to the research questions, so they were not coded. The coding process was iterative and flexible as I deleted or revised some codes and developed new ones as I gained more familiarity with the data.

The coding stage enabled data reduction. Miles and Huberman (1994) define data reduction as an analysis that ‘sharpens, sorts, focuses, discards, and organises data so that a “final” conclusion can be drawn and verified’ (p. 11). This data reduction process allowed portions of texts to be classified into different categories, enabling more rigorous analysis. This data reduction process allowed text in different interviews with similar codes to be merged and compared. It also allowed for a more contextualised understanding of the remarks of interviewees as well as the extraction of relevant quotes to support the emerging insights. Coding was also the first step in organising the data into patterns. Once this stage was complete,

I entered these codes into the Nvivo10 software, a popular content data analysis software (Ghauri et al, 2020), to commence further analysis.

Once I completed the process, theme development, which can be referred to as an active process of pattern formation and identification, commenced. To do this effectively, I used my research question to determine the relevant data clusters, ensuring that they told a coherent story about the data. Given the quantity of the data, using my research questions as a guide enabled me to ensure that my analysis remained focused. This process involved observing codes and data clusters and identifying the ones that could be combined into more meaningful patterns. The process of identifying themes was both inductive and deductive. After the literature review for this study, some key themes were identified from the theories, which informed the interview questions' design. However, as the interviews were semi-structured, this allowed for the emergence of new themes which were not initially considered. These themes were selected to represent the bulk of the data as much as possible. Some of the themes were merged into over-arching themes that included sub-themes.

After this stage, I started reviewing the selected themes, ensuring they worked well with the coded data, the entire dataset, and the research questions. I prioritised ensuring that the themes sufficiently captured the meaning in the collated, coded data segments. I also reviewed the entire data set again, ensuring that the themes selected truly reflected it. After this review, I was confident that themes could work well with the dataset and tell a meaningful story that answered the research questions. I had moved from a 'summative position (thinking about these themes as lists of codes and collated data) to an interpretative orientation' (Gareth et al., 2017, p.23).

I started developing a narrative about the data that made sense of the diversity of meaning. The emerging analytical narrative contained some data extracts, and the emphasis at this stage was placed on ensuring the clarity, cohesion, precision, and quality of the developing thematic analysis. The writing process allowed me to identify the themes that had enough depth and detail to stand alone or those that should be a subtheme under a broader theme. For example, I initially identified education and work experience as themes in analysing SEZ workers. However, upon further analysis, I decided to consolidate them into a theme called ‘absorptive capacity’ with the sub-themes of education and work experience.

The writing process involved weaving together data and analysis and connecting them to the research questions to ensure the emerging narrative was focused and relevant. I consistently referred to the literature and research questions to ensure that my data analysis was connected to the bigger picture of the overall project. Key quotes were extracted and used both illustratively and analytically. Quotes were used illustratively as examples within the analytical narrative but were also used analytically as the specific aspects or features of quotes formed the basis of analytical claims. Tables and diagrams were also used to provide further insights into the findings.

2.5 Challenges and ethical considerations

- **Research design**

The initial challenge I faced was defining the research questions and the scope of my study. This was because the theoretical concepts I sought to analyse were informed by diverse literature, including Economics, Economic Geography, Management, Political Science and Entrepreneurship studies. This meant the breadth and depth of literature I had to engage with was immense. To overcome this challenge, I engaged in an extensive review of relevant literature across these disciplines whilst anchoring the analysis in the core themes of the study: Industrial hubs, the role of the state, entrepreneurship and technological capabilities.

Grounding the study on the theories behind these core themes allowed me to mitigate the potential limitations of interdisciplinarity.

There were also some challenges regarding my selection of case studies. It might have been beneficial to consider additional SEZs and clusters in the country for a more robust analysis. However, time and resource constraints and travel bans caused by the COVID-19 pandemic, which disrupted fieldwork, made it challenging to undertake a large-scale study. Given the different types of SEZs, including public, private and PPP types, and different types of clusters in the country, the restriction of case selection to one type of each may challenge the generalizability of the findings. Nonetheless, this study is relevant as empirical studies on industrial hubs in Africa remains limited and this contributes to knowledge in the emerging field.

- **Data collection**

Firm-level surveys at SEZs and clusters were initially part of my data collection strategy; however, this was impossible as managers in SEZ firms preferred to speak verbally and resisted committing anything to writing. Moreover, given the small number of operational firms in the zone (14), it would have been problematic to extrapolate survey findings into anything generalisable. For the firms in the Yaba cluster, the inability to travel due to COVID-19 restrictions on fieldwork also limited my ability to administer large-scale surveys. However, I was able to secure interviews with workers, entrepreneurs, and managers at firms. These limitations on the use of survey made non-participant observation, in-depth semi-structured interviews and the extensive review of documentary sources better suited to these circumstances. In sum, using three data collection methods allowed for triangulation, that is, using two or more research methods to investigate the same phenomenon (Grix, 2010). This allowed me to overcome any personal biases that may arise from the use of single methodologies as well as deficiencies that flow from one method (Mouton, 2001).

- **Access issues**

The interviews, especially at the SEZs, were initially challenging because of access issues. It was difficult to negotiate access to Chinese zone developers, firm managers, and their workers. I tried establishing contact through their business websites, but no relevant information existed. Eventually, I was granted access to my first set of interviewees through an introduction by a trusted academic to a critical gatekeeper. Still, the Chinese were often reluctant to speak with me because of trust concerns and the secrecy with which they conduct their business; many of them initially assumed I was a journalist or blogger coming to write a critical report on Chinese labour practices as is prevalent in mainstream media. It often took the intervention of my contact person (a zone officer) to assure them that I was a student and I had no media affiliations before they were at ease to speak.

However, once I started the interview process, I established rapport and personal relationships with other relevant respondents, and they also made introductions on my behalf. I also found that mentioning that I was a student from the University of Oxford gained me some respect and made some high-level respondents more willing to speak with me; this confirms that success in interviewing elites is often predicated on the researcher's social status and institutional affiliation (Odendahl and Shaw, 2002). Some older respondents spoke to me about their interest in taking executive courses in Oxford, and my willingness to answer them made them happy to answer my questions.

It is, however, important to state that I had relatively more accessible access to the LFTZ because the management comprises both Chinese and Nigerian staff. It was easier to build a rapport with the Nigerian zone officers who helped me gain access to the Chinese firms to interview managers and workers. However, the management was wholly Chinese in OGFTZ, where I collected supplementary data. While they allowed me to interview their management staff, they would not grant me access to their firms, workers, and managers.

- **Covid-19 pandemic and virtual interviews**

The second half of this project, which focused on the ICT cluster, was conducted after the outbreak of the COVID-19 pandemic and required innovations in fieldwork and data collection processes. In the first two years of the pandemic, the University of Oxford explicitly banned all travel for fieldwork to ensure the safety of students and participants. Students were, therefore, advised to consider alternative data collection methods in the face of these restrictions. This posed challenges for me because, traditionally, the gold standard for conducting interviews was in-person face-to-face interactions (Novick, 2008; Sy *et al.*, 2020); however, travel bans and social distancing requirements meant this was no longer feasible. As a result, I used videoconferencing software that allowed for synchronous video exchanges to facilitate interviews.

The use of videoconferencing tools, however, came with its own challenges. First, the people I interviewed were mainly based in Nigeria, and internet connection was only sometimes stable. I often had to call severally before connections could be established, and sometimes, the interviews were imbued with intermittent voices and muffled messages. This led to situations where I had to consistently apologise to participants, which was sometimes emotionally exhausting, especially if the participant was not patient. Some were more understanding and agreed to reschedule the interviews if disruptions occurred. Second, these internet connectivity issues also posed challenges for the use of cameras during these interviews because when the connection became shaky, participants often had to turn off their cameras to improve the quality of the audio connections – this happened with many participants.

While I understood the reason for doing this, I often found talking to a dark screen demotivating. Another challenge to virtual interviews was the lack of complete

multidimensional communication, which limits the conveyance of the subtleties of eye contact or body language. Finally, virtual interviews prevented me from embedding myself in the context, i.e., in the cluster I was studying, making it hard to reduce the social distance between myself and the participants. Despite these limitations, I devised means to overcome this. The first thing I did was to build a rapport before the actual interviews through emails and chats on WhatsApp.

Often, interviewees were introduced to me via email, and I would continue the conversation there and provide them with more details about the research. I asked them if they preferred to connect on WhatsApp, which most did. Over WhatsApp, I would share more information and ask them about their preferences for the interview, including scheduling and the preferred platforms. In some cases, the introduction to participants by contacts was informal, and we connected directly on WhatsApp and quickly eased into a rapport. In addition to this, I always ensured that my on-camera body language was open and warm. I often started interviews with a smile, thanked participants for speaking with me, and introduced them to the study's objective and purpose. I always asked for their consent before recording² any interview, assuring them I only recorded it for transcription. I also reminded them they had the right to pause or end the interview at any time.

Another advantage of video interviews was the number of interviews I could conduct weekly. When I conducted the 2019 fieldwork on SEZs, I conducted an average of 3 interviews a week because I had to visit the zones to conduct the interviews physically. It was physically and financially tasking as I spent at least 7 hours daily on commute; virtual interviewees were not even an option as the participants were not technologically astute. However, conducting interviews with the cluster actors was relatively easier regarding their familiarity with the

² All my recordings were audio

platforms, as almost all of them worked in the tech industry and used these platforms daily. They connected from anywhere; while most people took these interviews at home or in the office, some joined from the car, hospital, and airport.

While I could not conduct fieldwork traditionally, I explored other means to embed myself into the cluster I was studying. For example, I had the managers of co-working spaces conduct a virtual tour of their facilities for me. That allowed me to understand the organisation of space distribution and contextualise some of the Manager's responses. I also spent considerable time on the social media pages of some of these co-working spaces, looking at pictures and videos of their spaces and, sometimes, joining live broadcasts of their knowledge-sharing events. This deepened my understanding of how these spaces function while enabling me to strengthen the analytical rigour of my analysis. After travel restrictions were lifted and I visited Lagos, I visited the cluster and conducted a walking tour to deepen my understanding of my research findings.

2.6 Ethical issues

I conducted these interviews with the highest levels of ethical considerations. The Central University Research Ethics Committee of the University of Oxford approved this research. Before commencing any interviews, I sent an email outlining the purpose of the interview. I attached a participant information sheet explaining the study's purpose, interview modalities, risks associated with the interviews, how data will be used, and a university contact they could email if they had any concerns about the study. As much as possible, I got written consent from participants; however, in most cases, they insisted that their verbal consent was enough as they were reluctant to sign formal documents.

I clearly explained to them in English and, in some cases, Nigerian local languages, the purposes of my research and the kind of information I wanted from them. Also, because obtaining informed consent is always an ongoing process, I constantly reminded them of their

rights to opt-out during and in follow-up interviews. In writing the thesis, I have anonymised the names of the interviewees as that was my agreement with them. I used a lot of direct quotes to ensure that the respondents' voices were emphasised throughout, and, in most cases, these quotes often represent the sentiments expressed by most of the respondents.

Another ethical consideration was my reliance on gatekeepers (zone officers) to gain access. Some of my first interviewees often provided 'politically correct answers' when zone officers were present. To address this, I built a good relationship with interviewees to schedule follow-up interviews by myself and without the help of a zone officer. Also, as the frequency of my visits increased and I made my contacts, my dependence on gatekeepers drastically reduced. Indeed, they were often more critical about the management of the zone and their experience working in the zone and doing business in Nigeria in subsequent interviews.

Regarding the virtual interviews, I ensured that participants were comfortable with having their cameras on, even though it was my preference. I did so to ensure I would not intrude into their personal spaces, especially if they were at home. In some cases, I reminded them of the option to use a virtual background if they had any problems with their homes showing in the background. I always reminded them that I did audio-only recordings to protect their confidentiality. This made them feel more at ease during the discussions. To ensure data confidentiality, I did not use the automatic transcription feature offered by the videoconferencing software, for instance, to ensure that data is not transmitted to the servers. Instead, I downloaded recordings to my password-protected computer and will delete them in line with the university's guidance for data protection.

The findings presented in this study may also suffer from certain biases. My positionality as a Nigerian may have also biased my interpretation and analyses of the responses because, in addition to this being an academic project, it is a profoundly personal project, as my country's

failure to industrialise and its consequent overreliance on oil exports means that I have witnessed several booms and bust cycles in the economy and have watched my family's income and standard of living fluctuate accordingly. However, the data collection triangulation deployed in this study helped me overcome these biases.

3. Literature Review and Conceptual Framework

3.1 Introduction

This chapter presents the theoretical and conceptual underpinning and relevant empirical literature for the key themes of this study – industrial hubs, technological capabilities, entrepreneurship, and the state's role in industrial hubs. Section 3.2 examines the historical evolution of the term industrial hubs, starting from Alfred Marshall's original work on industrial districts, which emphasised the importance of agglomeration economies. The section also highlights other approaches, including the learning region theory and the regional innovation system (RIS) framework, that emphasise the role of localised factors in supporting learning and knowledge exchange within these hubs.

Section 3.2.1 and 3.2.2. takes a deep dive into SEZs and clusters with 3.2.1 discussing SEZ definition, theories and Chinese SEZs in Nigeria. It examines the popular theoretical approaches to the study of SEZs, highlighting their limitations in the study of knowledge exchange. Section 3.2.2 discusses the rise of knowledge and service-oriented entrepreneurship clusters in developing countries. It argues that traditional cluster theories, developed based on low-cost manufacturing clusters, are inadequate to analyse modern knowledge-intensive clusters that are dominated by entrepreneurs and other knowledge professionals. It suggests that new analytical tools are required to understand the dynamics of these clusters. Therefore, the entrepreneurial ecosystem concept provides more rigorous analytical tools to understand how institutions of capability development emerge and how they facilitate knowledge exchange between actors in these knowledge-intensive clusters.

Section 3.3 focuses on the role of industrial hubs in facilitating catch-up. Section 3.3.1 begins by examining industrial hubs' role in developing the production and technological capabilities required for structural transformation. It argues that industrial hubs are ideal platforms for transmitting tacit knowledge because they engender knowledge spillovers between actors. It argues for the need to move beyond the narrow neoclassical conceptualisation of industrial hubs to a more dynamic view informed by the East Asian experience, which views them as ecosystems that support the development of capabilities. It then discusses the critical role of the manufacturing sector in structural transformation and how the increasing importance of the services sectors in many developing countries may have implications for the sectors that these countries target with industrial hubs. Section 3.3.3 begins with a brief discussion of the global experience of industrial hubs in Asia, Latin America, and Africa, highlighting the growth of these hubs, their performance, and the different goals for which they were established. Section 3.3.4 is a deep dive of Africa's experience with industrial hubs focusing on the performance of clusters, SEZs and incubators.

Section 3.4 discusses the state's role in developing these hubs, given its prominent role in East Asian economies, where these hubs have been the most successful. It examines relevant theories on the state's role in development and the guidance they may provide for countries seeking to accelerate the development of hubs. First, it argues that hubs are a targeted form of industrial policy and that the emphasis on learning advanced by industrial policy scholars indicates the government's role in overcoming market and institutional failures that may undermine investments in learning (Chang, 2011). Second, the developmental state theory highlights the importance of state capacity and bureaucracy in advancing developmental objectives. Finally, the entrepreneurial state approach lends credence to the importance of state capacity in developing the entrepreneurship capabilities required to facilitate catch-up and

structural transformation. Section 3.4 presents the conceptual framework for the study while 3.5 concludes.

3.2 Theoretical Underpinnings and Historical Evolution of the Concept of Industrial Hubs

The notion of industrial hubs is a 'generic expression of economic agglomeration and industrial clusters of economic activities that have evolved since the industrial revolution resulting in reduced transaction costs, external economy of scale, learning and innovation, and linkages in the development of industrialization and capitalism' (Oqubay and Lin, 2020, p. 4). The concept is based on notions of how space shapes economic activities because it has been long observed that economic activity tends to cluster in specific geographical locations. As a result, scholars have sought to explain the reasons for clustering and the economic benefits that arise from it.

The original contribution to this idea was Alfred Marshall's work on industrial districts at the turn of the 20th century, where he focused on the role of agglomeration economies (Marshall, 1890). During the 18th and 19th centuries, there was a rise in industrial districts where small firms in similar industries leveraged agglomeration economies by being near each other. Examples of such industrial districts include the Lancashire cotton textile district, which was instrumental in making Britain the 'workshop of the world' in the last half of the 19th century, and the 'Third Italy', which refers to the towns and cities that specialised in various light industries such as apparel, footwear, and furniture in the Emilia Romagna regional district, which enabled Italy to modernise (Andreoni and Lazonick, 2020).

According to Marshall, the accumulation of firms which engage in similar or related activities created a range of localised external economies, which reduced the costs for cluster producers (Marshall, 1890). The main benefit of agglomeration for innovation derives from the properties of knowledge, which is that it is tacit, uncodified, and informal. Thus, knowledge externality is a crucial benefit of clustering. These firms are embedded in a network of users, suppliers,

consumers, and knowledge producers. These actors are repositories of market, scientific and technical knowledge which provide inputs for a firm's innovation efforts; thus reducing technical and commercial uncertainty within a spatially bounded environment (Landau and Rosenberg, 1986).

Furthermore, geographical proximity was argued to play an essential role in forming inter-firm linkages which facilitate the circulation of information and new ideas, thus promoting innovation. The importance of this proximity was not necessarily due to the reduced distance or transport costs but in terms of easy information interchange, similarity of cultural and psychological attitudes, frequency of interpersonal contacts, cooperation and density of factors mobility within the limits of the local area (Lin and Wang, 2019). Inter-firm linkages and spatial proximity are therefore believed to be the essential conditions facilitating mutual learning and knowledge spillovers that enable individual firms to increase their knowledge stock and become more innovative. The rise of global production networks and changes within industries and economic structures have gradually reduced the importance of such industrial districts.

The book 'The Competitive Advantage of Nations' enriched the concept of industrial hubs by showing how clusters drive competition and innovation in firms (Porter, 2000). Porter defined clusters as 'geographic concentrations of interconnected companies, specialised suppliers and service providers, firms in related industries, and associated institutions in particular fields that compete but also cooperate' (Porter, 1990, pp. 253–254). Using a diamond framework, he modelled the role of clusters in competition. This framework comprises four dimensions. Firstly, factor inputs such as physical infrastructure and university research institutes are assets that all firms draw on in competition. To improve productivity, these factor inputs must improve efficiency, quality, and specialisation to cluster areas. Secondly, specialised factors,

especially those required for innovation and upgrading, such as specialised university research institutes, tend to be less tradable or available elsewhere.

Second, the context for firm strategy and rivalry includes rules, incentives and norms that govern local rivalry's type and intensity. Low-productivity economies are characterised by little local rivalry, unlike more advanced economies, which are characterised by intense rivalry. Rivalry in these advanced contexts involves innovation and manufacturing and service delivery efficiency upgrading. Competition in these contexts also involves a shift from imitation to innovation and from low investments to high investments in physical assets and intangibles. Clusters play an integral role in these transitions.

The investment climate and competition policies play a significant role in determining the level of rivalry in a particular location. Factors such as macroeconomic and political stability, policies that influence skill development in the labour market, and strict enforcement of intellectual property laws can impact a company's willingness to invest in upgrading. Additionally, policies related to foreign direct investment (FDI), trade, and anti-trust can affect the intensity of local competition. Lastly, demand conditions can influence how companies shift from producing low-productivity goods to competing through differentiation. In conclusion, a cluster is a clear illustration of how the diamond model works in practice. 'Proximity arising from the co-location of companies, customers, suppliers, and other institutions amplify all the pressures to innovate and upgrade' (Porter, 2000, p. 21).

Saxenian's work on Silicon Valley, influenced by Marshallian externalities, reignited interest in geographical clustering by demonstrating the cultural and institutional factors that drive regional economic performance (Saxenian, 1996). Saxenian argued that the success of Silicon Valley can be attributed to its open, non-hierarchical, regional network-based industrial system' with porous boundaries. This was unlike the case in Route 128, where there were larger

firms with strong traditional hierarchies within them and more distant relations with local institutions.

Storper expounded on these ideas by Saxenian by introducing the concept of untraded dependencies (Storper, 1995, 1997). These refer to conventions, informal rules, and habits that coordinate economic actors under conditions of uncertainty. These relations constitute region-specific assets in production. 'They are "a central form of scarcity in contemporary capitalism", ... and "of geographical differentiation in what is done, how it is done, and in the resulting wealth levels and growth rates of regions' (Storper, 1997, p. 5).

The study of knowledge and learning regions has influenced our understanding of industrial hubs. The learning region theory, which emphasises the significance of in-person interactions in facilitating knowledge exchange, originated from research on economic geography, regional economic planning, and innovation systems (Florida, 1995; Maskell and Malmberg, 1999; Lundvall and Maskell, 2000). According to this school of thought, tacit knowledge is difficult to transfer, and as such, it is best shared between partners who share some similarities through face-to-face interactions. This is because spatial proximity facilitates face-to-face interactions which are crucial for transmitting tacit knowledge.

Face-to-face interaction allows for multi-dimensional communication, which refers to the ability to watch, listen and touch simultaneously in a non-sequential and interruptive manner (Bathelt, Malmberg and Maskell, 2004; Storper and Venables, 2004). Face-to-face contact also helps to overcome coordination and incentive problems in uncertain environments and enables socialisation among people in those environments (Storper and Venables, 2004).

Similarly, the regional innovation systems (RIS) literature emphasises the role of localised factors in supporting knowledge development in local firms (Cooke et al, 1997; Lundvall, 2007). The RIS approach refers to the networks and institutions that connect knowledge-

producing hubs such as universities and public research labs within a region and innovative firms, allowing for spillover between different organisations and improving the overall innovativeness of a region (Cooke et al, 1997).

These ideas were complemented by Storper's concept of a 'local buzz' defined as the information and communication ecology which emerges in clusters (Storper, 2002). This buzz consists of 'specific information and continuous updates of this information, intended and unanticipated learning processes in organised and accidental meetings, the application of the same interpretative schemes and mutual understanding of new knowledge and technologies, as well as shared cultural traditions and habits within a particular technology field, which stimulate the establishment of conventions and other institutional arrangements' (Bathelt et al, 2004, p. 13).

These theoretical approaches reviewed in the discussion broadly highlight how ideas around economic agglomeration and the knowledge externalities that emerge from the clustering of economic activities have evolved. At this stage, it is essential to clarify that while all industrial hubs are fundamentally based on the idea of agglomeration and geographical clustering, an important distinction can be drawn between two types of clusters – those that originate as spontaneous agglomerations of enterprises and other related actors and that that are induced by public policies (Mytelka, 2007).

The latter type, which has elsewhere been described as a 'constructed cluster' (Mytelka and Farinelli, 2003), includes science and technology parks, industrial parks, and Special Economic Zones (SEZs). While many spontaneous cluster do in fact emerge 'spontaneously', in more contemporary times, many governments worldwide have actively supported the emergence of spontaneous clusters to support their industrial ambitions. For example, in China, while market forces have often led to the initial emergence of clusters, the government has played a role in

facilitating their growth through, for instance, establishing industrial parks based on an existing cluster (Zeng and Zeng, 2011). Also, in some cases, clusters have emerged out of certain SEZs, including the ICT clusters in Zhongguancun and Shenzhen and the optoelectronics cluster in Wuhan (ibid).

However, in other developing regions, such as Africa, there are hardly any examples of clusters emerging from SEZs, as most zones are characterised by aggregating firms from unrelated industries (Monga, 2011). This dissertation considers a spontaneous cluster and a Special Economic Zone (SEZ) and tries to investigate how the differences in their design, configuration of actors and the practices of these actors concerning learning, linkages and investments, and the policy environment affect their outcomes.

3.2.1. Special Economic Zones

- **Definition and theories**

SEZs are a type of constructed cluster that started to emerge in the mid-1960s. Their popularity has been driven by their success in China and some East Asian economies, where SEZs have been used to develop manufacturing, improve technological capabilities, and promote industrialisation. SEZs are ‘demarcated geographic areas within a country’s national boundaries where business rules differ from those in the national territory. These differential rules deal principally with investment conditions, international trade and customs, taxation, and the regulatory environment’ (Farole, 2011, p. 23). This generic SEZ concept has evolved, resulting in different types of zones with a variety of rules and objectives (Akinci and Crittle, 2008); they include the following:

- Free trade zones are small, fenced-in, duty-free areas offering warehousing, storage, and distribution facilities for trade, transshipment, and re-export operations.
- Export Processing Zones (EPZ) are industrial estates that offer special incentives and facilities for manufacturing and related activities aimed chiefly at export markets.

- Enterprise zones are intended to revitalise distressed urban or rural areas by providing tax and financial incentives.
- Single-factory EPZ schemes provide incentives to individual enterprises regardless of location.
- Free ports accommodate all activities and provide a much broader set of incentives.

Regardless of these definitional differences, SEZs have come to be used as a generic term to define economic zones which have a different policy framework from those that prevail with the economy where it is located. SEZs have three main structural features; first, they are formally delimited portions of the national territory. Second, they are legal spaces with investment, trade and operating rules that are more liberal and administratively efficient than what is obtained in the rest of the country. SEZs, therefore, have a specific regulatory regime that governs their operations. Second, the regime's administration often requires a dedicated governance structure that may be centralised or decentralised (Farole, 2011). The way these structures are designed varies, and it depends on the zone regime, prevalent administrative culture, the number of existing zones, and the role of the private sector in the development and operation of zones, amongst other factors.

Regardless of the design, the structure's purpose is to ensure efficient management of the regime, ensuring that investors benefit from its provision. Third, zones also have a physical infrastructure to support the activities of firms operating within them. These infrastructure include real estate, roads, electricity, water, and telecommunications. Also, the infrastructure typically comprises industrial or mixed-use facilities and critical transport infrastructure that connects the zone to its sources, markets, and economic hinterlands. While these features are necessary to varying degrees, not all SEZs tend to include them. However, the determinant structural feature of an SEZ is that it benefits from a different regulatory regime from that in the rest of the economy.

There are at least four policy goals most countries try to achieve with SEZs (Farole, 2011). The first is to attract Foreign Direct Investments (FDI), as has been largely done in the Middle East. The second is to serve as pressure valves to alleviate large-scale unemployment, such as the EPZs in Tunisia and the Dominican Republic that have remained enclaves. While they have not catalysed structural transformation, they have supported robust job creation. Zones are also developed to support a more comprehensive economic reform strategy, i.e., to develop or diversify exports. For instance, the zones of Taiwan and China were meant to reduce anti-export bias while keeping protective barriers intact. Finally, zones can be used as experimental laboratories to test new policies and approaches. For instance, in China, financial, legal, labour and pricing policies were tested in SEZs before being extended to the rest of the economy.

Another way policymakers think of SEZs is the benefits they can deliver. There are two objectives that SEZs can deliver. The first is ‘static economic benefits’, where SEZs are used as trade and investment policy tools to create employment, earn foreign exchange, and capture gains from specialisation and exchange. These types of benefits are derived relatively in the short term. The second is ‘dynamic economic benefits’, the longer-term structural transformation and development benefits such as technology transfers, supporting local entrepreneurship and promoting economic benefits.

- **SEZ theories and knowledge exchange**

There are four approaches which have dominated existing theoretical approaches to the study of SEZs, they include the following:

- Neoclassical approach
- Cost-benefit approach
- Neo-Marxist dependency approach
- Heterodox approach

The neo-classical economic approach conceptualises SEZs as enclaves that offer open trade policies to encourage the inflow of foreign capital in countries with import substitution policies. Studies associated with this approach argue that they are welfare-reducing and distortionary because the inflow of capital into zones will lead to labour movement from the labour-intensive sectors of production to the more capital-intensive sectors within the EPZ (Hamada, 1974; Rodriguez, 1976; Hamilton and Svensson, 1982). However, this approach is limiting as it uses a static framework with employment and welfare effects as the primary concern. Thus, SEZs are only seen as receiving labour from the local economy, while the local economy does not benefit from foreign knowledge, economic activity, and employment generation (Johansson, 1994).

Subsequent research by Miyagiwa (1986) and Miyagiwa and Ohno (2009) has shown that SEZs can encourage technology transfer, induce entry by local firms and improve host country welfare if preferential treatments are provided for a limited time. Ge (1999) also show that SEZs can promote economic transition and liberalisation. Also, these studies have little relevance to the contemporary study and use of SEZs as they imply that SEZs are transitory and lose their significance when countries implement country-wide liberalisation reform. However, recent experience has shown that SEZ increase has followed rather than preceded economic liberalisation (Aggarwal, 2011). Thus, they are arguably an outcome of a liberalised regime rather than a vehicle for promoting liberalisation.

Warr (1989) proposed the cost-benefit approach to assess the impact of SEZs on the host economy. Like the neo-classical approach, it maintains that SEZs are economic enclaves allowing manufacturing exports under free trade rule while the rest of the economy engages in import substitution. Unlike mainstream economics, however, he argues that SEZs generate backward linkages with the host economy. According to him, SEZs use domestic capital,

workers, and local inputs and benefit the economy through wages, taxes, and payments for local inputs. However, if the excess of actual payments at market price over the opportunity cost of the resources exceed the cost of establishing and maintaining these zones, then they positively contribute to the economy (Aggarwal, 2011).

Because the cost-benefit approach focuses on the primary outcomes of SEZs as tools of foreign trade and uses that as a yardstick to determine the profitability of SEZs; it uses profitability as an indicator of whether the zone is beneficial to the economy, even though these two outcomes are very distinct. It fails to recognize other SEZ contributions such as foreign investment inflow and technology transfer. As a result, there is no analysis of the dynamic gains from SEZs, such as knowledge spillovers from FDI and technology transfer (Johansson, 1994).

The neo-Marxist dependency theory argues that SEZs are a product of the ‘new international division of labour’(NIDL), so their primary function is to exploit cheap labour rather than take advantage of tax and tariff incentives. With globalisation, liberalisation and technological change, global supply chains have fragmented, so firms can outsource production activities to independent input suppliers in a host country. TNCs (Transnational Corporations) do this to benefit from differences in local costs, especially labour costs; proponents of dependency theory, therefore, view this as an outcome of capitalist industrialisation (Fröbel et al, 1978). They argue that SEZs promote this by offering free trade and relaxed labour regimes to attract simple assembly activities which are primarily labour intensive (Aggarwal, 2011). They, therefore, increase the dependence of poor countries on foreign capital.

However, the contemporary nature of SEZs calls these assumptions into question. First, cheap labour is not the only reason companies locate in poor countries; they can do so to access new markets. Also, today's SEZs are more dynamic, unlike EPZs, which are highly labour-intensive. Most modern zones are investment and technology intensive. Finally, NIDL is not a one-way relation where TNCs exploit labour in developing countries; these fragmented global supply chains have also allowed domestic producers to participate in global value chains (ibid). FDI has allowed domestic producers to acquire new skills and technology.

Finally, the Heterodox approach advanced by structuralists argues that the existing theoretical approaches to studying SEZs do not fully consider their beneficial effects, given their role in the economies of China, Malaysia, and Taiwan. Their key argument is that FDI, which SEZs can attract, are a vital source of technology, learning and skills for developing countries. However, market failure undermines the inflow of FDI; as such, the government's role is to address these market failures. Given that fixing these market failures economy-wide might involve extensive resources; SEZs are a way to create an enabling investment climate within a delimited geographical area to attract FDI. According to (Oqubay and Lin, 2020), these SEZs have played an essential role in the successful catch-up experiences of the East Asian Tigers by supporting the development of technological capabilities and structural transformation.

While this theory improves the others and reflects a standard view of SEZs today, there are some limitations. First, whilst it considers the presence of FDIs within SEZs as necessary for knowledge spillovers, the exact mechanisms through which this occurs are not discussed. It does not also consider the possibility of domestic investments within zones and the implications for learning and spillovers (Aggarwal, 2011). Without a comprehensive theoretical framework that considers the knowledge spillover mechanisms of SEZs, the nuances of the knowledge

spillover process are not fully considered. In sum, while advocates of this approach insist on the role of SEZs in developing technological capabilities such as skills, this is not reflected in any framework. Therefore, this study aims to improve on this approach by introducing a skills-based approach to address these limitations and show the role that SEZs may play in developing skills in the host country.

- **Chinese Special Economic Zones (SEZs) in Africa**

African countries started experimenting with SEZs in the 1970s, starting with Mauritius, Senegal, and Liberia; 25 other African countries followed this over the 1980s and 2000s. Of the 5383 zones in operation worldwide in 2019, 237 were in Africa, of which 51 were under development and another 53 were planned (UNCTAD, 2019). In many African countries, SEZs were seen as tools that could improve the investment climate. ‘The investment climate describes the risks, opportunities and transaction costs involved in investing in and operating a business. It is determined by a complex interaction of laws, policies, and their implementation’ (Farole, 2011, p. 113). The perceived and actual investment climate of a location influences the decisions of firms to invest. Extensive research links a favourable investment climate to productivity, exports and investments (Acemoglu, et al, 2001; Stein and Daude, 2001).

Many African countries have also incorporated Special Economic Zones (SEZs) as part of their industrial policies, in addition to improving the investment climate. Also, China has also used SEZs as a critical tool for its economic relations with Africa. In 2006, as part of its eleventh five-year plan and its ‘Going Global’ policies for overseas trade and investment, the Chinese government announced its plan to establish up to 50 economic and trade cooperation zones worldwide (Bräutigam and Tang, 2014). These zones showcased China's 'soft power' and aided in the country's economic restructuring by relocating labour-intensive, less competitive, and mature industries such as textiles, leather goods, and building materials overseas (Bräutigam and Tang, 2011).

In 2006, MOFCOM selected seven zones to be hosted in Africa, including in Algeria, Egypt, Ethiopia, Mauritius, Zambia, and Nigeria (two). However, Chinese zones in Africa are not limited to those initiated by MOFCOM, as individual Chinese enterprises have established zones in places like Nigeria, Sierra Leone, Uganda, Botswana, and South Africa. Many African governments aimed to include Special Economic Zones (SEZs) in their industrial development plans and welcomed China's support. China's SEZ model, established in Africa by the Chinese government, followed the Public-Private Partnership (PPP) model. In this model, African governments provided the regulatory framework and incentives for the SEZs, such as tax holidays and waived import tariffs on raw materials and inputs. They were also responsible for providing infrastructure outside the zone, such as the roads leading up to it. On the other hand, Chinese developers were responsible for managing the zone, developing infrastructure within the zone, and promoting investment activities, including attracting Chinese firms to the zones.

The Chinese Special Economic Zones (SEZs) in Africa have not been performing as well as expected in terms of stimulating industrialization and growth. The current literature provides several reasons for this underwhelming performance, including poor strategic planning, a lack of demand-driven SEZs, infrastructure problems within and outside the zones, legal, regulatory, and institutional challenges, as well as a lack of knowledge on how to operate the zones and a lack of linkages between the zones and the local economy (Farole, 2011; Farole and Kweka, 2011; Farole and Moberg, 2014; Gakunu *et al.*, 2015; Zeng, 2015).

Nigeria has a high concentration of Special Economic Zones (SEZs) on the African continent. However, there is limited scholarship on the performance of SEZs in Nigeria. In comparison to Asia, where SEZs have been successful instruments for trade and industrialisation, studies on the performance of SEZs in Africa are lagging. Most existing studies focus on short-term

indices such as investment, exports, employment, taxes, and other static performance measures. There are minimal analyses on how SEZs can support the structural transformation of African economies by developing dynamic capabilities.

3.2.2. Emerging clusters in developing countries

Cluster studies have historically focused on manufacturing districts in Western Europe and high-tech clusters in America. Since the 1980s, however, academic interest in developing countries' clusters increased as the number of clusters in these regions has increased. Clusters were seen by many in these countries as a means to overcome constraints to the growth of firms (Van Dijk and Rabellotti, 1997; Schmitz and Nadvi, 1999). However, most of this research focused on low-cost manufacturing clusters that sell components to original equipment manufacturers in advanced economies. These include textile and manufacturing clusters in Latin America, China and some parts of sub-Saharan Africa like Ethiopia (Altenburg and Meyer-Stamer, 1999; Humphrey and Schmitz, 2002; Oqubay, 2019). Many countries in Latin America have been able to participate in GVCs by positioning their clusters as sites of low-cost manufacturing and, through interactions with global buyers and suppliers, have been able to upgrade the sophistication of their activities.

As discussed in section 3.3.2, the services sector is becoming increasingly important in many developing countries, especially in large urban centres where service-oriented clusters are emerging, akin to the high-tech clusters in developed regions. A famous example is Bangalore, which has often been described as the Silicon Valley of India and has established a reputation for providing high-skilled software engineering and other IT-based knowledge services. Other cities in India which have exhibited similar characteristics include Pune, Hyderabad and Chennai (Arora *et al.*, 2001; Dossani and Kenney, 2007). Also, such clusters are in Beijing, Shanghai, and Hsinchu (Saxenian and Hsu, 2001). They have been defined as 'Knowledge Service

clusters’, that is, ‘Geographic concentrations of lower-cost technical and analytical skills serving rising global demand for commodified knowledge services’ (Manning, 2013, p. 379).

These clusters are characterised by the availability of technical and analytical skills and services at lower costs. Unlike manual work associated with manufacturing, the ‘symbolic-analytical work and partially intangible nature of knowledge work require higher-skilled professionals. Therefore, like high-tech clusters, they are likely to develop around universities which produce young technical talent regularly. However, compared to high-skilled clusters in developed countries, their salaries tend to be lower. Also, unlike high-tech clusters, universities in these clusters do not tend to engage in sophisticated research collaborations with local or domestic firms (Chaminade and Vang, 2008). Second, their services are not oriented only toward local or regional markets but also to global markets and across industries.

Unlike high-tech clusters, which often result from a solid regional or domestic demand for technologies (Saxenian, 1994; Porter, 2000), these clusters show a robust global orientation because of a paucity of local and regional demand, hence the target for global clients (Arora *et al.*, 2001). The growth of these clusters has been driven by the advancement of ICT, which has decreased the costs of long-distance communication and intermediation and allowed the disintermediation of processes and tasks (Mithas and Whitaker, 2007). The characteristics of these new types of clusters, however, mean that traditional cluster theories do not provide sufficient analytical tools to understand how they emerge or operate; as a result, a new concept which shares similar foundational ideas as the cluster approach has emerged – the entrepreneurial ecosystem approach or EE.

The ‘entrepreneurial ecosystem’ concept refers to ‘a set of inter-connected entrepreneurial actors, institutions, entrepreneurial organisations, and entrepreneurial processes which formally and informally coalesce to connect, mediate, and govern the performance within the

local entrepreneurial environment' (Mason and Brown, 2014, p. 5). This concept builds on three principles of cluster theory (Spigel and Harrison, 2018). First, the idea that the presence of other firms is a source of competitive advantage; thus, entrepreneurs can take advantage of their proximity to other firms to gather intelligence or find customers. Second, the idea that knowledge external to the firm is valuable encourages entrepreneurs to leverage it for their competitiveness.

Finally, the cluster approach emphasises the critical role of knowledge in the modern economy and how physical proximity enhances this – the EE approach draws strongly from this perspective. However, the critical difference between traditional cluster theories and the EE approach is that cluster studies focus on established firms and industries even when they include a role for entrepreneurs (Henry and Pinch, 2000; Cooke, 2001) the focus is not specifically on them but on their role in the larger value creation and innovation system. They, therefore, view these start-ups as smaller versions of larger, international firms instead of as unique organisational entities with different (and more constrained) capabilities and resources.

Relatedly, there is also a problem with how knowledge is described in cluster studies. In cluster research, knowledge refers to the technical know-how needed to develop new products and technologies and the market knowledge necessary to know which products will succeed in the marketplace (Cooke, 2001). While this knowledge is essential, the EE approach emphasises the importance of a third type of knowledge about the entrepreneurial process. This includes skills such as business planning, pitching ideas, etc. This knowledge is not always sourced from universities but from entrepreneurs' experiences, books and websites on entrepreneurship, and interactions with more experienced entrepreneurs and mentors (Aldrich and Yang, 2014; Spigel and Harrison, 2018). Therefore, when trying to understand issues of knowledge exchange in modern clusters in developing countries where entrepreneurs and other knowledge

professionals dominate, the EE approach is more suited for such purposes and will be used in this study.

Therefore, to understand how these knowledge-intensive clusters may support the development of critical entrepreneurial capabilities, the EE approach provides a more appropriate analytical framework as it allows us to understand the critical actors within any given EE, the roles they play and how the interactions between them shape the dynamic of any given EE. By so doing, we can better understand how clusters emerge to support the development of critical capabilities, especially in developing countries where these knowledge-intensive clusters have emerged.

- **The entrepreneurial ecosystem approach**

The concept of the Entrepreneurial Ecosystem (EE) has gained popularity in academic and policy circles, partly due to Isenberg's Harvard Business Review article (Isenberg, 2010). The article highlighted the idea of a community of actors that provide the support an entrepreneur needs and the role of education, policy, and economic environment in creating new ventures. In practitioner and policy circles, organisations such as the World Bank, Kauffman Foundation, OECD (Organisation for Economic Cooperation and Development) and the World Economic Forum have been leading promoters of the EE concept (Mason and Brown, 2014). Indeed, in the wake of the global financial crises and weakening of faith in markets, the EE was seen as a new form of market-oriented industrial policy and, therefore, adopted and deployed by many governments worldwide (Brown and Mawson, 2019).

Despite the concept's popularity, scholars lack agreement on how best to define this term; however, we can examine what the words constituting the term mean. Entrepreneurial can be defined as processes in which opportunities for creating new goods and services are explored, evaluated, and exploited (Schumpeter, 1934). The entrepreneurship ecosystem approach often restricts this definition to 'high-growth start-ups', arguing that these are the forms of

entrepreneurship that drive innovation and productivity. The EE approach generally does not include traditional measures of entrepreneurship such as self-employment or SMEs (Small and Medium Enterprises), which is emphasised consistently throughout the literature (Stam *et al.*, 2012; Mason and Brown, 2013; Stam and Spigel, 2016).

The term ecosystem refers to the idea that entrepreneurship does not occur in a vacuum but within a community of interdependent actors (Stam, 2015). However, this definition has been criticised as vague and opaque; some scholars have questioned using a biological metaphor, arguing that it does not consider the dynamic nature of entrepreneurial agency that can reconfigure EEs (Roundy et al, 2017). It is argued that the ecosystem metaphor may need to emphasise equilibrium and continuity instead of disruption and dynamism (Isenberg, 2010). However, a widely accepted definition in both policy and academic circles refers to EEs as ‘a set of inter-connected entrepreneurial actors, institutions, entrepreneurial organisations and entrepreneurial processes which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment (Mason and Brown, 2014, p. 5). Regardless of the definitional differences, most scholars agree on entrepreneur’s central roles within these ecosystems (Feldman, 2014).

Thus far, literature on entrepreneurial ecosystems has primarily focused on advanced economies in Europe and North America, despite this being a global phenomenon (Bruton et al, 2008) and increasing evidence of solid entrepreneurial ecosystems emerging in cities such as Lagos, Nairobi and Capetown (Partech, 2022). There is, therefore, an urgent need to conduct more research to understand the entrepreneurship ecosystems in regions that scholars have overlooked. This thesis, therefore, attempts to understand the entrepreneurship ecosystem in Africa using a case study of the Yaba cluster located in Lagos, Nigeria by (i)Identifying the critical domains of the entrepreneurial ecosystem in the cluster; (ii)Understanding the role of

entrepreneurs and other non-state actors in developing these ecosystem domains and (iii) understanding the different ways of state engagement with the entrepreneurial ecosystems.

3.3 Industrial hubs and catching up in developing countries

3.3.1. The role of industrial hubs in the development of technological capabilities

The development process involves the establishment of productive and technological capacities within economies, which expands the limits of production possibilities and enhances the well-being of individuals in nations by broadening the scope of consumption possibilities. Throughout economic history, few countries have undergone such a transformation without a prolonged phase of structural industrialisation. This process of structural transformation entails a transition in both employment and output from low to high productivity, alongside continued diversification of economic activities marked by a deepened knowledge base and the cultivation of technological capabilities (Monga and Lin, 2019). A nation's ability to achieve industrial development and increase economic growth depends on its firms' technological capabilities.

These technological capabilities can be defined as the skills, knowledge and institutions that comprise a country's capacity to generate and manage change in the industrial technology with a country's uses (Bell and Pavitt, 1993). Firms can possess three technological capabilities: investment capabilities, which are skills required for identifying, operating, designing, constructing, or commissioning a new facility. Production facilities comprise basic skills such as quality control, operation, and maintenance; advanced skills such as adaptation, improvement, and equipment stretching; and more advanced skills such as research and design. Lastly, linkage capabilities refer to the skills essential for transmitting and receiving information, skills, and technology from raw material suppliers, subcontractors, technology institutions, etc (Lall, 1992).

The main argument of the technological capabilities approach is that the industrial success of developing countries is a function of how they manage the process of mastering, adapting, and improving upon existing technologies. This technological capability approach is a reaction to the neoclassical approach, which assumes that developing countries do not undertake any significant technological activity given that they do not innovate at the frontier. Therefore, the assumption is that there are no additional costs, risks, or constraints associated with using technology and that there can be no significant market or institutional failure (Lall, 2004).

The current perspective overlooks the crucial role of the processes that shape the production and generation of knowledge. In the industrial sector, it's not only the technological means like machines, equipment or technological information that matter but also the technological understanding or know-how. Technological understanding is tacit as it depends on one's training and experience. Knowledge is formed gradually over time through repetition and recurrent interactions. It's embedded in systems of ongoing practices and routines and is a product of social, cultural, economic, and political conditions.

The National Systems of Innovation approach was created to present a new way of analysing economic growth and development beyond the traditional economics framework. Its main objective was to highlight the lack of attention given to dynamic processes of innovation and learning in economic analysis. The advocates of this approach believe that knowledge is the most valuable resource in the modern economy, and learning is the most critical factor. Since knowledge fundamentally differs from other resources, standard economics is not suitable to define it, creating the need for an alternative paradigm (Lundvall, 2016). Furthermore, Learning is predominantly interactive and, therefore, a socially embedded process that can only be understood considering its social and institutional context.

The NIS approach is founded on some critical assumptions. First, the elements of knowledge required for economic performance are localised and cannot be easily moved from one place to another. The assumption behind the innovation system perspective is that knowledge includes tacit elements which cannot be easily codified (Polanyi, 1996). It is assumed that critical knowledge is embodied in agents, firm routines, and the relationship between people (Dosi, 1999). This contrasts sharply with neoclassical assumptions of perfect information, where there are no barriers to sharing information across borders. The second assumption focuses on interactions and relationships, as relationships are seen as carriers of knowledge, and interaction is the process where new knowledge is produced and learned. This assumption implies that neither knowledge institutions nor people innovate alone; thus, the essential characteristic of the NSI approach is that it is interactionist.

Therefore, Industrial hubs are ideal platforms for transmitting tacit knowledge because of the reduced geographical distance between people and firms and because they share complementary interests in the same industry. Knowledge spillovers are conceived as the leaks of knowledge which diffuse in the economic system and are therefore 'in the air' available as a public good (Arrow, 1962). It is argued that these knowledge spillovers are highly localised, and studies have shown that a relationship exists between spatial clustering, knowledge spillovers, and learning and innovative output (Audretsch and Feldman, 1996; Baptista, 2000).

Geographically bounded spaces are ideal for knowledge spillovers as they facilitate the transfer of tacit knowledge, which is highly localised and difficult to codify. Informal conversations between technicians, and workers, and the exchange of ideas through labour mobility and imitative behaviours are effective methods of transmitting such knowledge. In localities with a vertical division of labour, user-producer linkages may emerge, enabling informal interactions and incremental learning. Thus, these localities support the embeddedness of social relations with productive ones (Giuliani, 2005). Social embeddedness is said to generate an environment

of trustworthy relations which enhance knowledge exchange and, at the same time, promote a process of social monitoring among localised producers and technicians (Granovetter, 1985).

Current research on industrial hubs has not adequately explored how they contribute to the development of capabilities. This is due to the narrow ways in which they are typically conceptualized. According to Oqubay and Lin (2020), one prevailing approach views these hubs as mere blueprints for industrialization, without considering the role of the industrial ecosystem, cluster dynamics, and complex interactions. Similarly, another perspective regards these hubs solely as tools for economic liberalization, enabling countries to participate in the global economy. However, this perspective overlooks their potential to promote technological catch-up and structural transformation.

A deeper analytical perspective informed by neoclassical economies that sees these hubs as tools to address market failures (Lin and Lin, 2015) , including hard and soft infrastructural constraints undermining a nation's competitive advantage. It also views hubs as facilitating the upgrading of a nation's comparative advantage by supporting the accumulation of human and physical capital (Lin and Wang, 2017). However, a more dynamic view of these hubs informed by the catch-up experiences of East Asian economies has emerged. This view acknowledges the role of hubs in developing the ecosystems that support the development of capabilities.

According to these scholars;

'Developing production, technological, and innovation capability is a long-term process that requires an effective development path and industrial and innovation policies that are adapted and connected to broader complementarities of policies and strategies....Industrial hubs that enhance these capabilities are, therefore essential for climbing development ladders. The need to develop domestic capability, domestic linkages, and domestic learning lies at the heart of this perspective. The role of the state goes beyond 'fixing' market failures to becoming the organiser of production and propeller of technological capabilities' (Oqubay and Lin, 2020, p. 7).

3.3.2. The role of the manufacturing and services sectors in industrialisation

Throughout history, the manufacturing sector has been the driving force behind structural transformation and economic progress (Arrow, 1962; Kaldor, 1967). Economists who wrote about European countries in the 19th and 20th centuries came up with the concept of increasing returns. They observed that productivity tended to increase as manufacturing output increased and argued that this was due to the process of learning. As workers and managers gained more experience in production, they became more efficient not only in producing the good they were working on, but also in producing other goods, as their experience helped them reduce their fixed costs (Whitfield *et al.*, 2015).

The concept of increasing returns was later expanded to include the ability of a firm to reduce average and marginal costs due to the production of large quantities of a given production, to improve production techniques over time and to establish a brand name which separates it from competitors (*ibid*). These increasing returns and the large capital requirements for newcomers served as high entry barriers, causing imperfect competition and higher profits. In addition, technology is not freely available and adaptable by all firms. Even if it was, it cannot be efficiently exploited by all firms as technology requires tacit knowledge which cannot be easily transferred (Lall, 1992).

Kaldor's law developed casual explanations to demonstrate the manufacturing sector's role in economic growth (Kaldor, 1967). First, there is a positive relationship between the growth of manufacturing output and the growth of GDP, which is explained by the absorption of surplus labour from the agricultural sector into the manufacturing sector. Second, growth of manufacturing output leads to growth of productivity in manufacturing, which is attributable to static and dynamic scale economies, where the former depends on plant size or output levels at any point in time. At the same time, the latter derives from learning by doing, a function of cumulative past output (Arrow, 1962) or cumulative production experience (Kaldor, 1967) over

time. Third, manufacturing output growth is associated with an overall increase in productivity in the economy driven by spillover effects elsewhere.

For many developing countries, the manufacturing sector was therefore seen as the pathway for economic development because of these characteristics and the following reasons. First, the relative ease with which manufacturing know-how could be transferred from advanced to developing countries allowed manufacturing to display unconditional long-term convergence. This meant that countries that started with lower labour productivity could experience high labour productivity in subsequent decades regardless of policies, institutions, or geography (Rodrik, 2013).

Second, manufacturing has high tradability, and production was not constrained by market size as countries could trade with external markets. Manufacturing can still scale up even if productivity remains low in other parts of the economy. Third, while manufacturing requires human and physical capital, which can be scarce in developing countries, the traditional variable input is unskilled labour, which many developing countries have in abundance. Therefore, many factories, i.e., in garment, automotive vehicles, etc., could employ uneducated workers who require few skills other than those needed on the job (Rodrik, 2018).

However, while manufacturing remains tradeable, certain technological advances have undermined the advantages that manufacturing offers in knowledge transfer and use for unskilled labour. First, the share of manufacturing is trending downwards in advanced and middle-income countries and in low-income countries, there has barely been an increase. In the manufacturing sector of advanced countries, skill-biased technological changes have led to a steady loss of jobs in manufacturing (as a share of total employment) and a rise in the skill premium (the wage differential between skilled and unskilled labour). While these technologies and the resultant productivity growth reduced the cost of capital goods for developing

countries, it represented a loss for them if they had a latent or comparative advantage in manufactured goods. Lower prices depressed the profitability of industrial investments in poor countries, making industrialisation more difficult (Rodrik, 2018).

With the rise of new technologies such as automation, robotics, and 3D printing, the demand for skilled labour is likely to increase. This is because these technologies can be used to complement skilled labour. However, the same cannot be said for unskilled labour, which many developing countries have in abundance. Furthermore, how these technologies are used in GVCs requires high precision and quality standards, making it difficult to substitute them for unskilled labour. Additionally, the acceleration of factory automation threatens the potential offered by export-led light manufacturing. As automation and innovation continue to enhance the utility of additive manufacturing, advances in machine learning are gradually diminishing the appeal of offshoring productions (Yusuf and Yusuf, 2020).

These technological changes within manufacturing have led many to question whether services could offer an alternative pathway to industrialisation, especially given the premature de-industrialisation of many economies in sub-Saharan Africa and East Asia. Historically, services have been considered non-tradable with low innovation and productivity but specific changes in the global economy have challenged these assumptions about services. First, it was assumed that services were driven by domestic demand, that they could not drive growth but instead followed growth. Also, it was assumed that it required proximity and face-to-face interactions between buyer and seller.

However, the rise of ICT tech has allowed services to be produced and traded like goods (Bhagwati, 1984). Second, there has been a significant expansion in global trade in services much faster than in goods (Ghani, 2010). This has been driven by the fall in costs of services that can be digitised; also, services don't have to confront logistical barriers. Third, while

services were considered less productive than manufacturing and concentrated in informal sectors, ICT innovations have allowed global supply chains to extend into services (Ghani *et al.*, 2013).

Services have certainly benefitted from recent technological advances. Indeed, as the outsourcing of production increased, firms also realised that certain activities could be outsourced to specialised producers who could deliver them more efficiently. According to Yusuf and Yusuf (2020), this has led to services playing an essential role in the transformation of manufacturing in three critical ways. First, outsourcing functions such as marketing, advertising, logistics and accounting have become increasingly widespread as many firms view it as a non-trivial cost reduction and an opportunity for productivity gain.

Second, digital technologies have increasingly infiltrated into every aspect of manufacturing systems; complex activities such as transport equipment and telecommunications have been affected by this trend. This has led to increased demand for programmers, designers, trouble-shooters, etc., whose role is to develop and maintain these digital equipment. Third, the increasing emphasis on big data on consumer data, for instance, has led to the emergence of a new industry whose role is to collect, analyse and use data to predict and influence human behaviour and improve product design. These services are highly tradeable, technologically dynamic like manufacturing and show potential for unconditional convergence with more advanced economies.

In many developing countries, one of the consequences of premature industrialisation has been the expansion of unemployment in urban services and at lower income levels (Rodrik, 2013). However, many activities are typically in personal and retail services, which are non-tradeable, technologically stagnant and dominated by small informal enterprises. Another challenge is that even if countries participate in high-value services like those discussed in the preceding

paragraph, only some activities can absorb significant amounts of unskilled labour, which developing countries have in abundance. Thus, ‘service sectors with the best productivity performance typically shed labour; labour-absorbing sectors typically have the worst productivity performance’ (Rodrik, 2018, p. 13).

Nonetheless, the increasing opportunities offered by the services sector offer an alternative pathway for many developing countries as the manufacturing-focused hubs that flourished during the first six decades of the twentieth century may no longer be feasible due to the changing nature of the manufacturing sector as well as a different global trading regime that constrains the policy space available to developing countries. Moreover, rapid urbanisation in many developing countries provides compelling evidence that the services sector, formal and informal, is the principal source of jobs and not the manufacturing sector. Arguably;

‘The self-sustaining cities of the future will house a mix of activities that may include some manufacturing complemented by an array of tradable and non-tradable services. Their growth will depend on productivity gains achieved by harnessing digital and other technologies, and from the export of both goods and services. Competitiveness will be a function not only of the skilful combining of hard and soft technologies but also of the interlacing of services with manufacturing so as to enhance value added and profitability’ (Yusuf and Yusuf, 2020, p. 283).

3.3.3. Global experiences with industrial hubs

As the discourse on industrial hubs started to focus on their role in learning and knowledge exchange, many developing countries started incorporating them into their development strategies. As a result, the development of industrial hubs has been widely associated with catching up in developing and emerging economies. There are around 6000 industrial hubs spread across 147 countries (Oqubay and Lin, 2020) with a high concentration in Asia, including the IT industry in Bangalore, India; the Hsiu Science Park in Taipei, Taiwan; the Beijing and Shenzhen Science and Technology parks in China, amongst others. Developing these parks in latecomer economies was primarily inspired by the success of Silicon Valley or Boston’s Route 128; however, the pattern of industrial hub development has been uneven

amongst countries and regions. For instance, East Asia's experience has vastly differed from the African experience.

According to Oqubay and Lin (2020) three generations of industrial hubs comprised the East Asian wave: 1960s-1980s, 1980s – 2000s and post-2000. The first generation includes places where industrial hubs pioneered and were used for accelerated industrialisation and catch-up, i.e., South Korea, Taiwan, Singapore, and Malaysia. These countries industrialised, starting with light manufacturing, heavy and chemical industries and innovation and high-tech industries and industrial hubs were used for sectoral specialisation, facilitating fast learning and innovation. China was the prime mover in the second phase of the East Asian wave as its economy started to open under the leadership of Deng Xiaoping after 1978; today, China accounts for about two-thirds of global industrial hubs.

Beginning experimentally, China developed industrial hubs progressing from generic industrial hubs developed to attract foreign direct investments (especially from Taiwan and Hong Kong) to targeting global industrial and technology groups, i.e., Fortune 500 companies using economic and technological zones in coastal areas and targeted science and technology parks. The Chinese SEZ model has arguably been the most impactful. The first zones were established in 1978 as a controlled way of liberalising the economy by introducing capitalism and foreign investments after more than 30 years of economic and political isolation.

According to Farole (2011), Deng Xiaoping described the process as ‘crossing the river by feeling the stones’, referring to the introduction of liberal trade and investment regimes to areas of the country that had been open to trade but closed after 1949. The SEZs were initially established in the country’s coastal areas, i.e., three in the Guangdong Province and another in Fujian. The number of SEZs expanded in the 1980s and 1990s to include many regions and towns, moving towards the country’s heartland. These SEZs became very successful, making

China the world's largest exporter of manufactures and the leading recipient of FDI among emerging economies. SEZs played an essential role in this process;

'Between 1979 and 1995, the country received 40 percent of international FDI to developing countries. Ninety percent went to the coastal areas; 40 percent to Guangdong Province. The three Guangdong zones absorbed 50 percent of that total. In other words, these three SEZs received a staggering 7.2 percent of the total volume of FDI to emerging markets between 1979 and 1995 and 18 percent of all FDI into China' (Farole, 2011, p. 36).

The third wave, beginning after the late 1990s, covers many South and Southeast Asian countries, such as Vietnam and India, which the success of China has influenced. Globalising trade and investment have expanded this third wave to the Middle East, Latin America, and Africa. In Latin America, the number of industrial hubs, especially Special Economic Zones (SEZs), has grown exponentially over the past two decades; the number of SEZs is estimated at 500, hosting more than 10,0000 firms (UNCTAD, 2019). SEZs, have been established in Latin America in two main waves.

The first wave happened in the 1960s and 1970s, and took place in countries like Mexico, Brazil, Chile, and the Dominican Republic. The second wave happened in the 1990s in countries such as Guatemala, Costa Rica, Argentina, Paraguay, and Nicaragua. The SEZs established in Latin America serve diverse objectives. For example, in Mexico, Central America and the Dominican Republic, SEZs are integrated into international production networks which support the exports of light manufacturing such as textiles, and apparel, and in some countries, high-tech manufacturing such as medical devices, electronics and automotive. In contrast, Uruguay's SEZs are more oriented towards service exports, while other countries generally use SEZs to serve local markets through either manufacturing or distribution and other services (Mafla and Castrill, 2017).

In the 21st century, the nature of industrial hubs continues to experience some changes. First, climate change and the negative externalities of industrialisation have led to a new type of industrial hub – Eco-industrial hubs designed to reduce emissions and promote environmental sustainability. In China, for instance, efforts have been to convert industrial parks to eco-industrial parks, as exemplified in the case of the Suzhou New District (SND), one of China’s oldest industrial hubs. According to Mathews (2019), the SND was established in 1990 and designated as a National Hi-Tech Industrial Development Zone by the central government in 1992. In more than two decades of experience, it has attracted 16,000 enterprises, with total industrial output reaching US\$42 billion.

The SND is now a prime site for the demonstration of urban mining, with the recirculation of copper used in printed circuit boards (PCBs) as the principal activity. The PCBs are vital components in IT products produced in the SND. In the past, the copper utilised in the PCBs would have been derived from traditional mining activities, and after the disposal of the IT products as waste, the PCBs no longer needed would be disposed of in a landfill. Now, instead, the recirculation of copper is affected by companies extracting copper from waste etching solution, waste copper foil, and sludge. This is of economic and environmental benefit in that companies are enabled to find a profitable niche where none was recognised before, and in doing so, they drastically reduce the environmental footprint of the IT manufacturing activities in the SND.

Second, the acceleration of technology has influenced the development of new hubs by broadening their focus on innovation, open systems, and upgrading industrial hubs. Finally, the globalisation of production via global value chains and the increasing importance of value addition, domestic linkages, and learning position hubs are catalysts for structural transformation.

3.3.4. Africa's experiences with industrial hubs

The development of industrial hubs has also become popular in many African countries, with many governments supporting the development of industrial clusters, Special Economic Zones (SEZs) and incubator hubs, amongst other types of hubs, but this review will focus on these three types of hubs.

- **Industrial clusters**

Concerning the use of industrial clusters in Africa, scholars, many of whom captured in McCormick and Oyeleran-Oyeyinka (2007), have investigated several themes, including value chain upgrading, technology improvement, agglomeration benefits and the role of institutions and the government in the development of these clusters. McCormick and Kinyanjui (2011) examined the micro and small enterprise clusters in Kenya to understand their levels of productive capacity, i.e., levels of infrastructure, skill, technology, etc. They found that many of these features remain sub-optimal and require government intervention to enable them to achieve value chain upgrading. Oyeleran-Oyeyinka (2006) examined the evolution of the Otigba computer hardware cluster in Nigeria and argued that it displayed features that could potentially transform it into a local innovation system capable of producing high-value products. These features include emerging firm-level capabilities for assembling computer hardware and the growing inter-firm linkages that are required to build a knowledge-based cluster. These features challenge the conventional wisdom that poor countries are unable to host high-technology enterprises.

Sakye and Tadesse (2023) analysed innovation performance in clusters in 25 African countries between 2013 to 2020. They found a generally low level of innovation in these clusters and no significant association between spending on research and development (R&D) and industrial clustering. They argued for the government's active role in transforming African industrial clusters into innovation hubs. Kiggundu (2004) examined the process of cluster upgrading by

Ugandan fish processors, arguing that it was externally stimulated. The study found that firms engaged in process upgrading first before embarking on product upgrading and that buyers played a minimal role in the process-related upgrading. However, they have been more important in product upgrading by supporting the introduction of value-adding technologies.

Regarding evidence of agglomeration benefits delivered by clusters, Musonda's (2007) study of the Tanzanian cluster investigated the relationships between cluster performance and three variables including the education levels of entrepreneurs, forms of learning and competition in the product market and found that entrepreneurs benefited from clustering and derived value from the external economy. Yoshino (2011) studied clusters in 5 African countries – Cameroon, Ghana, Kenya, Mauritius, and Rwanda- and found that firms within industrial clusters performed significantly better in productivity, sales, and market sales than similar firms outside the cluster.

Another study of the industrial clusters in developing countries, including Tunisia and Ethiopia, found evidence of agglomeration benefits in these clusters. In Tunisia, there was evidence of spillover due to the transmission of ideas, while in Ethiopia, agglomerating firms were found to have higher levels of productivity if they produced similar products to other firms in the cluster. In Tanzania, Muto et al (2011) studied the furniture cluster in the city of Arusha to investigate the impact of location on MSMEs. The results revealed that entrepreneurs desire to locate in proximity to a large output market, it also found that workshops located in sub-clusters with more machinery shops tended to outperform those with fewer machinery shops.

Regarding the role of institutions and the government, Brautigam's (1997) analysis of the Nnewi auto parts cluster used institutional economics to explain its dynamic industrialisation process despite a weak enabling environment. She argued that the industrialists in the cluster have fixed the market and state failures by leveraging international linkages and alternative

culturally-based networks, which have allowed them to reduce information asymmetries, principal-agent problems, and transaction costs that other industrialists in the country face. McCormick and Mituallah (2002) analysed the institutions responsible for managing a fish cluster in the Kenyan side of Lake Victoria. They introduced the idea of co-management which refers to a system in which the government, community of fishers, external agents and other stakeholders share the responsibility and authority of making the decisions about fishery management.

In the Suame cluster in northern Ghana and the Kamukunji and Kariobangi clusters in Kenya, Oyeleran-Oyeyinka et al (2007) examined the uptake of information and communication technologies arguing that their adoption has not been facilitated by government policies but rather this collective learning had been in response to the collective needs of the SMEs in the cluster. They argued for greater private sector participation in the building of ICT centres in these clusters and leading firms' role in creating awareness about the potential and benefits of new technologies. They also encouraged the governments to provide incentives encouraging ICT adoption. In South Africa, Morris and Robbins (2006) examined the role of the government in two successful automotive clusters. Certain institutional measures undertaken by the government, such as the creation of a Department of Trade and Industry, which implemented growth-supporting policies for SMEs, played important roles in the successful performance of the clusters.

- **Special Economic Zones**

African countries started experimenting with SEZs in the 1970s, starting with Mauritius, Senegal, and Liberia; 25 other African countries followed this over the 1980s and 2000s. Of the 5383 zones in operation worldwide in 2019, 237 were in Africa, of which 51 were under development and another 53 were planned (UNCTAD, 2019). In many African countries, SEZs

were seen as tools that could improve the investment climate as the perceived and actual investment climate of a location influences the decisions of firms to invest. Extensive research links a favourable investment climate to productivity, exports and investments (Acemoglu, et al, 2001; Stein and Daude, 2001).

Yet the performance of SEZs on the continent has been largely underwhelming with very few positive outcomes. Farole's (2011) study of six African SEZs (Ghana, Kenya, Lesotho, Nigeria, Senegal and Tanzania) revealed that success in these zones have been rather limited with investments, exports and employment generation in these zones falling behind those of peers in other regions. Kweka and te Velde (2020) examined the performance of SEZs in Kenya, Rwanda and Tanzania and argued that while the lead SEZs in these countries delivered impressive localised economic results, they significantly lagged the best-practice benchmarks as there was little evidence of spillovers from these SEZs catalysing country-wide economic transformation. They argued that there was a need for complementary policies to support the development and implementation of linkage and capability development within these zones.

In terms of the number of operational firms per zone, African SEZs lag their peers as more than half host less than 50 firms; on average, African SEZs have 60 firms or fewer (UNCTAD, 2019). In terms of employment, Rodriguez-Pose et al's (2022) analysis of a sample of 53 SEZs on the continent found that around half of the SEZs had between 10000 and 10000 new jobs. African SEZs represent a small portion of employment, ranging from 1 to 5 per cent even in countries targeting labour-intensive sectors such as Egypt and Ethiopia which have the highest SEZ employment on the continent. They concluded that the jobs created by African SEZs lag those created by peer countries in East and Southeast Asia.

Some countries like Mauritius have attained some success with SEZs. Ramtohul (2020) examined the performance of the textile industry within the Mauritius Export Processing Zone (EPZ), highlighting the role that value chain upgrading in the SEZ has played in industrial survival, growth, and development in Mauritius. However, the author contended that this upgrading has not come without costs as its negative externalities include industrial pollution and traffic congestion. Whitfield and Staritz (2020) examined the role of SEZs in enabling technology transfer in apparel exporters like Mauritius, Madagascar, Kenya, Ethiopia, Swaziland, and Lesotho. They argued that while the provision of relevant infrastructure is important, understanding technology transfer in these zones requires an understanding of the dynamics of the global economy, such as global buyer and foreign investor strategies and the complexities related to the technological capability building of local firms.

Zeng (2012) identified some problems responsible for the underwhelming performance of African SEZs, including the legal, regulatory, and institutional environment; poor business environment; lack of strategic planning; inadequate infrastructure; limited zone management and operational know-how; policy inconsistency and resettlement issues. Additional factors include a mismatch between the SEZ sectoral focus and the host country's comparative advantage, poor environmental, social and governance performance (ESG) and a failure to provide the surrounding economy with a conducive business environment (Farole 2011; Frick and Rodriguez-Pose, 2021; Watson, and Zeng, 2016).

As China's economic engagement with Africa has increased, so has the number of Chinese SEZs on the continent. In 2006, as part of its eleventh five-year plan and its 'Going Global' policies for overseas trade and investment, the Chinese government selected seven zones to be hosted in Africa, including in Algeria, Egypt, Ethiopia, Mauritius, Zambia, and Nigeria (two). However, Chinese zones in Africa are not limited to those initiated by MOFCOM, as individual Chinese enterprises have established zones in places like Nigeria, Sierra Leone, Uganda,

Botswana, and South Africa. Many African governments aimed to include Special Economic Zones (SEZs) in their industrial development plans and welcomed China's support.

However, the Chinese SEZs in Africa have not been performing as well as expected in terms of stimulating industrialisation and growth and most studies have focused on analysing the reasons for their largely underwhelming outcomes. Xiaoyang (2016) examined the performance of Chinese SEZs in Africa and argued that the commercial interests of the Chinese zone developers were not appropriately aligned with those of the local authorities. Thus, despite the ambitious expectations of these zones, they have faced serious challenges and delays in infrastructure construction, skills transfer, linkages to local firms, value chain upgrading and urbanisation.

Brautigam and Xiaoyang (2011) analysed Chinese efforts to establish SEZs in Africa arguing that they form a unique experimental model of a development corporation in Africa as they are market-based and investment decisions by Chinese companies in receipt of state-support and subsidies. However, serious political, social, and economic challenges may prevent them from catalysing African industrialisation, including inadequate local learning and local participation. Brautigam and Xiaoyang (2011) 25 also point to a lack of capacity of host governments in terms of FDI legislation. Insufficient communication between the Chinese side and host countries has been identified as another problem due to the language barriers in many cases.

Xiaoyang (2015) argued that Chinese SEZs in Africa have demonstrated some promising effects, including their emergence as manufacturing powerhouses and helping African countries improve infrastructure construction and management. However, the biggest obstacle to maximising their impact on the continent is the lack of local linkages as many Chinese manufacturers import all their raw materials from China. Similarly, Rohne (2013) studied the Ethiopian Eastern Industrial Zone (EIZ), arguing that while it has the potential to be a tool for

economic development, it could not fully deliver due to the weak backward linkages from the zone, lack of firms with the capabilities required to join the global value chain and weak working cooperation between the zone's main actors. Kim (2013) analysed some of the issues that may undermine the success of Chinese SEZs in Africa and affect the projection of Chinese soft power in Africa. These include labour-related issues such as a lack of respect for workers' rights, violation of minimum wage legislation and poor working conditions, which have tainted the popularity of these zones among local populations.

Alden and Alves (2018) questioned the viability of the replicability of Chinese SEZ models in Africa. Using case studies of Chinese zones in Zambia, Nigeria, and Ethiopia, they argued that this replication of this model has been faced with obstacles, including weak regulatory frameworks, poor infrastructure, and limited local linkages, amongst other factors. However, they suggested that these issues are not unique to Chinese SEZs in Africa as they are the same challenges that have faced African SEZs for decades, thereby highlighting the structural nature of these problems and the need for African governments to address these issues.

- **Incubators in Africa**

The literature on incubators and their role as hubs in Africa is relatively new and thus far can be broadly categorised into three groups: (i) the impact of these incubators on businesses and entrepreneurs (ii) the challenges facing incubators and (iii) the role of incubators in economic development but a vast majority of these studies focus on South Africa and Nigeria. Examining the role of incubators on entrepreneurs in South Africa, Assenova (2020) examined the role of incubators in helping socially and educationally disadvantaged entrepreneurs. The study found that incubation and mentoring helped improve the business performance of disadvantaged entrepreneurs in the areas of revenue and employment, while mentorship was especially beneficial for those of them with limited prior experience and knowledge.

Ndabeni (2008) examined the contribution of incubators to small business development in South Africa. The author argued that business incubators provide a good platform for supporting knowledge-based enterprises before and after their incubation but suggested that these incubators need not replace entrepreneurial initiatives but instead create better conditions for entrepreneurship. In Tanzania, Kapinga et al (2018) examined the role of business and technology incubators in supporting female entrepreneurs' business. They found evidence that these incubators provided women with training and improved access to market information and business networks; however, they argued that there is a lack of contextualisation in the services that these incubators offered to these entrepreneurs, limiting their ability to meet their real needs. Mvulirwenande and When (2020) analysed the role of virtual incubators in fostering water-related innovations in Africa through a case study of a Dutch programme that promotes water innovation in African cities. They found evidence that these virtual incubators were disruptive and could be effective policy instruments for fostering water-related innovations on the African continent.

However, they argued that they need to be used along with other support mechanisms, be locally embedded, and target the micro, mezzo, and macro levels for them to realise their full potential. Briggs's (2017) study of business incubation in Tanzania found that the different types of entrepreneurships in the country indicated a need for additional forms of support by these incubators to effectively impact them. Also, the study found that they may help entrepreneurs overcome certain constraints to entrepreneurship if they can make them fit local needs. However, the author cautions that they may become exclusionary organisations, thus cementing existing roles in society.

Concerning the challenges that these incubators face, Lose and Tengeh (2015) examined the challenges facing business incubators in the Western Cape province of South Africa. They found that these incubators faced challenges with respect to sponsorship, production space, use

of advanced technological facilities and expansion into different areas. Masutha and Rogerson (2014) examined the evolution of business incubators in South Africa, revealing that the country has embraced a multi-stakeholder approach which includes the role of the private sector as well as national and provincial governments. They found differences between both groups of incubators; while private sector incubators are mixed in focus and concentrated in major metropolitan centres, public incubators, by contrast, are more sectoral-focused and more geographically widespread, indicating deliberate government attempts to locate these indicators in poor areas of the country.

Meru and Struwig (2015) examined the performance of business incubators in Kenya and found that there were disparities between how respondents rated the importance of the business incubation process and the actual services that they received. They found that while they received fewer services than anticipated, they still advocated for the role of business incubation in supporting entrepreneurship. The authors argued for the need for clear macro policy guidelines to ensure that the full potential of these incubators can be exploited for the benefit of the nation.

Finally, regarding the contribution of incubators to economic development, Bubou and Okrigwe (2011) examined the role of technology incubator hubs in Bayelsa state in Nigeria, arguing that they can help start-ups, especially in the technology sector, which can consequently support employment generation. They argued that the knowledge spillover effects and technology transfer from these activities can lead to regional developments as it can be a tool for poverty reduction. Akhuemonkhan et al (2014) examined the role of incubation hubs in supporting entrepreneurship in Nigeria, their review of 37 of these hubs found that they had a very weak socio-economic impact on job creation, wealth creation and industrial development. They argued for the need for a harmonisation of policy objectives surrounding incubation with their implementation before they can be vehicles for economic development.

Egbetokun et al (2012) examined the development of incubators in Nigeria, analysing the performance of existing ones in terms of efficiency, effectiveness, relevance, utility, and sustainability to gain insights into their potential as agents of growth and development. They argued that the success of these hubs will require efficient management of the available resources to these tenants and government support in incubation infrastructure. Additionally, Egbetokun (2023) conducted a comprehensive literature review of business incubators in Africa concerning their role in supporting entrepreneurial businesses. The review identified emerging themes such as types of incubators, their performance, their impact on business and the economy, and their role in learning. While the review concludes that they are useful for enterprise development in Africa, there is a need for collective research and improved policy efforts to strengthen their contributions.

This literature review highlighted some of the cross-cutting issues in the study of hubs in Africa including clusters, SEZs and incubators. While their performance is largely mixed and especially underwhelming in the case of SEZs, there is some evidence on the agglomeration benefits that they deliver including knowledge spillovers and their role in developing the capabilities of the firms located in them. Additionally, there is some recognition of the role of the state and the need for relevant government policy and public goods such as infrastructure to improve their performance. Also, the literature on SEZs and incubators highlighted the role of external actors and knowledge sources. This study attempts to build on some of these issues highlighted including the knowledge transfer, capability development, the role of the state and external actors. It builds on this existing scholarship by contributing new insights from the Nigerian case and enriching current discourse on the issues.

3.4 The role of the state in the development of Industrial Hubs

Industrial hubs do not exist in a void and are shaped by politics and political economy, which are featured in many aspects. Industrial hubs embody the broader development path and the political-economic goals of many of the initiatives. One of the limitations of the current discourse on industrial hubs, primarily informed by neoclassical economics, is that they are viewed as tools to fix market failures. As a result, the state merely plays a facilitating role.

However, structural economists promote an alternative view, arguing that ‘states should play developmental or entrepreneurial roles, creating and shaping market forces and strategically building production and innovation capabilities’ (Oqubay and Lin, 2020, p. 13). This is primarily informed by the experiences of East Asian economies where the state played an active role in developing industrial hubs. This section, therefore, examines different theories informing the state's participation in the economy to examine their relevance for understanding the state's role in the emergence and operations of industrial hubs.

3.4.1. Industrial policy debates

Debates about the state's role in economic development are familiar, and few fields of scholarship represent this, like the industrial policy literature. The industrial policy debate is a long-contested one in Economics. It dates back to the 1960s and 1970s when the works of Rostow (1960) and Hirschman (1958) advocated for the prioritisation of lead sectors that would stimulate the rest of the economy. In summary, advocates of state-led development argue that the success of East Asian economies such as Taiwan and Korea can be attributed to government interventions which ensured high levels of accumulation and technology absorption (Mkandawire, 2001). Policies typically adopted under this view include infant industry production, based on the idea that infant industries must be protected from foreign competition while developing their capabilities.

The industry prioritised here was the manufacturing sector, as it was seen as an engine of growth due to its dynamic features and increasing returns (Kaldor, 1967; Amsden, 1992). Scholars in this tradition attributed the poor industrial performance of countries in sub-Saharan Africa to the Structural Adjustment Policies (SAP) of the World Bank and the IMF, which were founded on unfettered faith in markets and on minimising the role of the government (Serra and Stiglitz, 2008). However, these infant industry arguments may have little relevance today. Few nations have vertically integrated industries at home but are instead embedded in global value chains and production networks (Whitfield *et al.*, 2015). More so, it is becoming more challenging to have only sectoral policies focused on manufacturing, for instance, as the boundary between manufacturing and instance has become increasingly fuzzy (Chang and Andreoni, 2016).

As the debates evolved, a critical view advanced by industrial policy scholars, especially evolutionary economists, is the role of learning in development (Chang, 2011). Even though learning was implied in the infant industry argument, the assumption was that learning would happen once a certain level of protection was attained. However, evolutionary economists recognise that investments in learning may be undermined by market and institutional failures and, as such, will require some government intervention (Freeman, 1995; Lundvall, 2007; Nelson, 2013). More so, as the process of acquiring technological mastery is neither instantaneous, costless, or automatic, there might be a role of selective government intervention to address these issues.

More recently, there has been an acknowledgement that many successful economies had varying degrees of government intervention at different stages of their development. Indeed, compared to the heydays of market fundamentalism, very few people would argue against the need for state intervention in certain instances. Still, the contention now is between those who insist that such interventions should be of a general approach towards all industries and those

who argue that they should focus on selected industries. Proponents of the general approach argue that the government should focus on formulating general policies to correct market failures that affect the entire economy (Aryeetey and Moyo, 2012).

However, critics argue that focusing on improving the environment for business is too sweeping as it needs to recognise that specific industries may face unique constraints which require unique interventions (Wade, 2010). They argue that most horizontal policies have a discriminatory effect due to limited resources, which is ultimately similar to sectoral policies (Chang and Andreoni, 2016). Hence, the government should formulate sectoral policies to develop specific industries when the market cannot. Therefore, within this context, it is easy to see industrial hubs as industrial policy tools, especially of the selective type. In East Asia, where SEZ programmes have been successful, they have been part of a broader industrial policy programme and have allowed the states to learn how to use FDI for economic development. According to Stein (2012, p. 8):

'The zone allows an experimental forum to learn to develop habits that will lead to efficiencies that can be emulated elsewhere in the country while at the same time building up trust with foreign investors. A successful drive to industrialisation will require the development of capacities and policies to foster private sector investment. The operation of a zone is a good starting point to begin to learn to apply those capacities'.

However, a limitation of this theory is that the tendency of industrial policy scholars to focus on a particular sector, i.e., manufacturing, obscures the need to consider the ecosystem within which the sector is embedded. The concept of industrial hubs, on the other hand, emphasises the dynamic and complex relationship between different actors in the ecosystem (Stam, 2015).

3.4.2. The developmental state theory

The developmental state theory, influenced mainly by political scientists and historians, advances the view that East Asian economies, specifically the Asian Tigers (South Korea, Taiwan, Singapore, and Hong Kong) were able to achieve impressive economic growth and development due to active state intervention in allocating resources and 'governing' the market

(Wade, 1990). In these countries, the government led policies that promoted specific sectors ahead of others, investing directly in their development through public enterprises or incentivising private enterprises to engage in activities in those select sectors. As these industries grew, these countries developed exporting capabilities and became internationally competitive. The conclusion, therefore, was that comparative advantage does not occur naturally but is instead created (Grabowski, 1994).

Leftwich defined a developmental state as ‘a state whose politics have concentrated sufficient power, autonomy, and capacity at the centre to shape, pursue and encourage the achievement of explicit developmental goals’ (Leftwich, 1995, p. 401). In East Asia, this political power rested firmly on establishing political coalitions with business elites and restricting the power of labour and other popular groups (Öniş, 1991). These states also had strong bureaucratic capacity, especially in the nodal agencies established to drive inter-agency collaboration, ensure policy coherence, and solve coordination problems.

In Taiwan, the core economic bureaucracy comprised the Council for Economic Planning and Development, the Industrial Planning Bureau, and the Council for Agricultural Planning and Development. These agencies were charged with implementing the industrial policy and depended strongly on the Politicians for their effectiveness (Wade, 1990). Therefore, politicians gave bureaucrats space to function by holding off special interest groups with diverse demands that might otherwise distract them from their developmental priorities (Öniş, 1991).

While this theory emphasizes the significance of state capacity and bureaucracy as a strong foundation, it presents a major flaw in that it only offers guidance for countries that are like East Asian tigers, leaving out those who aspire to become developmental but do not share the same characteristics. Also, the rise of the GPNs and GVCs and the growing influence of

institutions like the World Trade Organization (WTO) means that the policy instruments deployed by these countries may not necessarily be feasible or applicable in today's global economy. Even Robert Wade, a leading advocate of the developmental state, said;

'The developmental state has not so much 'declined' or 'disappeared' in East Asia in favour of the neoliberal state, as Pirie claims. It has 'evolved' in response to changing parameters. In Dent's words, 'while the policy tools and means may have changed, developmental states still preside over various adaptive-cum-transformative economic projects that increasingly involve a partnering with transnationalized capital' (Wade, 2018, p. 537).

However, this theory is relevant because it emphasises the importance of state capacity and bureaucracy in advancing developmental objectives. Thus, in trying to understand the state's role in the functioning of industrial hubs, a one-size-fits-all approach may not be helpful because state capacity varies significantly even within the context of developing countries. A more diagnostic approach that considers the state capacity level before assigning responsibilities to them may be more appropriate.

3.4.3. The entrepreneurial state theory

The idea of the entrepreneurial state, proposed by Mariana Mazzucato, has gained widespread recognition as a promising policy approach. Drawing from the industrial policy and development state strategies, Mazzucato argues that thriving economies are characterised by a proactive state that does not just provide the right conditions for growth but also actively participates in developing innovative breakthroughs that foster economic growth for firms and the economy as a whole (Mazzucato, 2011). The innovations that Mazzucato refers to are almost exclusively technological innovation, and the entrepreneurial state she refers to pursues mission-oriented policies, which are defined as:

'Systemic public policies that draw on frontier knowledge to attain specific goals, or "big science deployed to meet big problems" (Ergas, 1987). While the archetypical historical mission is NASA putting a man on the moon, contemporary missions aim to address broader challenges that require a long-term commitment to the development of challenges that are as much social as technological Field (Foray et al, 2012) ' in (Mazzucato, 2018, p. 804).

In her argument, she uses the United States as an example to highlight that the traditional market failure approach in understanding the government's role in the innovation process needs to be revised. She points out that the US government has funded the riskiest research, including basic and applied research, and has been the primary source of radical, path-breaking innovation. Innovations such as the railroads, the internet, pharmaceuticals, and more can be attributed to such government funding (Mazzucato, 2013). The agencies and policies she commends for these successes include the Defence Advanced Research Projects Agency (DARPA), the Small Business Innovation Research (SBIR) program, orphan drugs regulation, and nanotechnologies. Mazzucato's theory acknowledges the role of entrepreneurial activities for catch-up. Still, it faces similar challenges as the two previous approaches discussed but deserves special attention, especially when considering the government's role in developing industrial hubs.

The first is that this approach has limited applicability in developing countries where weak state capacity and bureaucracy may undermine the ability of the government to undertake these missions. Indeed, she argues in Mazzucato (2018) that the entrepreneurial state needs to have a solid absorptive capacity; however, it offers no guidance on how countries without such agencies can develop them. But even in supposedly more developed countries in Europe with efficient institutions that have pursued missions like the US, they have failed to achieve similar levels of technological breakthrough, but this framework fails to explain the reasons for these outcomes (Mingardi, 2015). More so, as it primarily focuses on frontier technological innovation, it does not offer any guidance on the entrepreneurial role of the state where other forms of innovation take place.

In summary, these theories highlight some essential points that states can consider as they support the development of industrial hubs, they include.

- The need for government intervention to go beyond the formulation of general policies to correct market failures for the entire economy but the need for targeted interventions in specific sectors using industrial hubs.
- The need for government intervention to support learning in firms as the presence of market failures means that learning is neither instantaneous nor costless.
- The importance of state capacity and bureaucracy, especially the development of nodal agencies that can supervise attaining the development objectives for which these hubs were developed.

3.5 Conceptual framework

This study adopts Oqubay and Lin's (2020) definition of industrial hubs as a 'generic expression of economic agglomeration and industrial clusters of economic activities that have evolved since the industrial revolution resulting in reduced transaction costs, external economy of scale, learning and innovation, and linkages in the development of industrialisation and capitalism'(p. 4). Given this definition, different types of hubs exist, with different objectives and typologies and are adopted to promote different objectives depending on the context within which they are adopted. Industrial hubs are seen as vital platforms for the development of technological capabilities i.e., the skills, knowledge and institutions that comprise a country's capacity to generate and manage change in the industrial technology a country uses (Bell and Pavitte, 1993). This study focuses specifically on industrial clusters and Special Economic Zones (SEZs), two types of hubs that have become especially popular in many developing countries.

These hubs are viewed as critical vehicles for the development of technological capabilities defined as the skills, knowledge and institutions that comprise a country's capacity to generate and manage change in the industrial technology with a country's uses (Bell and Pavitt, 1993). Industrial hubs are ideal platforms for transmitting tacit knowledge because geographically bounded spaces enable knowledge spillovers as they facilitate the transfer of tacit knowledge which is highly localised and difficult to codify. It is argued that these knowledge spillovers are highly localised, and studies have shown that a relationship exists between spatial clustering, knowledge spillovers, and learning and innovative output (Audretsch and Feldman, 1996; Baptista, 2000).

The specific type of cluster that this study engages with are knowledge-intensive clusters defined by Manning (2012) as 'Geographic concentrations of lower-cost technical and analytical skills serving rising global demand for commodified knowledge services' (Manning, 2013, p. 379). These clusters are characterised by (i) the availability of technical and analytical skills at lower costs (ii) services oriented not only to local or regional markets but to global markets and (iii) more affordable labour costs. However, the existing cluster theories have certain limitations in understanding these types of clusters, as a result, the entrepreneurial ecosystem framework is seen as an alternative but more suitable framework to understanding them, especially when thinking about the role of entrepreneurs in building entrepreneurship institutions which are key technological capabilities.

The 'entrepreneurial ecosystem' concept refers to 'a set of inter-connected entrepreneurial actors, institutions, entrepreneurial organisations, and entrepreneurial processes which formally and informally coalesce to connect, mediate, and govern the performance within the local entrepreneurial environment' (Mason and Brown, 2014, p. 5). The domains of this framework articulated by the leading scholar in this field (Isenberg, 2011) include policy,

markets, human capital, support, culture and finance³. However, in many developing countries, these critical domains are poorly developed because of critical resource constraints. The existence of significant market and government failures in these contexts creates a gap for entrepreneurs to step in and build the institutions and organisations required to provide these additional resources. Maguire et al (2004, p. 657) refer to these individuals as “institutional entrepreneurs ‘actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones. These actors ‘create a whole new system of meaning that ties the functioning of disparate institutions together’” (Garud et al, 2002). This study, therefore, considers entrepreneurs as having a more active role relative to the state in identifying these resource gaps and building the institutions necessary to address them.

By contrast, SEZs are seen as ‘constructed clusters’, that is, clusters that are created by the state or private actors as opposed to industrial clusters that emerge more organically. SEZs have come to be used as a generic term to define economic zones which have a different policy framework from those that prevail with the economy where it is located. Historically, SEZ thinking has been informed by four main approaches: (i) the neoclassical approach (ii) the cost-benefit approach (iii) the neo-Marxist dependency approach and (iv) the heterodox approach. However, one area where these approaches are limited is knowledge exchange, which is the key mechanism through which these SEZs can support the development of critical capabilities. A primary motivation for establishing SEZs is to attract FDI into a country and foster knowledge exchange between multinational corporations and the local economy. Thus, any approach to thinking about the role of SEZs, needs to incorporate the mechanisms through which this occurs. Given that these issues have been broadly addressed in FDI literature, this

³ The domains of the ecosystems and the role of entrepreneurs in building institutions and organisations are further expatiated in chapter 6.

study proposes incorporating these channels into current SEZ thinking⁴. Consequently, this study assumes that knowledge exchange in SEZs takes place through (i) employment (ii) training and skills development and (ii) supply chain linkages. However, the effectiveness of these channels depends on the type and motives of FDI and the host country's SEZ policies, strategies, and institutions.

Finally, this thesis recognises an active role of the state in developing these hubs given their contemporary applications and empirical evidence of their role in facilitating catch-up, in many East Asian economies. This perspective sees industrial hubs as essential tools for the development of critical production, technological and innovation capabilities, a process which needs to be embedded into specific industrial and innovation policies. However, given that each hub emerges and functions in its unique way, the state's role will depend on the type of hub being developed. The nature of Special Economic Zones (SEZs) for instance, implies that the state must be involved in developing the incentive package and legislation governing their operations. Additionally, policies that link these SEZs to an overall development programme will be relevant in ensuring their effectiveness. Clusters, on the other hand, appear more spontaneously, so the role of the state should, amongst other things, involve efforts to coordinate with key stakeholders in these clusters to develop policies that address the specific needs of the given clusters. Overall, the development of these hubs needs to be embedded into national or state development plans and will require strong political commitment

⁴ This approach and the SEZ theories is discussed in chapter 5.

Figure 2: Conceptual framework

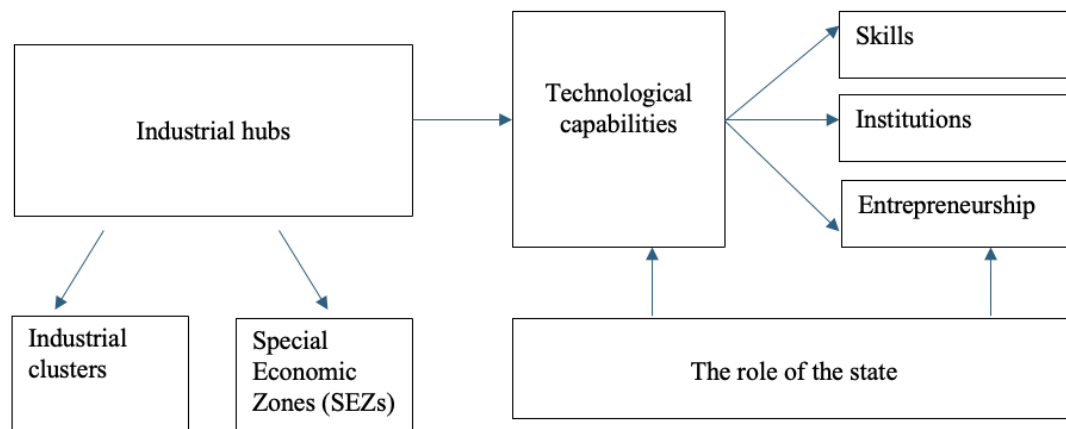


Figure two illustrates the relationship between the key concepts discussed thus far. While there are different types of hubs, this study focuses on industrial clusters and SEZs. These hubs are expected to facilitate the development of technological capabilities including skills, institutions, and entrepreneurship. Finally, the state has an important role to play in creating the policy and enabling environment for the development of these technological capabilities.

3.6 Conclusion

This chapter has reviewed the relevant literature and introduced the key concepts that form the basis of this study. It discussed the foundational theories underpinning the idea of industrial hubs, including industrial clusters and SEZs. It also presented several related insights, including the technological capabilities approach, the role of manufacturing and services in industrialisation, global and African experiences with industrial hubs and theories on the role of the state in economic development, which may help us consider their role in the development of these hubs. Finally, it presented a theoretical framework for the study.

4. Background chapter - Industrial Hubs, Capability Development and Economic Development in Nigeria

4.1 Introduction

This chapter is crucial for setting the stage for the study. It utilises existing literature, secondary data, archival sources, and interview data to provide insights into Nigeria's struggles with industrial development and its experience with developing industrial hubs. Additionally, it outlines the case studies for this thesis and explains how they fit into Nigeria's broader development program. The chapter is organised as follows:

Section 4.2 of the chapter presents an overview of Nigeria's industrial development progress since independence in 1960. The section examines the different measures and strategies adopted by successive governments to promote the growth of the manufacturing sector and highlights how the sector's performance has fluctuated over time. It argues that the manufacturing sector's contribution to GDP and employment has consistently declined due to its lack of competitiveness.

Section 4.3 highlights that the contribution of services to the country's GDP and employment has consistently increased over time. This is due to various efforts including programmes and policies promoting entrepreneurship in the services sector. The section also demonstrates how investments in digital infrastructure, such as internet connectivity, have increased ICT's contribution to GDP, further facilitating entrepreneurship in other services sectors. However, the performance of entrepreneurship in the country has been limited by several issues, including a lack of access to finance, skilled labour, and infrastructure.

Section 4.4 discusses the history and performance of industrial hubs in the country and argues that while a few positive outcomes have been observed, the performance of clusters and SEZs in the country (including Chinese SEZs) has been largely underwhelming, failing to make any significant contributions to innovation or industrial development. Section 4.5 discusses the two case studies, the LFTZ and the Yaba tech cluster, showing their similarities and differences in history and management, activities, job creation and skills development. Sections 4.5.3 and 4.5.4 discuss the challenges faced by firms in the LFTZ and Yaba cluster, respectively. Finally, Section 4.6 concludes the chapter.

4.2 A history of Nigeria's industrial development

In the colonial era, the British did not prioritise Nigeria's industrial advancement. However, they focused on developing fundamental infrastructure, such as roads and railways, that would aid in transporting primary goods and distributing imported goods from Britain within Nigeria (Ikpeze, 1990). During the colonial period, there was limited investment in developing local manufacturing capabilities. The colonies were only expected to supply raw materials to Britain while importing manufactured goods from the metropole. As a result, European multinationals such as UAC and John Holt dominated the Nigerian economy, while most local businesspeople were petty traders or small-scale labourers. Therefore, after gaining independence, the government's primary focus was on developing local industrial capabilities through the aggressive pursuit of Import Substitution Industrialization (ISI).

During the first national development plan (1962-1968), the goal was to establish the foundation for industrial development in Nigeria by allowing the importation of capital goods such as machinery, tools, and spare parts. This would facilitate the assembly of products within the country. 13 per cent of the public investment program was allocated to establishing an integrated iron and steel complex and an oil refinery; this provided funding for the

government's participation in industry and the establishment of a Development Bank that would provide funding to the industry (Murphy et al, 1989).

This plan recorded some initial gains, including the increase of manufacturing's share of GDP from 5 to 6 per cent (Ikpeze et al, 2004) and the growth of medium and large-scale plants in the industry from 150 at independence to 380 by 1965. However, manufacturing growth remained volatile, value addition was minimal, only a few backward linkages existed, and firms were overwhelmingly concentrated in light manufacturing and consumer goods (Olukoshi, 1993). The policies of ISI did not achieve their intended goals, instead, they increased import costs, leading to higher production costs for local manufacturers. This made their products less competitive compared to foreign counterparts. Additionally, ISI failed to address the balance of payment issues, and the industrial estates that were supposed to be established did not meet expectations.

Following the end of the Nigerian civil war in 1970, the government focused on three key policy priorities - reconciliation, rehabilitation, and reconstruction. To promote fair distribution of industries across the country and diversification of industrial activities, the second national development plan (1970-1974) was launched (Ekundare, 1971). The 1970s was a period of oil boom in Nigeria, generating an estimated \$90 billion in revenue between 1974 and 1981 (Ikpeze et al, 2004). Oil revenues rose to the extent that it constituted 80 percent of total federal revenues and over 90 percent of export earnings by 1974. This led to an unprecedented increase in government spending, doubling federal expenditure by 1974. By the early 1980s, the public sector accounted for about 50 percent of GDP and 70 percent of employment (Forrest, 1994, 2019; Ikpeze et al, 2004).

The government used the financial windfall to invest in heavy industries such as oil refineries, petrochemicals, fertilisers, liquefied natural gas, iron, and steel. However, some of these

industries were located based on political factors due to the political climate at the time, which resulted in their underperformance and lack of competitiveness. The oil boom had two main consequences; first, it concealed the extent of foreign exchange imbalances and fiscal inadequacies (Seers, 1981). As government funds became the primary source of economic surplus, productive economic activity became less appealing since accessing the government spending process was the primary means of acquiring wealth (Schatz, 1984). Most 'entrepreneurs' preferred to be involved in import trading, distribution, construction, or commission agents as commerce and service became more profitable to small-scale industries (Forrest, 1994).

This decade saw the Nigerian Enterprise Promotion decrees of 1972 and 1977, which aimed to increase Nigerian participation, local private accumulation, and state ownership in the economy (Thomas, 1987). In the late 1950s, there were interventions aimed at changing the ownership structure in the manufacturing sector that was heavily influenced by foreign capital. Despite these efforts, foreign companies dominated technology and capital-intensive industries. This was due to the resourcefulness of foreign firms who used technical service agreements or Nigerians as figureheads to maintain managerial control (Schatz, 1984; Thomas, 1987; Forrest, 2019). As foreign firms chose to partner with politically connected Nigerians, indigenisation policies did not lead to a transfer of productive resources to Nigerian industrialists but to Nigerian political elites. The Nigerian political elites strengthened their partnership with foreign producers but failed to create linkages between local and foreign industries (Clarke, 2013).

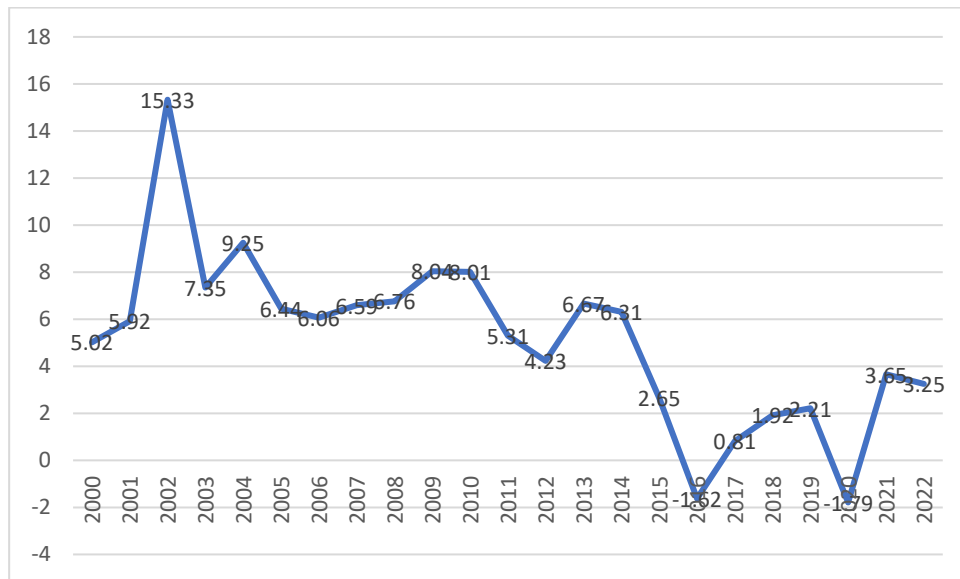
The international oil markets collapsed in 1982, exposing Nigeria's structural issues. These issues were reflected in the severe foreign exchange problems and the collapse of the manufacturing sector. Since most industries relied entirely on imported raw materials and capital equipment, many were forced to reduce their capacity or shut down entirely due to a

lack of access to critical inputs. The government had to accept the Structural Adjustment Programme of the World Bank and the International Monetary Fund (IMF) as a solution. The SAPs aimed to reduce state intervention and promote a market-led economy by dismantling licensing regimes and marketing boards, liberalising foreign exchange markets, reducing tariff and non-tariff barriers, reducing subsidies, and privatising government-owned enterprises (Anyanwu, 1992).

Implementing Structural Adjustment Programs (SAPs) was initially helpful in increasing the capacity utilisation of industries. By mid-1987, capacity utilisation had improved from 30 per cent to 36.7 per cent; by 1991, it had reached 42 per cent. This improvement resulted from liberalising the foreign exchange regime, which allowed manufacturers to import raw materials and inputs. However, trade liberalisation also led to the influx of finished products from abroad, which exposed local manufacturers to unfair competition from cheaper imports. Many could not compete and had to shut down or convert their facilities to warehouses or packaging centres for imported products such as fruit juice and detergents (Ishiola, 2004).

The impact of SAPs on industry was mixed. According to many African scholars, while providing some macroeconomic stability, it failed to promote industrialisation and manufacturing development (Stein, 1992; Aryeetey and Moyo, 2012). During the 1990s, Nigeria underwent several political and economic crises due to military rule. However, with the return to democracy in 1999, the country embraced economic liberalisation and private-sector-led development. This led to the implementing of a new economic policy called the National Economic Empowerment and Development Strategy (NEEDS), which aimed to foster economic growth and development.

Figure 3: Nigeria’s annual GDP growth rate (2000 – 2022)

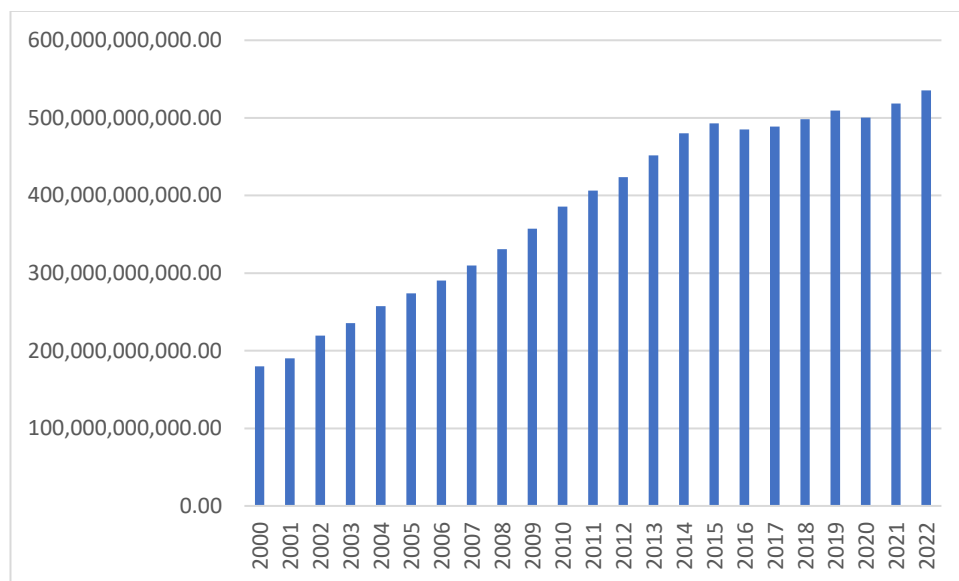


Source: World Development Indicator, 2023.

During the Obasanjo-led administration from 1999 to 2007, there were several noteworthy accomplishments. These include successfully negotiating \$16 billion debt relief from the Paris Club, the widely acclaimed telecommunications sector deregulation, and the banking industry's consolidation. In addition, there was relative macroeconomic stability, with an average growth rate of 7 percent from 2003 to 2007 (See Fig 1). After taking office in 2011, President Goodluck Jonathan continued with most of the existing policies, including retaining Dr. Ngozi Okonjo Iweala as the Minister of Finance. The Vision 2020 document outlined his development strategy to make Nigeria one of the world's top 20 economies by 2020. The goal was to achieve a GDP of \$900 billion and a per capita income of at least \$4000 annually (Okonjo-Iweala and Osafo-Kwaako, 2007).

The Nigerian government introduced new measures 2010 to support the industry in achieving its long-term development plan, titled ‘Vision 2020’. The main objective of this plan was to make Nigeria one of the world's top twenty economies by 2020. The manufacturing sector was prioritised, focusing on five sub-sectors: chemicals and pharmaceuticals, basic metal, iron and steel, fabricated metal, food, beverages and tobacco, textiles and apparel and footwear, and non-metallic mineral products. The National Industrial Revolution Plan (NIRP) was launched in 2014 to support these industrial objectives. However, in 2015, Muhammadu Buhari was elected as the President, coinciding with the steep fall of oil prices from a high of \$112/barrel in 2014 to below \$50/barrel in 2016. This, combined with the decline in oil production in the same period, led to an economic recession in 2016.

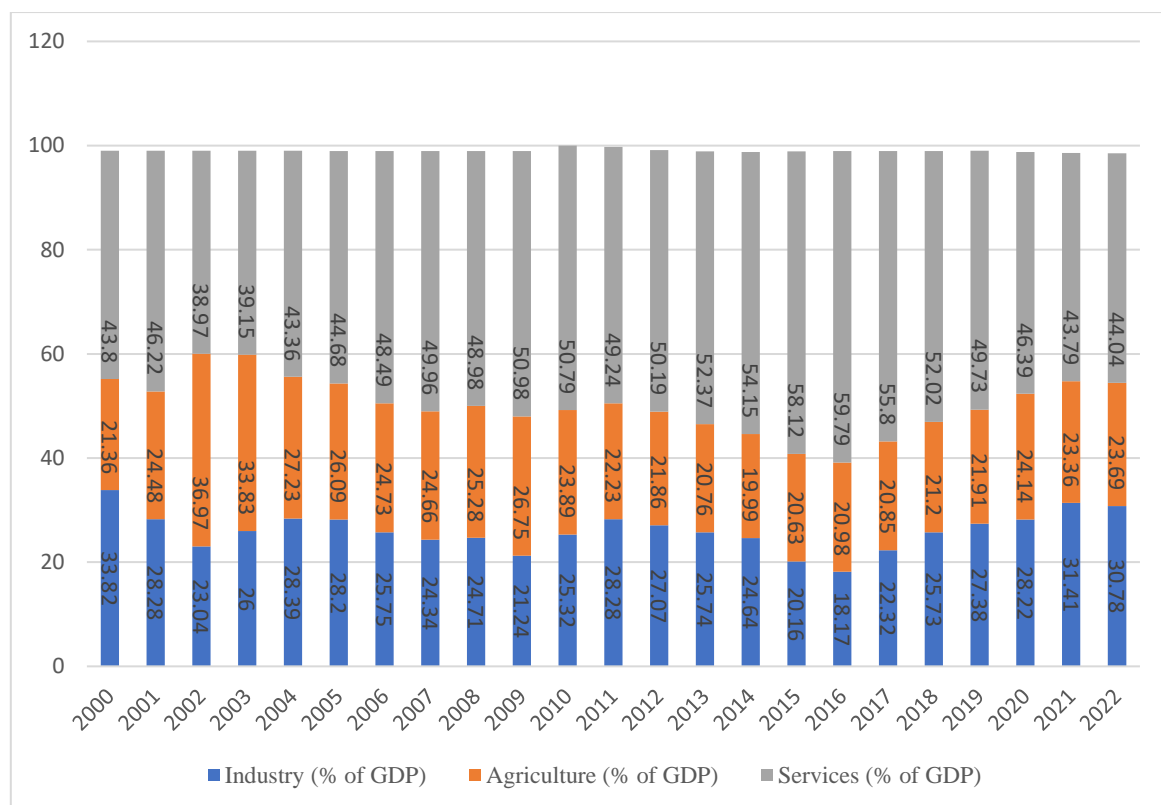
Figure 4: Nigeria's GDP (2000 -2022)



Source: World Development Indicator, 2023.

In 2017, the Nigerian government launched the Economic Recovery and Growth Plan (ERGP) to promote economic development and diversification. The plan prioritised the development of industrial hubs, to be achieved through a series of actions such as reviewing local and fiscal regulatory incentives, providing dedicated infrastructure, expanding the capacity of financial institutions to provide financing to manufacturing firms, promoting science parks and innovation hubs, and offering an attractive fiscal and regulatory framework to support private equity and venture capital.

Figure 5: Sectoral contribution to Nigeria's GDP (2000 - 2022)

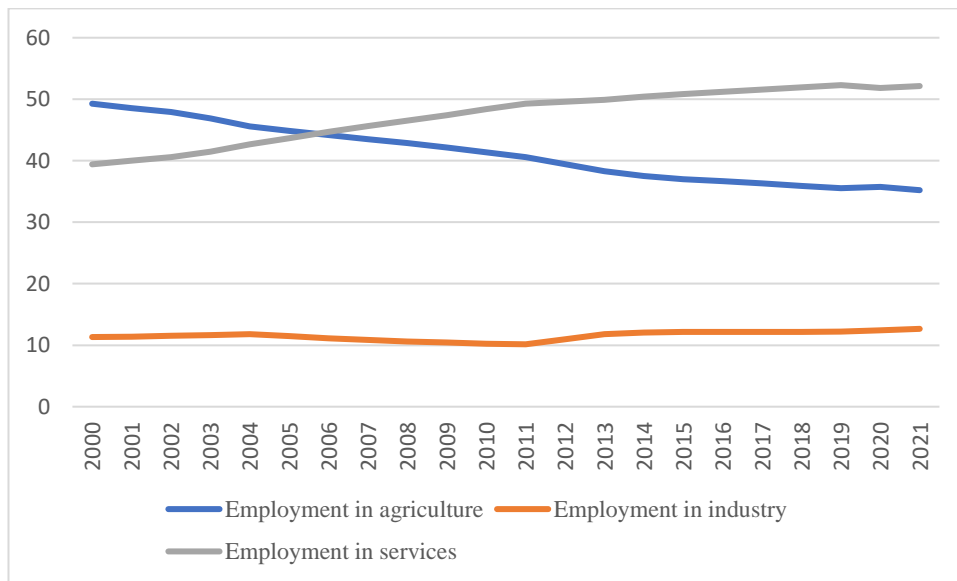


Source: World Development Indicators, 2023.

The contribution of agriculture and industry to Nigeria's GDP has been consistently declining, while the share of the services sector has significantly increased. In 2002, the services sector accounted for 39 per cent of GDP, but by 2016, it had risen to 59.8 per cent (See Fig 3). The growth of the services sector can be attributed to the liberalisation reforms carried out in the early 2000s, such as the privatisation of the telecommunications sector and the consolidation of the banking sector in 2006 (Chete *et al.*, 2014).

In recent years, there has been a noticeable rise in manufacturing value-added, which can be attributed to the successful implementation of the Economic Recovery and Growth Plan (ERGP). This achievement has, in part, been supported by the ease of doing business reforms, which have significantly improved Nigeria's global ranking, climbing from 169 in 2016 to 131 in 2020 (World Bank, 2016, 2020). As depicted in Figure 4, the industry sector's contribution to employment has been disappointingly low, accounting for less than 15 percent of the total workforce, in contrast to the agriculture sector's 42 percent share. Furthermore, the graph also reveals that the services sector has gained increasing importance, with over 50 percent of the total employment generated by this sector since 2019.

Figure 6: Sectoral contribution to employment in Nigeria (2000 - 2022)



Source: World Development Indicators, 2023.

The manufacturing sector's problems stem from a failure to develop critical production capabilities, resulting in complexity. A 2007 study conducted by the Manufacturers Association of Nigeria (MAN) revealed that;

‘Only a meagre percentage of manufacturing companies (10%) are operating at a sustainable level, whereas as much as 60% are going to shut down or have already shut down after facing several series of financial and other kinds of crises. Many factors were identified by MAN to be the root cause of the problem. The reasons behind the low growth and performance of the Nigerian manufacturing sector during the last few years include “high production costs caused by energy, high interest and exchange rates, influx of inferior and substandard products from other nations, multiplicity of taxes and levies, poor sales partly as a result of low purchasing power of the consumers, bogged down with delay in clearing consignments due to existence of multiple inspection agencies at the ports, etc.’ (Ku et al, 2010, p. 14)

The sector has not kept up with advances in production technology, hindering its international competitiveness (Mazaheri and Mazumdar, 2005). Insufficient investment in research and development has also played a role in these outcomes. This aligns with studies that have discovered that the Nigerian manufacturing industry has deficient levels of skill and technology adoption, which has resulted in stagnation or reduction in the effectiveness of companies in the sector (Malik et al, 2004). Limited investments in technology by firms in the sector have

resulted in a lack of growth and efficiency. The issue, however, is that these firms often cannot secure the financing required for these investments. This deficit in skills and investment has led to low-capacity utilisation by firms as they grapple with issues such as capacity decline, expansion, and mortality (Ojowu, 2003).

Foreign Direct Investments (FDI) have historically been viewed as a means to bolster manufacturing performance in Nigeria, but empirical evidence suggests that the outcomes have been largely underwhelming. Studies have found that FDI inflow in Nigeria over the years has a negative relationship to manufacturing output and has therefore retarded rather than enhanced growth (Adejumo, 2013; Okaro, 2016; Nwosa, 2019). Others have suggested that the poor performance of FDI in the country reflects the poor business environment and the quality of human capital (Ayanwale, 2007). Foreign direct investment (FDI) performance in Nigeria's manufacturing sector has shown that FDI inflow alone cannot improve technological capabilities. Various factors affect the effectiveness of FDI. In Nigeria's case, the effectiveness of FDI has been hindered by unpredictable government policies, macroeconomic instability, an unfavourable business environment, a lack of essential raw materials, and weak industrial capabilities (Danmola et al, 2017).

4.3 Efforts to promote entrepreneurship in Nigeria.

Over the years, successive governments have promoted entrepreneurship to spur economic growth, especially in the services sector. Moreover, entrepreneurship development has also been seen as a solution to high unemployment rates, poverty, and sluggish economic growth (Abimbola and Agboola, 2011; Thaddeus, 2012; Oyelola *et al.*, 2013; Salami, 2013). The following analyses from Idam (2014), the government has implemented several programmes to support entrepreneurs.

The Small and Medium Industries Equity Investment Scheme (SMIEIS) was established in 1999 by the Banker's Committee of the Central Bank of Nigeria (CBN) to support small and

medium-scale enterprises. The scheme required banks in Nigeria to set aside 10 per cent of their profit after tax for investment in small and medium enterprises. However, the scheme has not been very successful. For example, in 2009, only 28 billion Naira was invested, which was only 67 per cent of the 42 billion set aside. Additionally, the investments were heavily concentrated in Lagos state, which accounted for 41.25 per cent of all investments, while 24 states had less than 1 per cent investment each (CBN, 2009).

Established in the year 2000, the Bank of Industry (BOI) was formed by merging three Nigerian federal government development finance institutions - the Nigerian Industrial Development Bank (NIDB), the Nigerian Bank for Commerce and Industry (NBCI) and the National Economic Reconstruction Fund (NERFUND). However, the BOI has faced criticism for its urban focus and its tendency to prioritise big industrial corporations over small enterprises. The Nigerian Agricultural Rural Development Bank (NACRDB) was created in 2001 to address this issue and support entrepreneurship in the agriculture sector. NACRDB merged three federal government development finance institutions – the Nigerian Agricultural Cooperative Bank (NACB), Peoples Bank, and the Family Economic Advancement Programme (FEAP). It aimed to provide accessible credit facilities to rural farmers, cooperative societies, and small businesses. However, unfortunately, over 80 per cent of the target population lacked access to the institution's services.

Established in 2003, the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) aims to oversee the development of micro, small and medium enterprises (MSMEs) in Nigeria by introducing programmes, policies, and services for MSMEs. However, SMEDAN's impact has been limited due to a lack of awareness among the target population. The government also established the National Entrepreneurship Development Centre, which provides institutional support for entrepreneurship development. Additionally, Nigerian tertiary institutions, including universities, are required to establish Entrepreneurship

Development Centres (EDCs), and entrepreneurship has been made a compulsory course of study in these universities. However, the EDCs' impact has been minimal due to a disconnect between them and the industrial sector. This undermines the effectiveness of the academic programme delivered to students.

The Youth Enterprise with Innovation in Nigeria (YoUWIN) was launched in 2013 to support entrepreneurship in the country. It was designed as a business plan competition for young people between the ages of 18 and 45, who were allowed to compete for N1 million to N10 million to execute their business ideas. This was the first initiative that aimed to identify truly entrepreneurial firms instead of just MSMEs in general. In 2016, the government launched the Aso Villa Demonstration Day (AVDD), a pitch competition designed to fund innovative start-ups nationwide. AVDD was launched on a relatively small scale, with only 3 start-ups out of the 30 finalists receiving 3 million each in funding.

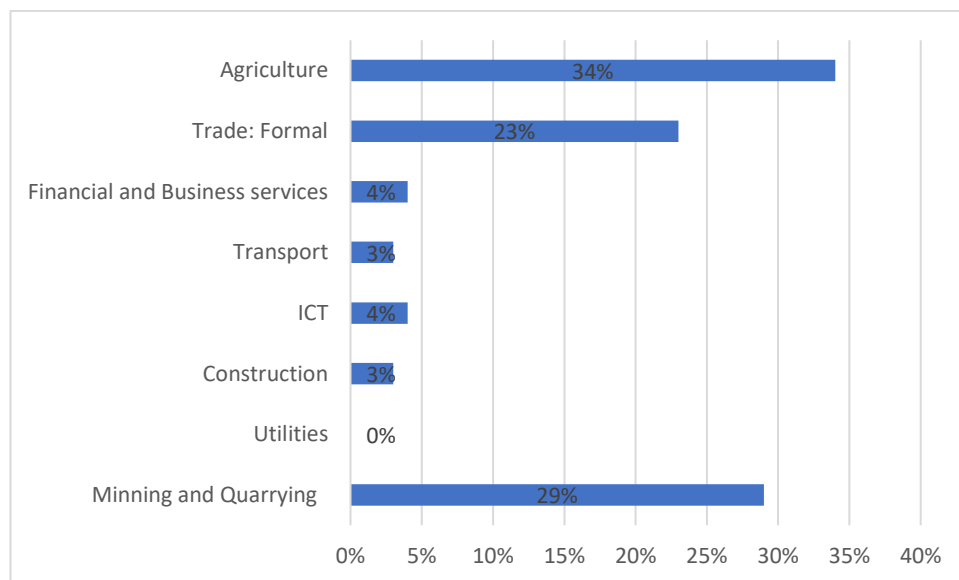
However, in 2017, 51 start-ups were selected as finalists and allowed to pitch their ideas to the president. They were promised \$40000 in grants to be paid in two tranches (Ndiomewese, 2018). Following the initial payment, the recipients did not receive any further payments. Several beneficiaries expressed their frustration to the media, as some had already invested in equipment, supplies, and other resources to expand their businesses, expecting to receive the remaining funds. However, the remaining payments never materialised, leaving them in challenging situations.

Nevertheless, these efforts have, over time, led to an increasing share of services, as shown in Fig 3, in the nation's GDP, leading authors including Ekeruche *et al.*(2022) to argue that Nigeria's services sectors or industries without smokestacks (IWOSS) offer significant opportunities for large-scale employment and trade opportunities. The Nigerian economy has experienced a significant increase in sectors such as financial and business services,

information, and communications technology (ICT), tourism, formal trade, and transport in the last two decades. From 2000 to 2020, the contribution of these sectors to GDP has increased significantly.

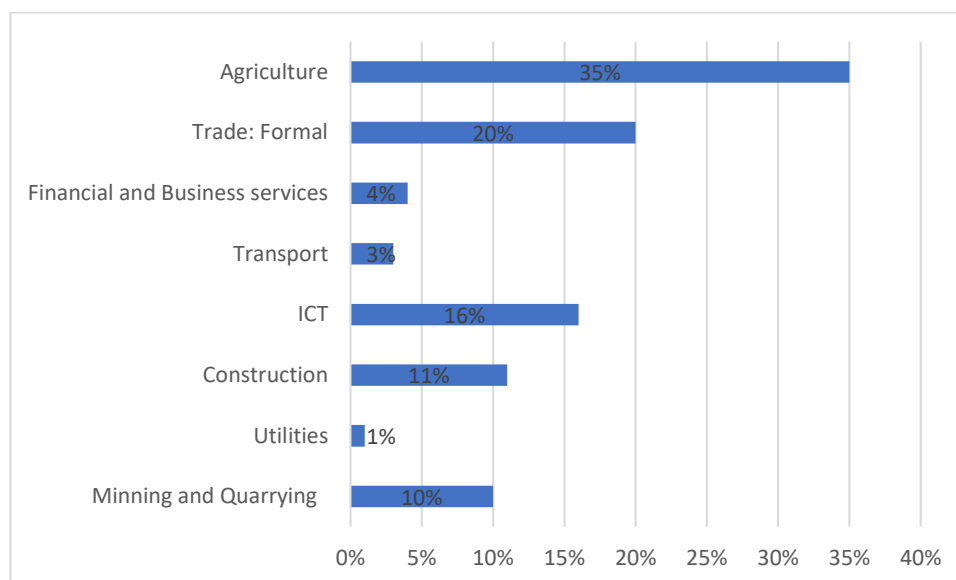
Figures 5 and 6 show that the share of GDP from the ICT and construction sectors has increased by 75 and 73 percentage points, respectively. In 2000, only 4 per cent of Nigeria's Gross Domestic Product (GDP) was contributed by the ICT sector, while the construction sector contributed only 3 per cent. However, in the year 2020, the contribution of the ICT sector to GDP increased to 16 per cent, while the construction sector's contribution increased to 11 per cent. This growth in the ICT sector is primarily due to the significant increase in internet service providers in Nigeria, which currently stands at about 188, according to the Nigerian Communications Commission.

Figure 7: Contribution of select services sectors to Nigeria's GDP in 2000



Source: Ekeruche et al, 2022.

Figure 8: Contribution of select services sector to Nigeria's GDP in 2022



Source: Ekeruche et al, 2022.

Nigeria's ICT sector is Africa's most prominent, accounting for 82 per cent of the continent's telecommunications subscribers and 29 per cent of its internet usage (National Information Technology Development Agency, 2021). The Nigerian Communications Commission (2021) estimates that Nigeria has about 76 million subscriptions on broadband (a penetration rate of 40 per cent) and 187 million lines in the voice segment as of May 2021. The growth of the ICT sector has been an enabler of entrepreneurship across many sectors, such as healthcare, education, financial services, agriculture etc. As a result, the National Digital Economy Policy and Strategy (2020 -2030), launched in 2019, aims to reposition the Nigerian economy towards digital technologies' opportunities and reduce the country's dependence on oil exports. The program is based on 8-pillars for the acceleration of the Nigerian economy:

- Developmental regulation
- Digital literacy & skills
- Solid infrastructure
- Service infrastructure
- Digital services development & promotion

- Soft infrastructure
- Digital society and Emerging technologies
- Indigenous content development & adoption

The opportunities offered by ICT have led to an increasing push at the state and federal government levels to implement policies and ICT projects to attract ICT investments and create an enabling environment for businesses. At the federal level, the most recent initiative, which will be discussed in chapter 7 is the Nigerian Start-up Act, which was signed into law in 2022 to support the growth of technology entrepreneurship in the country. The primary objective of the Act is to provide a legal and institutional framework for the development of start-ups in Nigeria; the sub-objectives include: (i) providing an enabling environment for the establishment, development, and operations of start-ups in Nigeria; (ii) fostering the development and growth of technology-related talent and (iii) positioning Nigeria's start-up ecosystem as Africa's leading digital technology hub, having excellent innovators with cutting-edge skills and exportable capacity.

Despite significant progress, entrepreneurship performance in Nigeria, including start-up entrepreneurship, is hindered by various critical challenges. SMEs account for 96 per cent of businesses and contribute 50 per cent of GDP (PWC, 2020) but 80 per cent fail within the first five years due to financial constraints (Adebisi and Gbegi, 2013). According to a study conducted by PWC which surveyed over 10,000 firms, the primary obstacle to business growth is the lack of credit. During the period under review, less than one-third of MSMEs had successfully obtained a loan from a financial institution (PWC, 2020).

Infrastructural issues, including poor power supply and road networks, have also affected the performance of entrepreneurs (Igwe, 2016). For instance, the telecom masts nationwide are powered by heavy-duty diesel generators due to inadequate power supply. Moreover, the quality of skilled labour in Nigeria remains a significant constraint, given the poor quality of

primary education and the low levels of tertiary enrolment (GEM, 2014). However, Egwu (2014) argued that beyond these issues, the fundamental problem that has undermined the government's approach is that all small business owners in Nigeria are treated as entrepreneurs. As a result, there have been limited efforts (until recently) to distinguish entrepreneurial from non-entrepreneurial firms. According to him;

'Policies and programmes put in place to grow small businesses remain beneficial to the economy, but the classification of small businesses into entrepreneurial and non-entrepreneurial firms will allow for specific strategies for each group. While small non-entrepreneurial businesses may need basic skills training, soft loans and grants to be fully self-employed, entrepreneurs, in order to play their catalytic role in economic development, need higher level of support in terms of research and development, as well as the provision of grants and venture capital for the execution of business plans' (Egwu, 2014, p. 5).

4.4 History and Performance of Industrial Hubs in Nigeria

In the 1960s, Nigeria tried to create industrial hubs by developing industrial estates, but they were unsuccessful in attracting foreign direct investment and promoting industrial capabilities. Despite this, industrial clusters have emerged throughout the country, particularly in the southern regions such as Delta and Ogun states, which have large manufacturing clusters, and Lagos, which has the largest. The Nnewi automotive cluster, the Otigba computer village, and the Aba fashion and garments cluster have spontaneously emerged with little government support.

Spontaneous African clusters, including Nigeria, have had mixed and largely underwhelming outcomes despite their potential. As discussed in Chapter 3, many of these clusters struggle with poor infrastructure, weak connections to modern sources of innovation and technology, and a general lack of government support. There were limited interactions between clusters, and local knowledge institutions were insignificant (Oyelaran-Oyeyinka, 2004). There is no evidence of innovation in textile weaving clusters in southwestern Nigeria due to a lack of knowledge and skills, shortage of skilled personnel, financial constraints, lack of basic infrastructure, and unsupportive government regulations (Adegbite, 2011).

In some cases, however, there have been relatively positive outcomes. Some auto-mechanic clusters in southwestern Nigeria have shown higher levels of innovation among clustered than non-clustered firms (Oluwale et al, 2013). Also, there is evidence of a positive impact of clustering, innovation, and technological capabilities in the furniture-making clusters in southwestern Nigeria and collaboration and innovation in an automotive cluster in South-eastern Nigeria (Ekesiobi et al, 2018).

Nigeria has a history of free trade zones dating back to the 1990s. During the administration of General Ibrahim Babangida, Export Processing Zones (EPZs) were developed to attract foreign direct investment (FDI). The Nigeria Export Processing Zone Act No.63 was enacted in 1992, which gave the Nigeria Export Processing Zone Authority (NEPZA) the responsibility of establishing, regulating, licensing, and monitoring EPZs. The Calabar EPZ was established in 1992, followed by the Onne Oil and gas free zone in 1997. However, due to poor performance, the government changed their mandate and made them free trade zones, no longer requiring 75 per cent of their production to be exported. These zones were permitted to sell to the domestic market without restrictions but had to pay customs duties on imported raw materials (Adunbi and Stein, 2019). This change also expanded zone ownership structures from public to private and JV (joint venture) SEZs.

There is an incentive and regulatory framework in place that governs Special Economic Zones (SEZs) regardless of their ownership type. According to the Nigerian Export Processing Zones Authority (NEPZA), there are currently 25 operational free zones in the country, with 12 under construction and 21 inoperative zones. Out of the 19 operational zones, 12 are privately owned. NEPZA also states that there are 584 enterprises operating in these zones, which have created at least 25,000 jobs and attracted a minimum of USD 30 billion in foreign direct investments.

The performance of Special Economic Zones (SEZs) in Nigeria, including those owned by Chinese investors, has been largely disappointing. The performance of the two Chinese SEZs in Nigeria has been poor as they have failed to attract many Chinese firms, generate employment, or expand exports (Adunbi and Stein, 2019). Similarly, Bräutigam and Tang (2014) study the performance of Chinese SEZs in Nigeria and find limited evidence of technology transfer to local firms. Newman and Page (2017) also, conclude that the performance of SEZs has been disappointing as they have failed to develop the institutions and human capital needed to attract global investors. Farole (2011) found that the zones in Nigeria have not had a meaningful impact on the country's export structure, contributing only about 4 per cent to non-oil exports. Of all five African countries surveyed for the study, employment in Nigeria was lower than in all, but only 46 percent of managers were Nigerians.

Harry (2016) survey of fifty-four randomly selected enterprises in four zones – Calabar, Onne, Snake Island, and Lagos found minimal evidence of local sourcing but an overwhelming focus on labour and assembly. Evidence for exports was also minimal, as nearly 70 per cent of respondents indicated that they exported less than 20 per cent of their production. Similarly, Stein's (2012) study of the Onne Oil and Gas trade zone discovered that through 2007, 10 years after it was established, there was little or no evidence of processing activity as it was primarily used as a warehouse for oil and gas companies.

4.5 Introduction to the Case Studies

This section introduces the two case studies for this thesis, the LFTZ and the Yaba cluster. It begins with a discussion of their areas of similarities before outlining some key differences in their (i) History and management, (ii) activities, and (iii) job creation and skills development. These discussions aim to provide the reader with the context needed to better understand the motivation for this thesis.

4.5.1. Similarities between the hubs

The two clusters under consideration have been in operation for about 14 years. While the LFTZ was established in 2006, it was not till 2009 that it became operational; similarly, the Yaba cluster started gathering momentum around 2010. Both, located in Lagos state, are broadly subject to the same policy environment⁵ and infrastructure challenges but have continued operating over the years. More fundamentally, they are both viewed by the federal and state governments as an integral part of their industrial development strategies and as platforms that can deliver agglomeration benefits for their locations.

A ‘cluster concept’ was adopted at the federal government level as part of a national industrial development strategy. The government introduced the cluster concept to tackle significant challenges in industrial development, such as an unfavourable business environment, multiple taxation, lack of credit facilities, poor capacity utilisation, and inadequate skills. For many policymakers, the motivation to promote these clusters stemmed from the classical benefits that derive from agglomeration economies including (i) collaboration and competition between firms (ii) labour pooling (iii) knowledge spillovers, innovation, and inter-firm linkages and (iv) opportunity for better target governments for industry and commerce. To this end, these clusters can be seen as part of a strategy to develop industry and help the country develop critical capabilities while supporting economic development. While there is a recognition of some of the differences and management of these clusters, the understanding is that they can both be used to achieve relatively similar ends.

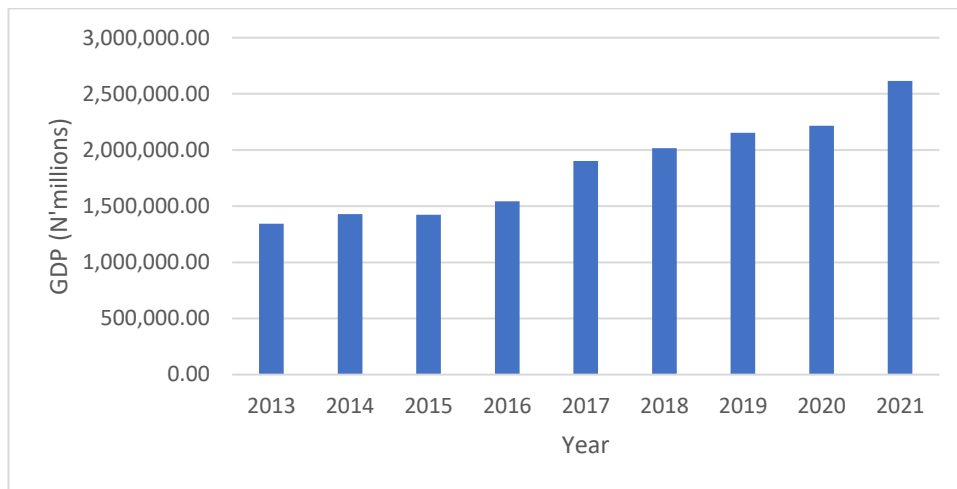
⁵ Although the SEZ has special incentives not applicable to the Yaba tech cluster.

Figure 9: Nigeria's industrial hubs strategy

Type of industrial hub	Definition
Free trade zones	Agglomeration of industrial activities situated near seaports or international airports where goods would be brought in and taken out of the country's without being subject to usual duties as they were outside the custom's territory. They will also provide special incentives to attract foreign direct investments (FDI).
Industrial parks	Mega parks covering areas of not less than 30 to 50 square kilometres for large manufacturing companies with significant value addition to their final products. One Park was supposed to be in each of the six geo-political zones in the country, focused on processing products considered to be a comparative advantage of each zone.
Industrial clusters	Agglomeration of industrial activities between 100 and 1000 hectares, smaller in size than parks and to be managed by the private sector. The state and local governments were supposed to establish this.
Enterprise zones	Enterprise zones were 5 to 30 hectares agglomerations supposed to help the scaling up of informal businesses to become formal businesses. There were supposed to be located in every state capital, local government and major city.
Incubators	These were supposed to be start-up centres for new and experienced entrepreneurs who wished to start-up their business. These centres were supposed to provide entrepreneurship training and would be attached to higher institutions and research institutes.

The Lagos state government views them similarly and sees them as platforms for job creation and vehicles to accelerate the growth of their manufacturing and services sectors. Nigeria's manufacturing employment is concentrated mainly in Lagos state, accounting for about 50 per cent of the country's manufacturing workforce. The manufacturing sector in Lagos has experienced significant growth in value addition, increasing from N1.344 trillion in 2013 to N2.615 trillion in 2021. This growth has been driven mainly by the Food, Beverage, and Tobacco sub-sector, which recorded N1.066 trillion in 2013 and grew to N2.015 trillion in 2021, contributing 77% to the overall value addition. The LFTZ is, therefore, seen as a strategic manufacturing platform that can support the development of critical industrial capabilities.

Figure 10: Contribution of the manufacturing sector to the GDP of Lagos (2013 – 2021)



Source: Lagos Bureau of Statistics (LASG, 2023)

Also, Lagos State's economy is primarily services driven. As of 2013, the services sector, comprising 25 sub-sectors, contributed 90.8 per cent to the GDP. In 2021, this figure remained relatively high at 86.25 per cent. The services sector is dominated by four main sub-sectors: trade (48.3 per cent), telecommunications (16.5 per cent), financial institutions (5.1 per cent), and real estate (4.03 per cent). The growth of ICT, mainly services provided by start-ups in and around the Yaba cluster, has been a significant driver of the services sector's growth in Lagos. These start-ups' digitisation and financialization have provided other sectors in the services industry with simple and intelligent value addition. Therefore, Lagos state policymakers view the Yaba cluster's development as an important means to maintain the role of services in its economy while increasing the sector's value addition.

Because of their strategic importance to the state, these hubs have enjoyed significant buy-in and support from the state and feature prominently in its investment promotion materials. LFTZ is partly owned by the Lagos state government through its joint venture with Chinese zone developers, while the Yaba cluster has been a beneficiary of several interventions by the state government, as will be discussed extensively in chapter 7.

4.5.2. Differences between the hubs

- **History and management**

The history and management of these clusters are different, with the LFTZ being a constructed cluster, i.e., a public policy project, managed through a joint venture between the Lagos state government and Chinese zone developers, while the Yaba tech cluster emerged spontaneously with a more decentralised form of management. In 2006, the Chinese government committed to establishing six Economic and Trade Zones (ECTZs) in Africa. Two of these zones, the Lekki Free Trade Zone (LFTZ) in Lagos state and the Ogun Guangdong Free Trade Zone (OGFTZ) in Ogun state, were designated for Nigeria. The LFTZ was initiated by Bola Ahmed Tinubu, the current President of Nigeria, when he was the Governor of Lagos state in 2004. He set aside an initial 1000 hectares for the project at the time. In 2006, the Lagos state government partnered with a Chinese consortium, the China–Africa Lekki Investment Limited (CALIL), to establish the LFTZ.

CALIL is made up of five state-owned companies from China, namely: the China Railway Construction Corporation Limited (CRCC); China Civil Engineering Construction Company (CRCC); the Nanjing Jiangning Economic and Technology Development Company; Nanjing Beyond International Investment and Development Company; and the China – Africa Development Fund. The Lekki Free Zone Development Company (LFZDC) manages the day-to-day operations of the company as a Joint Venture (JV), with CALIL owning 60 per cent, the Lagos state government owning 20 per cent, and the Lekki Worldwide Investment Ltd owning the remaining 20 per cent. It is worth noting that, although the Lagos state government is the local partner in this project, all Special Economic Zones (SEZs) across the country operate under the NEPZA (Nigeria Exports Processing Zones Authority) Act.

NEPZA offers a convenient one-stop-shop service in all Special Economic Zones (SEZs) to streamline bureaucratic services for investors. This is achieved by ensuring that officers from relevant government agencies, including the Nigeria Customs Service (NCS), Nigeria Police Force (NPF), and Nigeria Immigration Service (NIS), are physically present in these zones. As a result, companies are not required to visit the Immigration office to obtain work permits for their staff. When their containers arrive in the country, they can bypass the ports' clearing process and receive support from the customs officers within the SEZs.

Additionally, police officers are stationed in every zone to ensure security. Officers from the Nigerian Agency for Food and Drug Administration (NAFDAC), the Standards Organisation of Nigeria (SON), and the Department for State Services (DSS) come in on a need basis. Companies seeking to interact with government agencies in Nigeria must go through the Nigerian Export Processing Zones Authority (NEPZA), which serves as a channel for their requests. At the Lekki Free Trade Zone (LFTZ), NEPZA promises companies a quick turnaround time of 24 to 48 hours for all requests. However, the lack of cooperation from state governments and partner agencies has made it difficult for NEPZA to fulfil these commitments. The NEPZA Act provides generous tax and fiscal incentives to companies to encourage investment and mitigate the challenges of doing business in Nigeria (FRN, 1990). They include;

- Legislative provisions on taxes, levies and duties and foreign exchange regulations shall not apply within zones.
- Repatriation of foreign capital investment in the zones at any time with capital appreciation of the investment.
- Remittance of profits and dividends earned by foreign investors in the zones.
- No import or export licenses shall be required up to 25% of production may be sold into the Customs territory against a valid permit and on payment on appropriate duties.
- Rent-free land at the construction stage, after that, rent shall be determined by the authority.
- Up to 100 percent foreign ownership of businesses in the zones is allowable.

- Foreign Managers and qualified personnel may be employed by companies operating in the zones.

By contrast, the Yaba tech cluster or ‘Yabacon valley’ emerged more spontaneously. The Yabacon valley is the heart of Nigeria's tech industry and houses a large concentration of tech start-ups, co-working spaces, incubation hubs, investors, and other important actors in the country. As Lagos's tech ecosystem has expanded, the cluster has spread beyond Yaba to include suburbs such as Lekki, Ikoyi, and Victoria Island, around 12-15 km away from Yaba. Yaba is one of Lagos's oldest neighbourhoods and is home to two government-owned tertiary institutions: the Yaba College of Technology (Yabatech) and the University of Lagos (Unilag). The Nigeria Medical Research Institute, a vocational training school, and tens of secondary schools are also in the area.

According to a veteran in the cluster, the presence of these educational institutions led to the establishment of many training institutes in the neighbourhood to teach young graduates new programming languages, such as Fortran, which became popular in the early 2000s. This also attracted young people from other parts of Lagos to Yaba to acquire these skills, further bolstering the region's skilled workforce. The presence of these young and skilled workers was also a significant factor in attracting small businesses to relocate to the area. The owner of an IT training institute at the time said that;

‘So around late 2008/early 2009, we started a software development company that focused on developing bespoke solutions, so even if it's a website, we tried to make sure that clients have some unique selling point that was included in the whole process or the architecture. One of the first things we did was establish an academy that provided graphics and website design training. We recruited students from institutions around us like Yabatech and Unilag, we trained them, and soon they started to work on some commercial projects. Some who were very good began to earn money in a short period’⁶.

⁶ Hub 1.

Yaba's strategic location in Lagos made it a preferred choice for start-ups. Although it is situated in the Lagos mainland, it is close to Lagos Island, where modern commercial real estate developments are concentrated, particularly in the Ikoyi and Victoria Island areas. It is approximately 15km from these areas. However, the costs of operating on the Island were often too high for start-ups, making Yaba a more affordable and attractive option. With its favourable location and a young labour force, Yaba became the ideal location for entrepreneurs to launch their businesses. According to a serial entrepreneur in Yaba;

'Yaba was just convenient for younger people with the little capital and looking for cheap resources, close to schools where you could get talent who were open to innovations and would cost close to nothing to join your team'⁷.

In the early 2010s, the region saw a rise in start-up entrepreneurship due to better economic conditions and improved digital connectivity. For instance, the number of people in Nigeria using the Internet saw significant growth, increasing from 11.5 per cent in 2010 to 21 per cent in 2014. This was a significant improvement compared to the 0.06 per cent recorded at the beginning of the decade in 2000 (Statistica, 2023). More people also started to own smartphones as China's entry into the global smartphone market significantly reduced the costs of mobile phones for people in developing countries. Nigeria's macroeconomic conditions were also favourable in this period; between 2011 and 2014, real GDP grew between 5-6 per cent, and GDP growth in the non-oil sector was high, reaching a peak of 8.3 per cent in 2013 (World Bank, 2015). As technology start-ups started to establish themselves in the region, providers of related services and business support services such as digital marketing, accounting, etc., also started to migrate to the region to meet the needs of the emerging ecosystem there.

⁷ Hub 1.

In terms of the management of the cluster, there is no centralised administrative body like the type at the LFTZ, instead, the cluster benefits from different policies and initiatives by federal and Lagos state government agencies that have responsibility towards technology and entrepreneurship. At the federal government level, there are three main ministries whose jurisdictions cover technology start-ups, they include;

- The Federal Ministry of Industry, Trade and Investment (MITI)
- The Federal Ministry of Communications and Digital Economy (MCDE) and;
- The Ministry of Science, Technology, and Innovation (MSTI).

As MITI's mandate is to support local industries, it has agencies that focus on supporting the growth of SMEs, and support for start-ups tends to be included in this general category. Two relevant agencies under this ministry are the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), which has several programmes to connect SMEs with sources of finance and capacity-building programmes and the Bank of Industry (BOI), which provides financing to MSMEs as well as large businesses. BOI also offers business advisory services and has funds focused on specific priority sectors such as agriculture and power and different demographics, i.e., youth and women. The Central Bank of Nigeria also has a Micro, Small and Medium Enterprises Development Fund (MSMEDF) that is supposed to enable MSMEs to access low-interest funds; however, no specific funds are targeted towards technology start-ups.

Under the Federal Ministry of Communications and Digital Economy, the agency whose work is most relevant to Technology start-ups is the National Information Technology and Digital Economy (NITDA), which was established to implement the National IT policy and the National Information Technology Development Agency Act of 2007. This mandate empowers NITDA to approve all government information technology projects and infrastructure developments in the country. Their activities also extend to the private sector as they have

regulations ensuring private actors comply with the country's digital technology regulations. Nigeria also has a National ICT policy of 2012 where the government says that its objective is to use ICT to address youth-specific development orientation issues; some of the provisions of this policy include:

- Provide incentives such as appropriate tax and import duty reliefs.
- Facilitate the grant for pioneer status to qualified companies to encourage investment in the ICT sector.
- Provide appropriate fiscal incentives to encourage local manufacture of ICT equipment and.
- Development of software.
- Streamline procedures and requirements for the importation of ICT equipment.
- In collaboration with relevant agencies of government, take practical steps to reduce the occurrence of multiple regulations and taxation in ICT.
- Adopt financing models that foster indigenous ICT entrepreneurship.

In 2016, the government also launched its ICT sector roadmap to address issues undermining ICT development in the country, including technology infrastructure, broadband penetration, and e-commerce. To increase 3G network penetration to 90 percent of the population, the Nigerian Communications Commission auctioned 2.6GHz to MTN, a private telecommunications company. The challenge with these agencies and the policies that they implement was that they were not focused on the specific needs of Start-up entrepreneurs and the ecosystems that support them but were inclusive of MSMEs and self-employed people. This was very problematic because often, these MSMEs include people who venture into entrepreneurship because of failing to secure jobs instead of risk-taking high value value-adding entrepreneurs defined by Schumpeter.

As a result of this, (Isenberg, 2011) argues that entrepreneurship requires different policies that are separate from those affecting self-employment or even SMEs, as their goals and activities are different. Many entrepreneurs do not like being lumped together with SMEs as they view

being small or medium as an uncomfortable transitional state that can lead to being stigmatised as a small, second-tier supplier. Unlike SMEs, entrepreneurs aspire to partner with, compete or outsmart incumbents. The Lagos state government supports start-up entrepreneurship through the Lagos State Employment Trust Fund (LSETF), whose mission is ‘creating employment and entrepreneurship for all Lagos residents’. The relevant programmes include;

- The MSME Loan Programme
- Job Hubs
- Lagos Innovates

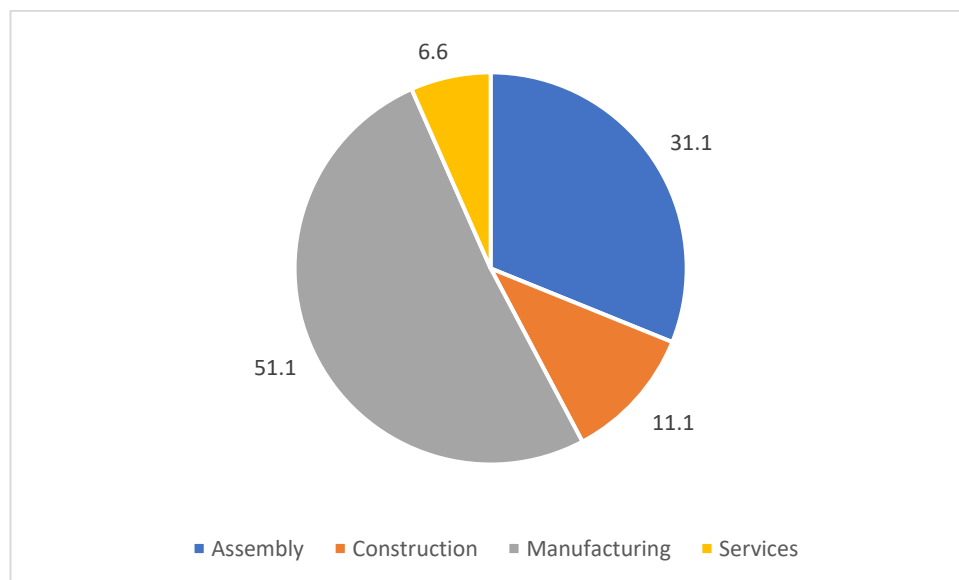
The MSME Loan Programme provides affordable access to funding for small businesses to grow, expand, create wealth, and put people to work. The scheme, which is targeted at different types of enterprises, is capped at a 9 per cent interest rate per annum and is available to all business owners in the state.

The job hub involves the provision of physical spaces where business owners in similar industries can operate their enterprises, grow together, and connect with customers; they are targeted toward enterprises in the creative sectors (fashion, beauty, photography, and entertainment), cleaning (laundry, carpet, and industrial cleaning) and catering (market and kitchen related businesses). Finally, the Lagos Innovates Programme will be discussed extensively in chapter 7 includes a series of programs designed for technology- and innovation-driven start-ups in Lagos State, providing them access to high-quality infrastructure, learning, capital, and networks.

- **Activities of firms in the hubs**

In the LFTZ, most firms are involved in light manufacturing and assembly activities. Of the 45 registered firms, about 51 per cent are involved in manufacturing and producing items such as agrochemicals, insecticides, baby diapers, household equipment, and LPG (Liquified Petroleum Gas) containers. Most of the manufacturing processes involve some local raw materials or minimal local processing. By contrast, most of the assembled goods rely almost entirely on inputs from China with little or no local value addition. The assembly of items such as fans, furniture, and trucks accounts for 31 per cent of the firms' activities. The zone has faced difficulties attracting investors involved in more complex manufacturing activities; indeed, while there are 45 registered firms, only 14 are fully operational, and only one is Nigerian-owned⁸. The low representation of local firms in the zone reduces opportunities for linkages between foreign and local firms, which will be discussed in the empirical analysis.

Figure 11: Distribution of LFTZ enterprises by subsector.

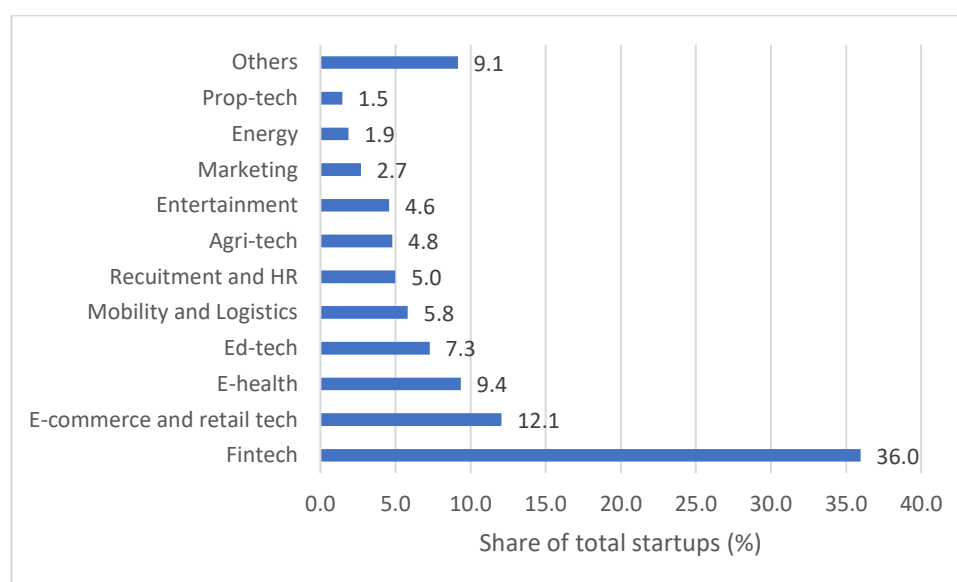


Source: UNDP 2015 and LFTZ, 2019.

⁸ This was the situation in 2019, when fieldwork was conducted.

In the Yaba cluster, however, an industry survey⁹ estimated the total number of start-ups in Lagos in 2022 at 424, 88.4 per cent of the number of start-ups in Nigeria¹⁰. Fintech dominates the start-up ecosystem with 36 per cent (173) of the start-ups, three times more than the next largest sector, e-commerce and retail tech, accounting for 12.1 per cent. E-health and ed-tech (education) come in at third (9.4 per cent) and fourth (7.3 per cent) respectively. Other sectors present in the ecosystem include mobility and logistics, recruitment, human resources (HR), Agri-tech (agriculture), entertainment, marketing, Prop-tech (property), legal-tech, waste management, and auto-tech (automobiles).

Figure 12: Sectoral distribution of start-ups in the Lagos tech ecosystem



Source: Disrupt Africa

Fintech is the largest sector in Lagos' start-up ecosystem, representing 36% of all start-ups.

Payments, remittances, and lending and financing make up 26.6% and 19.7% of all fintech

⁹ Disrupt Africa, 2022

¹⁰ Detailed data on the number of start-ups in Yaba is hardly available as most publicly available reports and databases provide information on the Lagos ecosystem. Statistics of the Lagos tech start-up ecosystem provided by Disrupt Africa (used in this analysis) broadly represent the Yaba cluster trends, given that most prominent start-ups commenced operations in Yaba before moving to the more upscale areas of Ikoyi and Victoria Island.

companies, respectively. Nigeria's most valuable start-ups, known as 'unicorns'¹¹, are fintechs including Interswitch and Flutterwave. Interswitch became a unicorn in 2019 after receiving an investment from Visa, while Flutterwave became Africa's fourth unicorn start-up in 2021. Other notable fintech operating in Lagos include Paga, Piggyvest, Bamboo, Cowrywise, and Kuda. Paga is a mobile payment company that allows users to send and receive money digitally, buy/sell airtime credit, make retail purchases, and pay bills. The platform is accessible via SMS or online, making it available to users without internet access.

The e-commerce & retail tech sector is the second largest sector in Nigeria's business ecosystem, with 58 start-ups, which account for about 12 per cent of the total number of start-ups. While some start-ups operate platforms like Amazon or Alibaba, 15 per cent provide retail-tech solutions. These companies offer tech-based products and solutions that help physical retailers digitise and scale their operations as e-commerce has become more prevalent in Nigeria. The e-health sector is the third largest sector in the ecosystem, with 45 players. Of these, 22.2 per cent are focused on practice management and procurement solutions, 15.6 per cent on health information and virtual healthcare platforms, and 15.6 per cent on medical appointment bookings.

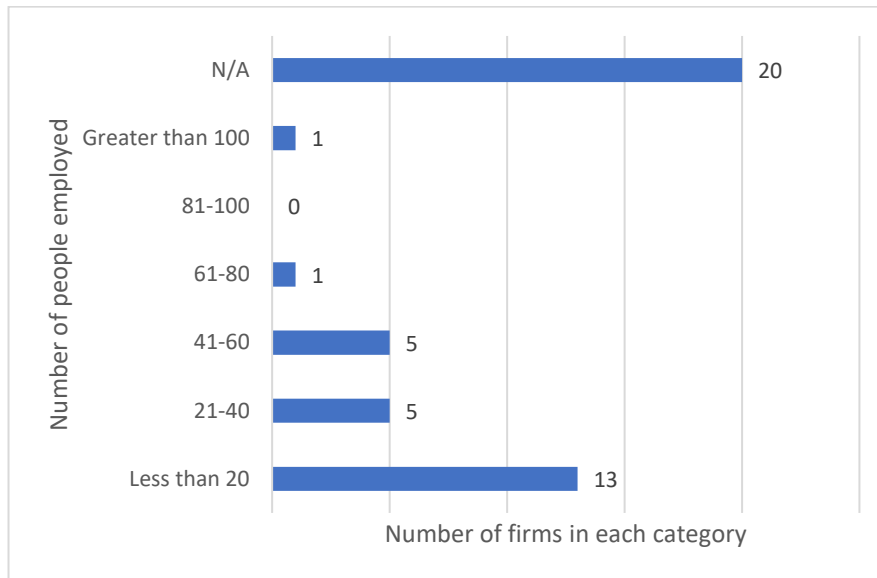
- **Job creation and skills development**

Although the estimated total employment within the LFTZ is around 2000, obtaining a detailed breakdown of the number of people employed by each enterprise was challenging. We only had data available for 25 businesses, as shown in Figure 12. Out of the 25 firms, 13 had less than 20 employees each, while 5 firms had 21-40 employees each and another 5 firms had 41-60 employees each. Unfortunately, we did not have employment data for the remaining 20 firms. Additionally, since the fieldwork was conducted in 2019, it is reasonable to expect an

¹¹ A Start-up company with a value of over USD 1 billion.

increase in total employment as some of the firms under construction then would have started their operations by now.

Figure 13: Number of people employed by LFTZ firms.



Source: UNDP 2015 and LFTZ 2019.

I also collected supplementary data from the Ogun Guangdong Free Trade Zone (OGFTZ); while I did not visit any firm there, I interviewed the zone and government officers. Established in 2006, the OGFTZ focuses primarily on light manufacturing. The zone had 60 registered companies, of which 36 were operational. About 4000 Nigerians were employed within the zone, and the cumulative investment is USD 325.3 million (Adunbi and Stein, 2019).

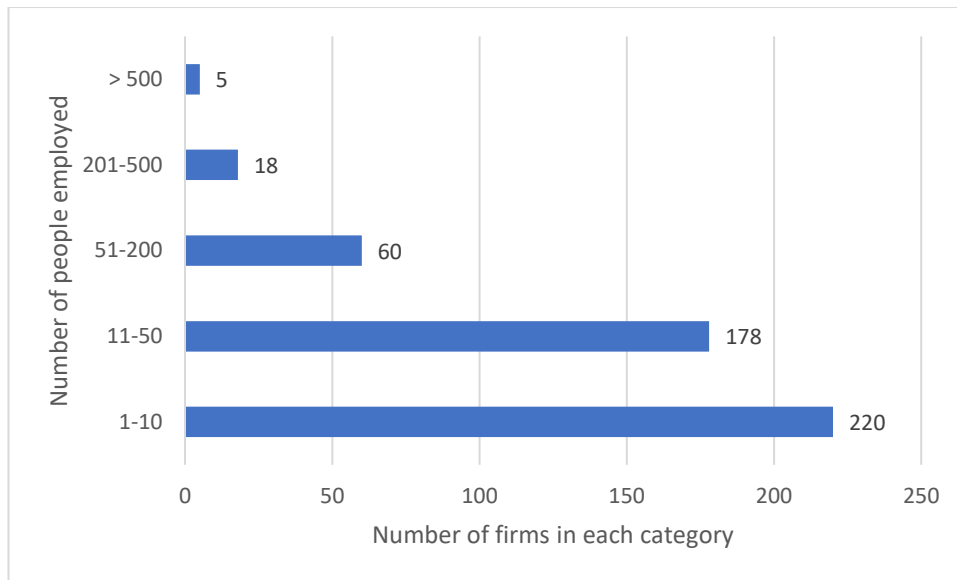
The skills that workers are exposed to are primarily simple assembly and highly task-specific skills reflecting the type of FDI present in the zone. For example, at the furniture assembly plant, workers' responsibilities include welding parts of chairs together and packaging the furniture. Similarly, the freezer assembly company's tasks include cleaning the compressor, welding parts, testing whether the fridge is working, and packaging it. These tasks involved in the primary assembly are repetitive and low-skill and only provide a limited range of skill transfer. Because most of the primary production inputs have already been manufactured in

China, it means most of the high-skill, research and development-intensive aspects of the manufacturing process had already been undertaken in China, automatically limiting the range of skills and knowledge to which local workers are exposed.

Almost all the factory workers were educated up to the secondary school level, but this education did not equip them with the skills required to work in these factories. Also, for many of them, it was their first work experience, meaning that training and on-the-job learning were a necessity. Most of the training, however, was primarily through observation and demonstration as most workers were paired with a supervisor to work with upon resumption whose activities they imitated. Subsequently, they would begin to practise what they have learnt repeatedly and with minimal supervision. Once, their supervisors are impressed, then they can continue working unsupervised.

In the Yaba cluster, however, the start-ups employed approximately 19,335 people, almost 50 per cent of the total employment in the fintech sector. On average, these firms have about forty employees. The founding teams are typically small, with just one or two founders, each with about three to four years of prior work experience before starting their company. Most firms in the cluster are primarily involved in providing software, application development, and tech solutions integration for the public and private sectors. Marketplace software development is significant, as SMEs require online platforms to sell their goods and services. Additionally, some start-ups provide consulting services such as remote sensing, monitoring, and business solution-solving. The fintech industry is the largest employer in tech ecosystem, providing 8,653 jobs while the e-commerce and retail tech sector is the second largest employer accounting for 16 per cent of all the jobs created in the ecosystem.

Figure 14: Number of people employed by firms in the Yaba cluster



Source: Disrupt Africa

Given that most of the firms in the Yaba tech cluster are involved in software development, the predominant type of skill here is software programming as this is the core technical skill required by most of the start-ups in the cluster. This involves the understanding of the various types of programming languages and how to write software codes. While programming languages are often in codified form and its initial knowledge can be acquired through training, courses etc. Expertise in coding requires years of experience which exposes workers to different programming languages and more complex projects. In addition to programming skills, entrepreneurial skills are also highly valuable, including the skills required to manage and operate a software company. They include networking skills, relationship-building skills, fundraising skills etc. While some entrepreneurs may possess these skills on their first attempt at building a business, others accumulate them through years of corporate experience or previous failed attempts at building software businesses.

Most of the software developers had degrees in Computer Science, Computer Engineering and related fields; very few of them had Master's degree in related fields such as Data Analytics and Cybersecurity. However, there were instances where people did not have any educational background in Engineering or Computer Science but were from totally unrelated backgrounds. Existing literature suggests that education is a key source of skills for most professions, however, in the case of the software programmers interviewed for this study, their university degree did not necessarily equip them with the skills required as almost all developers interviewed were self-taught. They had to learn how to code using online videos, books, courses and materials. Many of those interviewed admitted to learning how to code by watching videos on YouTube, reading relevant articles, and signing up for courses on platforms such as Udemy or Coursera. Even though digital connectivity in Nigeria still has a long way to go, increasing internet penetration and falling costs of mobile phones have made it easier for lots of young people to train themselves using the internet.

4.5.3. Challenges in the LFTZ

- **The one-stop-shop facility**

According to Farole (2011), for Special Economic Zones (SEZs) to effectively provide a one-stop shop, there needs to be inter-agency coordination among the relevant government agencies. Therefore, the SEZ law should clearly define the role of the regulatory authority as the facilitator of this coordination. The Nigerian Export Processing Zones Authority (NEPZA) act already explicitly states this, and all the relevant agencies, such as the Police, Customs, and Immigration, are aware of it in theory. However, in practice, NEPZA officers often struggle to secure the cooperation of these agencies, especially the Customs Department.

According to a zone officer;

*'Majority of the Customs officers have no idea what the purpose of the SEZ is, so you have to go to their office and speak to their bosses to train their staff'*¹²

¹² Zone officer 7.

A few issues within the Special Economic Zones (SEZs) are causing problems for the Nigerian Export Processing Zones Authority (NEPZA). Firstly, some NEPZA officers bypass the established protocol by dealing directly with investors instead of allowing them to liaise with NEPZA officers. This makes it harder for investors to navigate the bureaucratic hurdles, which goes against the purpose of NEPZA's one-stop-shop service. Secondly, some NEPZA officers are not adequately trained to handle their responsibilities. This leads to delays in processing applications and approvals for investors, which can be frustrating for all parties involved. Thirdly, some SEZs do not adhere to NEPZA's regulations and guidelines, creating confusion and inconsistency for investors.

Finally, some Customs officers within the SEZs do not have decision-making powers, undermining NEPZA's ability to provide a 24-hour turn-around time. Furthermore, the frequent redeployments of Customs officers mean that NEPZA officers must constantly train them on their responsibilities, which is time-consuming and inefficient. The challenges Customs officers present to the SEZ programme, however, go beyond the actions of individual officers as it is an institutional problem. The NCS is famous for massive corruption, Dr. Okonjo Iweala, a former Minister of Finance described it as;

'The most complained about service of the Ministry of Finance, notorious for corruption' (Okonjo-Iweala, 2014, p. 67).

There are tensions between NEPZA and the NCS over issues of revenue. Many in the Customs service believe that the SEZ programme's waivers constitute revenue that would have gone to the NCS. As a result, Customs officers often try to work directly with investors to obtain payoffs from them. A former government adviser shared an example of such a case.:

'At the Calabar Free Zone, a company had imported components from China to be assembled within the zone. Customs charged them a demurrage of four million naira (\$10,000) daily. They insisted that they would not clear his goods until a Customs officer brought the original clearance documents from Lagos. Even though the man had photocopies of the document as well as his own counterpart to the original, i.e. shipper's copy, they would not release the

goods to him. They wanted him to 'settle'¹³ them, but the man was tired of indulging their constant pay-off demands. Thankfully within that period, the Minister of Trade and Investment visited the zone, and the man reported to him. It took the personal intervention of the Minister for Customs to act accordingly'¹⁴.

This corroborates findings by Farole (2011), which show that customs processes are often a source of cross-institutional conflict because government tax revenues are at stake. The Nigerian Customs Service (NCS) faces a significant challenge due to the federal government's sudden import prohibitions and tariff revisions. This unpredictability of the tariff regime often leads to a mismatch between the published and actual tariffs at the ports. Although the NCS exploits these policy inconsistencies to take advantage of desperate investors, it also presents an opportunity for reform. Better coordination between relevant agencies can ensure that the tariffs at the port reflect the actual tariffs at any given time, which can reduce bureaucratic bottlenecks for investors. However, the lack of cooperation by Customs and other agencies often frustrates Nigerian Export Processing Zones Authority (NEPZA) zone officers, undermining their ability to deliver efficient one-stop-shop services.

'In my opinion, we, as an enterprise, we invest in free zones, and what we want are good services. They are our service providers, and they have to make us happy, but instead they expect us to make them happy...these federal agencies, they are 'wayo, wayo'¹⁵, they are very wicked and that is a very big problem. If any foreigners go to invest in China, we provide them with good service because they are bringing money and they employ local staff. But here they do not want to provide us service, why?'¹⁶.

It is evident that the poor coordination among different agencies is not limited to specific SEZs but is a systemic problem for NEPZA, which is responsible for resolving such issues. A former NEPZA MD stated that due to this lack of cooperation, they must spend time explaining things to their supposed partners instead of focusing on their core responsibilities. He suggested that a public awareness campaign could help resolve the situation and that they would collaborate with other stakeholders to tackle the issue. (Jime, 2017).

¹³ Settle means bribe

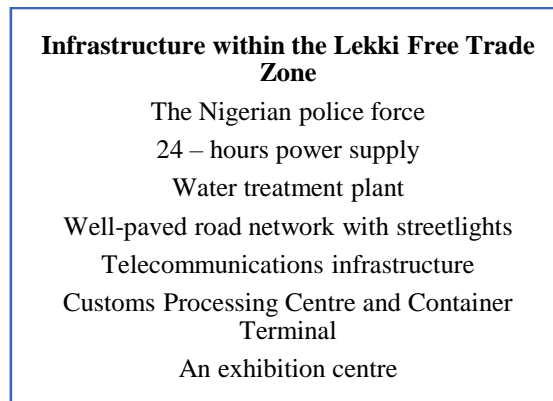
¹⁴ Govt officer 4.

¹⁵ Wayo wayo means dubious

¹⁶ Manager 1.

- **Infrastructure and road transport facilities**

Figure 15: Infrastructure within the LFTZ



One of the main goals of the Special Economic Zones (SEZ) program is to make doing business in a country easier by providing efficient infrastructure, such as power and roads. In the state-owned zones in Nigeria, the government is responsible for internal and external infrastructure. In contrast, in the joint-venture zones, the private partner is responsible for internal infrastructure, and the state government focuses on external infrastructure. The Lekki Free Trade Zone (LFTZ) has decent infrastructure within the zone, which many firms cite as the reason for setting up their business there, mainly because of the reliable power and security provision. The LFTZ has a 24-hour uninterrupted power supply, perimeter fencing, and a division of the Nigerian Police Force (NPF). The roads within the LFTZ are well-paved, with good drainage. Another advantage for investors is that the LFTZ is located next to the Lekki Deep Sea Port and the Lekki–Epe International Airport¹⁷. According to one of the Chinese firm Managers:

‘We decided to invest in LFTZ because it is safe, and they have a power plant and water treatment plant. It is cheaper to buy land outside, but it is dangerous and without security, you cannot do anything’¹⁸

¹⁷ The airport construction is yet to be completed.

¹⁸ Manager 2.

Figure 16: Road network within the LFTZ



Source: [LFTZ website](#)

The Chinese developers have played a crucial role in providing and maintaining the infrastructure within the LFTZ. Unfortunately, the Lagos state government has failed to fulfil their financial commitment for the maintenance of the SEZ for three years, leaving the responsibility solely on the Chinese developers who manage the zone daily. Additionally, the poor state of external infrastructure, such as ports and roads reveals the lack of commitment by both the state and federal government in providing supporting infrastructure. At the LFTZ, a firm Manager said that:

'The road is very bad, potholes, traffic every day and it is very narrow. There are trucks parked on both sides of the roads every day. Even though most of our customers prefer that we use ship, the ship is not good, so we use trucks to transport our pipelines - it takes us two days to get to Port Harcourt'¹⁹²⁰

During the past administration in Lagos, the former Governor (Governor Akinwunmi Ambode) made public promises to improve the roads leading up to the zone. However, these promises were empty, primarily rhetoric and did not result in tangible improvements. The same situation

¹⁹ Port Harcourt is one of the top oil producing cities in the country and is approximately 650 km away from Lagos

²⁰ Manager 1.

exists at the OGFTZ, highlighting the critical importance of political commitment for the success of SEZ programmes. When the project was initiated, the Governor of Ogun state was highly supportive of the project, but his successor did not share the same enthusiasm. Instead, the successor (Governor Ibikunle Amosun) was accused of using the project to enrich himself and his cronies (Nikia Clarke, 2013). In fact, during his 8-year tenure, he never visited the area. The Chinese developers claim that his administration failed to provide them with a complete land ownership certificate, leading to constant encroachments on their property.

The nonchalant posture of the governor was apparent in his failure to provide adequate roads for the zone, despite repeated attempts by developers to get his attention. The governor did not respond to their letters, and their attempts to use influential state elites to contact him also failed. This was very frustrating for them, not only because it caused physical stress to businesses but also because it increased transport costs. Many truck companies were unwilling to ply their routes. In 2016, it cost them 150,000 naira (\$700) to transport a container from the ports, but by 2019, the cost had increased to almost 1,000,000 naira (\$2500). One of the Chinese zone managers lamented, saying:

'Before, I came to Nigeria, I worked in Africa for a long time, but I have never seen a country with such a bad infrastructure problem like Nigeria. I have been to South Africa, Botswana, Lesotho, Zimbabwe, Rwanda and Ethiopia; even though the people suffer there, they still have good infrastructure. The roads outside the zone should be the government's responsibility but the government has not done anything to benefit our enterprises and the host community'²¹.

Therefore, the Chinese developers have taken up the responsibility of constructing the Igbesan – Kusada road, which is one of the main roads which leads up to the zone; they intend to build a toll gate to recoup their investments but allow indigenes of the communities there to use the road for free. Even though Agbara (where the zone is located) is the hub of industrial activity

²¹ Zone officer 7.

in the state, the Governor (at the time) prioritised infrastructure projects in Abeokuta, his hometown, where he draws most of his political support. When a new Governor was elected in 2019, their expectation was that he would prioritise the Agbara road.

- **The state of the ports**

The ports of Apapa and Tin Can in Lagos handle over 75% of Nigeria's imports and are the only ports through which goods headed for the OGFTZ and LFTZ can pass (Stears, 2019). The ports are known for their chronic inefficiency and congestion, which caused them to be blocked for most of 2018 and 2019. As a result, the roads leading up to the ports were congested with 40-foot container trucks forming queues of up to 10 kilometres away from the ports. This led to snaking lines across several commuter highways and bridges, causing significant traffic disruptions (Kazeem, 2018).

Figure 17: Traffic gridlock on the highway leading to the Lagos ports



Source: [Google](#)

As Farole (2011) points out, providing onsite clearing at the zones is of limited value if there are long delays in getting goods through the ports. Conversations with many firms revealed that the time and money involved in getting their goods to leave the ports was highly inconveniencing and overshadowed whatever benefits they got from the on-site Customs clearance. According to a Manager:

‘According to zone policy, we don’t need to clear at the port; you bring it to the zone and clear here. However after the container arrives at the ports, it still takes at least ten days to leave the ports. Even with the ten-day delay, Customs will still find a way to make you pay some money, otherwise, your container won’t leave. Sometimes, our goods can be stuck at the ports for a week because they can’t find the containers, or our container is underneath tens of other containers’²².

To begin with, three primary issues contribute to the inefficiency at the ports. Firstly, because the other four ports in the country are no longer in use, at least 70 per cent of the country's total imports must go through the Lagos ports. Secondly, the ports were initially constructed to handle 34 million metric tonnes daily. Still, they are currently required to manage over 80 million metric tonnes, which the existing infrastructure cannot support (Vanguard, 2019). For example, there aren’t enough warehouses to store overtime instead, they are kept in the same terminal where laden cargoes should berth. Second, the port technology is not modern; therefore, the absence of digital scanners means cargo must be physically examined, thus increasing waiting times. The obsolete technology means they cannot offer 24-hour services or fast-track clearing like neighbouring Ghana, where cargoes are cleared within the shift they arrive.

Finally, and as previously discussed, there is massive corruption at the ports, which can be attributed to the discretionary powers given to Customs officers and officers of the tens of organisations there. Businesspeople often face exploitation by officers from Customs and other agencies at ports due to the arbitrary powers they possess. They can decide on tariffs, classify goods, and impose port charges as they see fit. The lengthy waiting times at ports, such as 172 hours for clearance and inspections and 105 hours for port handling, create a sense of urgency among businesspeople to expedite the process. Customs and other port agencies take advantage of this urgency to demand bribes from businesspeople, exacerbating the problem of corruption (World Bank, 2020).

²² Zone officer 7.

Despite several attempts to tackle these issues, there have been minimal changes in the overall structure. This is mainly due to the Customs law and regulations that give the Nigerian Customs Service (NCS) and its Comptroller General extensive discretionary powers. Additionally, vested interests, including politicians, senior bureaucrats and businesspeople who benefit from the existing system, have added to the challenge (Okonjo-Iweala, 2014). The current situation at the ports is hurting the government's efforts to present Nigeria as an export platform. Many SEZ companies are not considering Nigeria as a competitive export location due to the delays and inefficiencies at the ports. According to the Chinese Manager at Company 7, even though they receive regular pipeline orders from other African countries like Kenya, it is more cost-effective for them to manufacture and export from China rather than Nigeria due to the delays experienced at Nigerian ports. According to him:

*'To manufacture 2000 tonnes, it takes 7 days in China, but here it will take 4 – 6 months. Before we start production, our staff must come from China to check production lines that will take about one month. Then we must spend at least 3 months waiting for raw materials from China because there are so many containers at the port, which is a huge problem. Then we will spend another 1 month for production. So even though we have built a factory here if we get a contract, my chairman will prefer for us to produce and ship from China'*²³.

When I reminded him that the Lekki Deep Seaport²⁴ would be completed soon and could potentially solve this problem, he laughed in disbelief. He said the project had been ongoing for about 13 years without completion. The deep Seaport, located next to the LFTZ, was initiated to reduce the pressures at the other Lagos ports. It is projected to initially handle 1.5 million containers yearly (Lekki Port, 2020). The completion date for the infrastructure project in Nigeria has undergone several revisions, which is usual for such projects in the country. The Lagos state government initially stated that the project would be finished by 2015. However, when the former governor took office, he pushed the completion date to 2019. In January 2020,

²³ Manager 1.

²⁴ This interview was conducted in 2019 and the deep seaport as finally completed in 2023 after at least 17 years of construction pauses and delays.

the current governor of the state, Babatunde Sanwo-Olu, announced that the port would not be completed until 2022 (Nairametrics, 2020). It was eventually completed in 2023.

These inconsistencies in the delivery of infrastructure projects do little to increase investors' confidence. The poor condition of roads and the government's inability to address the issues at the ports and complete the deep Seaport project are clear examples of how inadequate government commitment can negatively impact SEZ projects' success. This can result in the emergence of these projects as isolated areas for foreign industries.

4.5.4. Challenges in the Cluster

The growth and development of the Yaba cluster have also been met with specific challenges that threaten the growth of start-ups. The first issue is the state of the physical and social infrastructure. The real estate in Yaba is insufficient to accommodate the growing number of start-ups, leading to more established start-ups migrating to more upscale neighbouring areas such as Ikoyi, Victoria Island and Lekki, otherwise known as 'the Island'. Pioneer start-ups like Andela and Konga had to move out to other locations because there was insufficient space to expand their operations. As discussed earlier, Yaba is one of the oldest neighbourhoods in Lagos state, with small buildings and narrow roads which can barely accommodate the heavy traffic in the fast-growing area. There have also been cases of armed robbery, harassment and other forms of criminality, which is making the area gradually uninhabitable. According to someone familiar with Yaba;

'I can tell you that many companies did move out Yaba. Infrastructure-wise, housing is a problem, parking is a big problem. There is also a lot of traffic there. Security is a problem; I was robbed there some years back. So, security is a big problem in Yaba. And the government hasn't just they haven't solved this problem; they've just let it fester²⁵'.

²⁵ Investor 1.

Small start-ups tend to stay in Yaba, while larger ones relocate to the Island area as they acquire more funding. The Island is an upscale neighbourhood in Lagos where most of the bank headquarters, oil companies, multinationals, and foreign consulates are found. The modern real estate developments in this area cater to the needs of young founders, their growing start-ups, and their own residential needs. The Island boasts a more vibrant social scene for young people, with many clubs, diverse restaurants, malls, and networking events. It is also the go-to place for creative and entertainment events in Lagos, including arts, music, fashion, and movies. This makes it an exciting location for young founders to live and work in. Unfortunately, Yaba has not been able to provide the same level of infrastructural, social, cultural, and leisure amenities that young people require. According to a serial investor;

‘When Andela²⁶ was growing, they realised they needed a more accessible space and a better building, so they left Yaba. I also kept saying that young people wanted to live where other young people were, they want to go to the movies, nightclubs etc. I told people that the Island was much more attractive now every start-up I know has a Lekki office One of the things that didn’t help Yaba is that they were the oldest part of Yaba and young people want new and cheap houses, so Lagos was expanding away from Yaba’²⁷.

These observations are consistent with Florida (2003) who argues that the presence of creative people or a creative class is an essential factor influencing the location decision of people;

‘The super-creative core of this new class includes scientists and engineers, university professors, poets and novelists, artists, entertainers, actors, designers, and architects, as well as the “thought leadership” of modern society: nonfiction writers, editors, cultural figures, think-tank researchers, analysts, and other opinion-makers.....Beyond this core group, the creative class also includes “creative professionals” who work in a wide range of knowledge-based occupations in high-tech sectors, financial services, the legal and health-care professions, and business management’ (Florida, 2003, p.8).

This has happened on the island: it has almost become a status symbol for start-ups that launch their operations in Yaba to relocate their offices to the island once they have enough funds. As a result, it has attracted a particular class of people, including potential investors and financiers,

²⁶ One of the leading start-ups in the cluster to be discussed in chapter 6.

²⁷ Investor 4.

who have made it almost a requirement to move there after raising significant funds to network and tap into these connections. According to someone familiar with this phenomenon.

'From a few conversations I've had, it appears that as some start-ups mature and grow bigger, they move from Yaba to fancier locations in places like Ikoyi and Victoria Island. It may be because potential investors or partners perceive them to be more professional or sophisticated if they're located on the island. But also, as you scale, you begin to look for a larger space, and many of them look to aspirational neighbourhoods such as Victoria Island, Lekki and Ikoyi. But there is also an issue of access; most of the events that happen in the ecosystem happen in those areas and you can get to meet foreign venture capitalists and other investors'²⁸.

Insecurity has become a major concern for professionals in the tech sector and surrounding areas of the Island. Entrepreneurs, software developers, and others have had to deal with harassment, intimidation, physical assault, and even kidnappings by the Special Anti-Robbery Squad (SARS) of the Nigerian Police. SARS was founded in 1992 to combat violent crimes primarily using undercover tactics. However, as Nigeria's reputation as a hub for cybercrime grew over the past two decades, SARS officials were ostensibly deployed to fight this crime. Nonetheless, these SARS operatives are infamous for using unprofessional and extra-judicial practices in their operations, with limited investigative procedures, leading them to profile young, vulnerable people.

Professionals in the technology industry, particularly young men, are among the most targeted groups due to the nature of their work. As the tech sector continues to grow rapidly and offers high-paying jobs to young people, many of its employees can afford a higher standard of living, as evidenced by their ownership of the latest digital gadgets such as iPhones and laptops. Regrettably, this has also made them easy targets for overzealous SARS officers who often harass them on the streets, extort money from them, and occasionally detain them for days. Consequently, many legal teams of these tech firms have dedicated staff to assist employees arrested by SARS.

²⁸ Google 1.

In 2019, a coalition of 30 prominent entrepreneurs in the technology industry, including Bosun Tijani of CC Hub and Iyin Aboyeji of Andela, launched the #StopRobbingUs campaign to protest the unlawful profiling and arrest of young people by SARS. This was due to its negative impact on the morale of tech professionals. The campaign included several interventions: a legal intervention fund, a public awareness program, and a class-action lawsuit on police brutality. It was launched when complaints against SARS on social media had reached a crescendo, and efforts to engage the police and policymakers to address the issue had not yielded any meaningful results.

Thus, the real crescendo was reached in October 2020, when nationwide protests were sparked across the country when SARS operatives killed a young man in Delta state, Nigeria. These protests extended beyond Nigeria to include Nigerian diasporan communities in the UK, US, Canada, and Europe; social media users trended the protests with the hashtag #EndSARS, which trended worldwide for days. Given their first-hand experience of SARS brutality, many tech companies were actively involved in the protests, whether through legal tech services for arrested protesters or fintech and cryptocurrency services to support crowdfunding efforts.

In response to these overwhelming protests, the Police claim they had disbanded SARS; however, reports of their attacks have not ceased. Moreover, the government forcefully cracked down on tech companies and leaders who were seen to be leading these protests. Bank accounts of companies and prominent leaders were frozen; more stringent cryptocurrency regulations were introduced, given its role in the process, and Twitter was banned (7 months ban), given its role in the organisation.

4.6 Conclusion

This chapter has provided the relevant background for this study. It provided a history of Nigeria's industrial and economic development and measures by successive governments to

promote entrepreneurship in the country. It reviewed Nigeria's experience with industrial hubs, including a brief history, strategy, and institutional environments and their performance. It discussed the similarities and differences between the industrial hubs, which are the case studies for this project. The next chapter will be the first empirical analysis where we focus on firm-level activities in Chinese SEZs to understand how much they support learning and capability development.

5. Knowledge Transfer and Learning in the Lekki Free Trade

Zone (LFTZ)

5.1 Introduction

Over the years, there has been a significant increase in the number of Special Economic Zones (SEZs) worldwide, from 176 zones in 47 countries in 1986, to at least 5400 zones in 147 countries (UNCTAD, 2019). In developing countries especially, they have become popular not only because of their job and revenue creation potential but also because of their ability to accelerate the development of the productive and technological capabilities required for industrial development (Oqubay and Lin, 2020). This potential offered by SEZs is supported by the empirical evidence of their role in developing dynamic capabilities and industrial upgrading in China and other parts of Asia (Bräutigam and Tang, 2014).

Nigeria is one of those countries that has made SEZs a core pillar of their industrial development strategy. This focus on SEZ development has coincided with China's increasing investments in Africa. Given SEZs' role in China, Chinese zone developers have emerged as partners for Nigerian governments seeking to develop SEZs. It is assumed that employing Nigerians and sourcing input from local suppliers can facilitate learning and enable the transfer of critical knowledge between SEZ firm and the local economy. By so doing, SEZs can, therefore, play a critical role in the development of critical skills and capabilities.

The Lekki Free Trade Zone (LFTZ), one of the two Chinese SEZs in the country, was developed in 2009 through a joint venture partnership between the Lagos state government and a consortium of Chinese zone developers. The assumption at the time of its development was that it would support the development of critical manufacturing capabilities by attracting Chinese FDI which will facilitate the spillover of knowledge to local workers and skills through employment, skills upgrading and linkages. However, most of the literature on the performance of these Chinese SEZs in Africa has failed to examine how much they have delivered on these

expectations as they have primarily focused on measuring their performance on static economic outcomes such as jobs and exports.

This chapter contributes to the literature on the contributions of SEZs to capability development by analysing the dynamics of learning and knowledge exchange within them. It argues that while these SEZs offer local workers and firms potential learning opportunities, significant obstacles, including the absorptive capacity of local workers and firms, motivations of SEZ firms and SEZ policy and incentive framework, have limited knowledge exchange between foreign and local workers. Section 5.2 presents the analytical framework for this chapter to highlight the channels of knowledge exchange within SEZs based on FDI literature.

Section 5.3 presents the findings and empirical analysis of this study. It examines the employment conditions of locals employed in the firms in the SEZ, including their positions, wage and non-wage benefits and working conditions. It finds that while Chinese firms in SEZs significantly employ local workers in factory-floor positions, they are significantly under-represented in managerial positions, thus limiting the knowledge and skills they are exposed to. Moreover, their wage and non-wage benefits lag those of other multinationals in the country offer. Section 5.4 examines how SEZ firms support their employees' skills development and the implications for learning. It argues that most of the training done by firms is on-the-job training as there is limited evidence of a formal training programme in most of the firms; however, this mechanism of knowledge transfer is undermined by the absorptive capacity of local workers as well as the language and cultural barriers between Nigerian and Chinese workers.

Section 5.5 examines the extent to which backward linkages exist between SEZ and domestic firms and argues that the weakest mechanism of knowledge transfer is through backward

linkages, as there was hardly any evidence of meaningful backward linkages between local and SEZ firms. Section 5.6 examines Nigeria's SEZ policies and strategies and argues that the strategy's weakness has resulted in the zone's inability to attract FDI aligned with the country's industrial goals despite the generous incentives of the SEZ programme. It also argues that this poor strategy is reflected in the minimal attention paid to the development of relevant value chains for these SEZs as well as the locations of these SEZs. Section 5.7 concludes.

5.2 Analytical framework – Knowledge exchange mechanisms between SEZs and the local economy

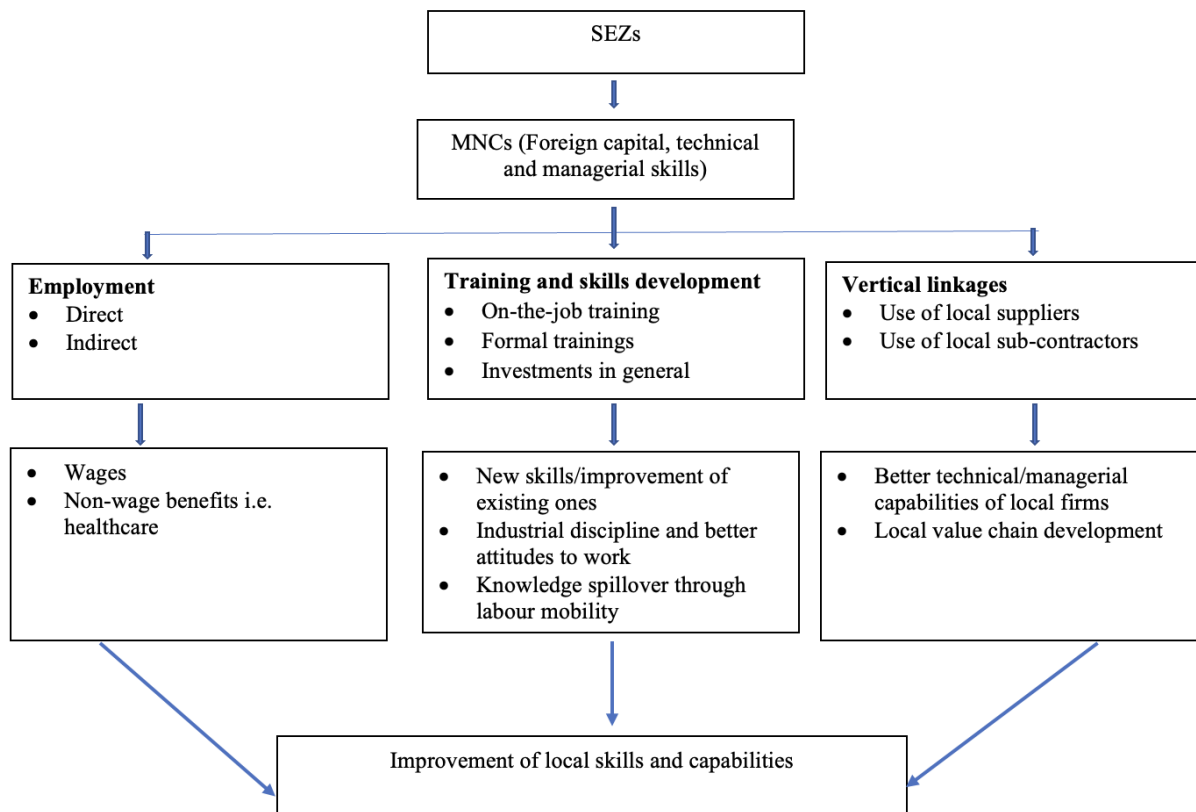
In section 3.5.2 I argued that the heterodox approach represents an improvement in SEZ theories as it highlights the role of SEZs in capability development. However, it does not provide a framework to understand the mechanisms of learning and knowledge spillovers within them. Therefore, taking the heterodox approach as a point of departure, I argue that a primary motivation for attracting FDI into SEZs is to foster knowledge exchange between MNCs and the local economy. By so doing, local workers and firms can develop technological capabilities, especially skills, including firm-level capabilities needed to identify, operate, and design machines (Lall, 1992). They also include skills needed for production, such as quality control, operation, and maintenance, as well as different attitudes to work, new occupational categories, new work relationships and managerial capabilities (ibid).

However, the popular SEZ theories discussed in section 3.5.2 have thus far not incorporated the mechanisms through which foreign firms in SEZs can promote knowledge exchange, facilitate learning, and support the development of skills and capabilities in the local economy. These issues have been extensively discussed in FDI literature; thus, this study proposes integrating those mechanisms from FDI literature into our SEZ study. This knowledge exchange can occur through the following mechanisms:

- Employment

- Training and skills development
- Knowledge spillovers through linkages

Figure 18: Knowledge transfer mechanisms in SEZs



a. Employment

Foreign firms in SEZs firms can boost host country employment by employing locals. Their ability to achieve this, especially within an SEZ, depends on how much they can serve export markets not previously served by local firms (Te Velde, 2001). In developing countries categorised by the availability of labour at low wages, SEZs can attract investments into simple processing and labour-intensive industries, increasing the demand for unskilled labour (Aggarwal, 2007). However, as activities in the SEZ shift towards higher value-added activities, the demand for skilled labour increases.

But it is not simply the employment of local workers that matters but also their roles. It is argued that managerial positions allow workers to better assimilate knowledge and circulate it within their networks. Thus, the extent to which horizontal spillovers can occur through labour mobility depends on locals' positions within foreign firms (Auffray and Fu, 2015). Firms in SEZs can also contribute to job creation in the host country indirectly through linkages with local supply chains. Also, SEZs can create indirect employment opportunities through sectors of the economy that are affected by the operations of SEZs. The employment effects of SEZs are not always beneficial, especially in terms of the working and living conditions of workers. SEZs have been criticised for violating workers' rights, enforcing overtime, and using pressure tactics to meet deadlines (Phillips and Xaba, 2002).

b. Trainings and skills development

Foreign firms in SEZs can also help develop skills in the host economy through investments in general education, official training programmes or on-the-job training. Foreign firms can support general education in the host country by providing grants and scholarships or establishing general education centres (te Velde, 2002). Oftentimes, this can be part of corporate social responsibility to the host economies. Evidence shows foreign firms spend more on training than local firms (UNCTAD, 1996). Foreign firms often must train their local workforce to understand products and processes, allowing them to build technical and managerial capabilities. This training can be formal, informal, or on-the-job; some professional employees are often sent on international training courses. This training benefits developing countries because of the weak public education systems (Blomström and Kokko, 2002). On-the-job training provides workers in developing countries with exposure to industrial discipline, punctuality, quality control and meeting deadlines (Aggarwal, 2007).

However, language and cultural barriers may challenge the transfer of tacit knowledge between foreign and local SEZ workers via training. Tacit knowledge requires repeated interactions and shared norms for the development of trust. However, with language barriers ‘the loss of rhetorical skills is always present as humour, symbolism, sensitivity, negotiation, persuasion and motivation require a very high level of fluency. These skills are more important in managerial positions than in operational positions’(Harzing and Feely, 2008, p. 10). More so, cultural barriers have been argued to undermine the ‘social glue’ which binds individuals within an organisation, thus reducing cohesiveness. Cultural incompatibility may create different practices within an organisation, undermining the organisation’s overall performance (Cooper and Cartwright, 1993; Pothukuchi *et al.*, 2002).

c. Knowledge spillovers through linkages

Foreign firms' knowledge spillovers can occur through horizontal or vertical supply chain linkages. Horizontal linkages refer to interactions between domestic and foreign firms that are involved in competing for activities (UNCTAD, 2001). This competition can cause competition and demonstration effects as the entry of foreign firms can increase competition between local and foreign producers. In the short to medium term, local producers may experience a loss in output and market share. Still, in the long run, however, the productivity of local producers may improve because of the pressures to keep up with foreign producers (Javorcik, 2008). Horizontal knowledge spillovers can also occur through labour mobility. Multinationals provide their workers with knowledge and skills, not all of which may be internalised; they can transfer this when workers move to local firms or start their businesses (Fosfuri *et al.*, 2001).

Vertical linkages comprise backwards and forward linkages. While forward linkages occur when foreign firms sell goods or services to domestic firms, backward linkages refer to ‘transactions that go beyond arm’s length, one-off relations as in buying standardised products off the shelf and involve longer-term relations between firms’ is argued to offer the most significant potential for knowledge spillovers (UNCTAD, 2001, p. 127). These long-term business relationships involving multiple interactions between local and foreign firms can enhance local firms' managerial and technical competencies by putting pressure on them to improve the quality of their services to meet the demands of foreign firms (Auffray and Fu, 2015). Backward linkages include sub-contracting linkages where foreign firms outsource some of their production to local firms (Farole and Winkler, 2014). The foregoing has highlighted the mechanisms of knowledge exchange between TNCs in SEZs and local workers; however, their effectiveness depends on the following:

- The type and motives of FDI
- Host country SEZ policies, strategies, and institutions

The employment, training, and linkages potential of FDI within SEZs are all impacted by the types and motives of FDI. The type of FDI here refers to whether they are brownfield or greenfield. At the same time, the motive depends on whether they are resource-seeking, market-seeking, efficiency-seeking, or strategic asset-seeking. The sector of FDI may also affect their potential. Regarding employment, greenfield FDI is more likely to create local jobs than brownfield FDI (Brancu and Bibu, 2014). Foreign firms, in general, also tend to pay higher wages than domestic firms to attract and retain talent and avoid high labour turnover (Aitken, Harrison and Lipsey, 1996; Fosfuri, Motta and Rønde, 2001). In terms of training, service sector MNCs, for instance, invest in the skills development of their employees (Blunch and Castro, 2005). Similarly, firms in high-tech industries tend to provide more training for their employees (te Velde, 2002).

The motive of FDI also influences how much an MNC will invest in skills development. Resource-seeking investments are usually low value adding and low capital expenditure (except for extractive industries), meaning they are less sticky, that is, more footloose. These sorts of investments are not likely to expose workers to sophisticated or complex skills. On the other hand, market-seeking FDI has high knowledge spillover potential because the retailers are more likely to purchase inputs from local suppliers since they produce for the local market (Leshner and Miroudot, 2008; Barrientos and Visser, 2012). Efficiency-seeking and strategic asset-seeking FDI require a certain level of created assets in the host country and is therefore associated with the more advanced developing countries. The countries with a stronger bargaining position for this FDI have the necessary science and technology infrastructure.

Regarding linkages, knowledge spillovers are less likely to occur in resource-seeking activities, while R&D-intensive sectors are posited to transfer more technology, all things being equal (Narula and Dunning, 2000). Manufacturing FDI is argued to have more significant potential for spillovers because it is more labour-intensive and requires a broad range of goods and services inputs, thereby increasing the avenues available for linkages with local firms. However, much of the ‘export assembly’ activity characterising labour-intensive global production network investment operates with similar motivations and strategies as resource-seeking FDI—essentially ‘extracting’ low-wage labour rather than broader capabilities of local firms’ (Farole and Winkler, 2014, p. 32). Finally, market-seeking FDI is thought to have high spillover potential because the retailers are more likely to purchase inputs from local suppliers since they produce for the local market (Leshner and Miroudot, 2008; Barrientos and Visser, 2012).

Furthermore, the degree and structure of foreign ownership influence the spillover potential of FDI. On the one hand, empirical studies have shown that a higher share of foreign ownership and management is associated with an increased incentive for the parent firm to transfer knowledge (Dimelis and Louri, 2002; Takii, 2005). On the other hand, a larger domestic ownership share may prevent foreign investors from reducing technology leakages, thereby encouraging spillovers. Greater domestic participation makes it easier to source for local suppliers and increases spillovers through labour mobility as locals are already involved in firms at the management level (Toth, 1998; Dimelis and Louri, 2002).

As the ability of spillovers to occur through linkages depends first all on the presence of linkages, the global production and sourcing strategies of foreign firms also impact this process. If production is highly internalised, they may have little interest in sourcing local inputs except for non-tradable services such as packaging (Paus and Gallagher, 2008). A multinational's sourcing strategy may rely on imported inputs from established suppliers abroad, especially if they have strict standards and specifications; this reduces the opportunities to recruit local suppliers (ibid). Finally, studies have also shown that the length of the foreign presence of a multinational in the host country may impact spillovers; as firms become more familiar with the context, they become more informed about the local suppliers and labour skills (Gorodnichenko and Peter, 2007).

Host countries' policies and strategies matter significantly for the effectiveness of the knowledge exchange mechanisms from SEZs. Host country SEZ policies include attracting FDI that is more amenable to knowledge exchange, encouraging foreign firms to invest in skills and development, and encouraging them to establish linkages with domestic firms. Countries

implementing SEZ programmes need to consider the type of MNC that is more likely to contribute to the education of the local workforce and invest in their training. For example, Moran (1998) shows that firms that are part of a globally competitive network that need to remain competitive are more likely to invest in training and education and will, therefore, employ more skilled workers. Therefore, to attract such MNCs, countries can use targeting, grants, and fiscal incentives to encourage investments into SEZs by firms more likely to contribute to skills development (Te Velde, 2001).

SEZs generally tend to have a package of fiscal incentives which they use to attract FDI; however, the challenge is the extent to which these incentives are creatively deployed to attract relevant FDI. In addition to incentives, reducing tariff and non-tariff barriers, such as infrastructure, customs, etc., can attract trade-intensive and globally competitive companies. However, to attract these skills-intensive FDI, host countries must invest in education to ensure that the workforce is educated and skilled or at least trainable. Several studies have shown the importance of the absorptive capacity of workers and firms in promoting knowledge exchange.

At the individual level, the absorptive capacity of local workers refers to their ability to identify, assimilate and utilise knowledge (Cohen and Levinthal, 1990); this is often proxied by education levels and work experience. At the firm level, the absorptive capacity of local firms determines their ability to develop backward linkages with foreign firms. According to Fu (2008) the absorptive capacity can be proxied by the 'technology gap between the foreign and domestic firms, R & D intensities of the local firms or the human capital embodied in local firms' (p.92).

Regarding employment, some countries use expatriate quotas and broader localisation policies that encourage foreign firms to have local staff at various stages. Strict implementation of labour laws and union recognition may help improve labour relations with foreign firms by

improving these companies' wages and non-wage conditions. However, SEZs in developing countries that often lack strategic assets that can attract FDI often relax labour laws and policies as incentives to attract FDI. For instance, the Nigerian SEZ programme allows for 100 percent foreign ownership with no expatriate quota and prohibits unionisation.

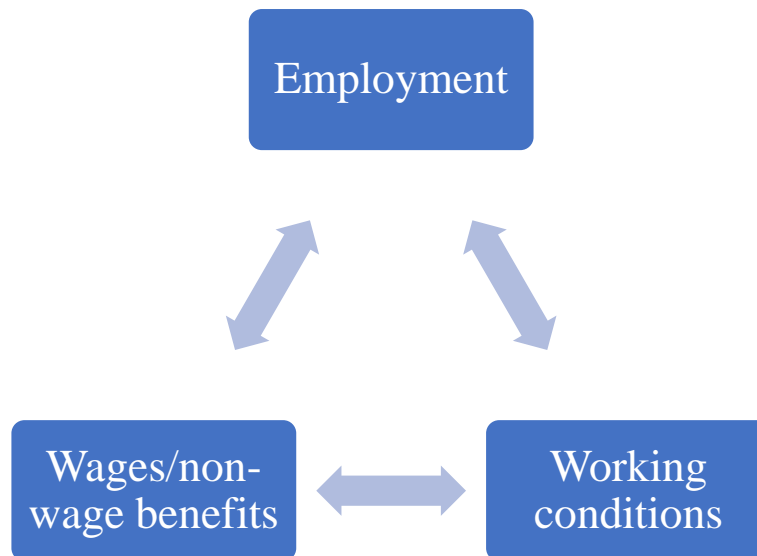
Finally, Government policies and institutions can support linkages between local and foreign firms. To establish linkages, local firms need to have good absorptive capacity. Training, education, and technical capabilities in local firms, along with investments in research and development, can help in this regard. Additionally, policies that facilitate the exchange of information and knowledge between local and foreign firms can promote the development of linkages between them. To encourage linkage development, incentives such as tax rebates can be given to local firms for purchasing inputs from local suppliers. The use of local content requirements and more significant interactions between foreign firms and local universities/research institutions can also be helpful.

5.3 Findings

5.3.1. Integration of local workers in SEZ firms

The first section of this empirical analysis examines the integration and employment conditions of locals employed in the firms in the SEZ and how this may impact learning and knowledge transfer between them and their Chinese supervisors. It begins by examining the extent to which local workers are employed and examines their wages and non-wage benefits. The final part looks at the working conditions in these firms and the implications they may have for worker motivation and learning.

Figure 19: Integration of local workers in SEZ firms



Chinese firms in the SEZ employ locals significantly in their operations – on average, firms in this study have at least 87 percent of their staff as local staff. At the LFTZ, the average number of people employed in the firms is 40; the 3-5 management positions are typically reserved for the Chinese staff, while the remaining shop-floor positions are almost exclusively occupied by local staff. The total employment at the LFTZ is estimated to be 2000, while the OGFTZ has 60 operational firms, and the total number of people employed is 4000. A significant factor influencing the hiring of local staff is the cost of local workers relative to the cost of hiring Chinese expatriates, this aligns strongly with the efficiency-seeking motive of most of the Chinese firms. According to a Chinese zone officer;

'In Nigeria, the average labour cost is 30,000 naira /month, which is approximately \$100; in India, Vietnam, and Asia, you cannot hire labour for that cost. In China, labour costs go up to \$300 - \$400, which is a significant difference. But even though they are expensive, they have more experience, and you don't need to pay much attention to train them. But when companies hire Nigerian workers and pay \$100, they have \$300 left, and they can use \$100 - \$150 to train them, and they may still have \$100 left after training, which is a huge advantage for them'²⁹.

²⁹ Zone Officer 6.

The officer said that labour cost is one of the factors which makes Nigeria a competitive investment location because hiring local labour provides a cost-saving opportunity for firms, thereby enhancing their ability to compete with their peers. Besides saving on these costs, many firms simply cannot afford to hire a Chinese expatriate if they can recruit for those positions locally. In deciding whether to hire a Chinese over a local staff, they must consider the relatively higher salaries which they would be paid, the cost of their accommodation, visa fees, and flight tickets, all of which increase if they are coming along with their families and other dependents.

Figure 20: Distribution of workers in sampled enterprises

Firm	Chinese employees	Nigerian employees	Percentage of local workers (%)	Managers	
				Chinese	Nigerian
Company 1	2	36	94.7	2	2
Company 2	9	38	80.9	5	0
Company 3	4	54	93.1	3	0
Company 4	0	25 -50	100	0	1
Company 5	8	42	84	3	0
Company 6	2	30	93.8	2	0
Company 7	20	40	66.7	Nil *	0

Source: Author's field work.

Firms are also motivated to hire factory locals as part of Corporate Social Responsibility (CSR). In fact, at the OGFTZ, part of the agreement between the zone and the local community to maintain harmonious relations is employing indigenes to work in the zones. While officials of the zones said they try to match locals with opportunities, they have not recorded significant success because many do not have the skills required for the job. However, this feedback has not been well received by community leaders who have asked the SEZ firms to train their indigenous workers with the required skills if they claim they don't have the needed capabilities. However, a common criticism of these firms is that most of the positions occupied by Nigerians are factory-floor roles, with only a few occupying technical or managerial positions. Many Chinese employers argue that they simply cannot find locals with the skills to operate the factory machines. According to one of them;

'I think because the industrialisation level in Nigeria is not that high. So, most workers don't have the experience to operate complicated machines. In Nigeria, you don't have many industries, especially manufacturing, which means there are few qualified workers and technicians. This area is new; about 10 years ago, when our company came here, every other place was bush. This time, many Chinese companies come here, and we recruit and train people. So, I think the number of qualified workers and technician engineers is growing. And typically, when firms want to recruit local workers, we help them find local employees. They come here, and we don't need to go far to recruit them because this place is famous. There are people from the east, from the north, they come here looking for a job'³⁰.

A Chinese manager at a petroleum pipeline manufacturing company expressed similar sentiments but added that the time it takes to train local staff to develop the requisite capabilities may be long and delay production; therefore, they find it easier just to hire a Chinese professional. According to him;

'No, Chinese is better. It would take a long time for us to train Nigerians, and we need to start production immediately because profit is very important to a private company. But we have local staff working with us welding or using the Crane or Forklift, but we do not allow them to touch any part of our machines because they do not know how to work for a long time. They work for one month and leave. Also, once we start production, we have different types of

³⁰ Zone officer 7.

*inspection. Only people with the certifications can work on the machines because we work with IOCs (international oil companies), and they have high standards*³¹.

They insist that if they could find such technical and managerial skills locally, they would not have to hire foreigners to fill those positions because of the financial implications it would have for companies. One of them said;

*'The factories don't like to recruit too many foreigners because the cost will be much higher than the local employee. The company must pay for flight tickets, visa fees and higher salaries because of the long distance from their hometown. So, how many kilometres, like 12,000 or more, from here to China? Almost 20, 000 kilometres. It's very far, from Lagos to China flights, it's almost 20 hours*³².

However, Nigerian officers within the zone disagree with such assertions. Some NEPZA officers said they get the impression that the Chinese want to ensure continued dependence on them because there are certain positions that they expect Nigerians to occupy. Yet, Chinese firms do not employ Nigerians in such roles. Indeed, a Nigerian supervisor (who had previously worked at a Korean factory) at a factory said that they did not understand why there were not more supervisors like him employed in these factories because he knows many people who have the required capabilities. According to him;

*'I do everything; my task is the machine, and I fix the machine when there is a fault. I know how to operate everything; I know how to repair it. That is one thing with the Chinese, they always think they know better. Meanwhile, some Nigerians can fix these things and do more than them. But they just think they know better; that is their problem. Chinese people, that is their way, but the Koreans believe in training people. Once they train people, you know that once you are trained, you can catch up. In expression, within 3 months I was able to catch up and after 6 months they started to give me work to do*³³.

However, discussions with other actors in Nigeria's SEZ programme reveal that a critical reason Chinese companies struggle to get highly qualified Nigerians for technical and managerial positions is because of the quality of the wages and working conditions relative to Western multinationals, for instance. They said the Chinese do not realise that if they can provide the same conditions as a 'Nestle' or 'Unilever', they would not struggle to get local

³¹ Manager 1.

³² Zone officer 6.

³³ Worker 5.

workers into such positions. Indeed, studies comparing Chinese to Western multinationals show that, to a considerable extent, the failure to put local workers in managerial positions is not entirely attributable to a lack of highly skilled labour. They show that the most systematically observed difference' between Chinese and other multinationals is that the latter tend to employ a significantly greater number of expatriates, especially at the managerial levels (Lee, C.K., 2009; Auffray and Fu, 2015).

There are two reasons for this, which are consistent with the claims made by the Nigerian officers in the zone. First, their low-cost operating strategies mean that they are unlikely to attract highly skilled staff. Even if they do, they struggle to retain them. Once local workers gain experience in Chinese firms, they quickly move on to a Western multinational where they get higher compensation. Second, Chinese expatriates are less likely than local workers to complain about demanding labour practices such as working for longer hours during local holidays and working overtime and during weekends. Employing Chinese expatriates in such positions means they would be less entangled in issues with authorities about their labour practice.

Moreover, given that most of the firms in these studies are Small and medium-sized businesses experiencing their first international expansion, it is easy to see how they may struggle to establish sophisticated recruitment and management systems that can enable them to compete for highly skilled talents in the labour market. Other reasons cited for the lack of representation of locals in management positions include the degree of foreign ownership of firms in the zone and the length of their presence in Nigeria. All the firms in this study are wholly foreign-owned; this effectively means that no locals are part of the ownership, reflected in management positions.

Discussions with managers revealed that wholly owned foreign firms may prefer home country nationals in managerial positions to preserve their corporate culture and facilitate communications between head offices in China and affiliates mainly because of the language barrier in this case. This is not unique to Chinese firms, as studies have shown that companies with different languages between the host and home countries are more prone to hiring expatriates in important positions (Harzing and Feely, 2008).

Second, the length of foreign presence is also argued to influence the extent to which locals are integrated into managerial positions. The two Chinese projects in this study have been in operation for about 10 years, while the average age of the firms sampled is 5 years. Studies show that when Chinese firms are new in a country, they tend to use Chinese labour for managerial and technical positions in their initial years of establishment (Tang, 2016). This relatively short presence and the language barrier may explain their inability to know where to search for highly skilled labour, especially when they initially set up.

5.3.2. Wages and non-wage benefits

Nigeria's SEZ policy stipulates that firms must pay workers in line with the country's minimum wage. Chinese firms at the LFTZ pay an average of 30,000 naira or \$100/month³⁴ for factory floor positions, which is higher than the country's minimum wage of 18,000 naira or \$60/month; however, conversations with workers suggest that this is often lower than the wages offered by other multinationals in similar sectors. Indeed, studies have shown that although Chinese firms may pay above national minimum wages, they pay less than their Western counterparts in similar sectors (Oya and Schaefer, 2019). The consequence of this was high levels of turnover; most of the workers I saw had been there for less than a year and

³⁴ The wage costs are based on 2019 exchange rates of \$1=N300 (approximately)

admitted that they would gladly leave if they found alternatives because they did not feel that their pay was commensurate with their efforts. A worker said:

'The reason why people don't stay here for too long is that their pay is very low. Once people start working here and realise that from year to year, they will not increase their salary, they need to find their way out. When I resumed here, they told me that after 3 months they would increase my salary, later they said after six months but still, they have not increased it, yet my work is increasing, and I virtually do everything here, most people come here to work for long but once they realise that they are not good people to work with, they decide to leave'³⁵.

However, instead of increasing wages to reduce these turnover levels, firms become reluctant to do so as they fear that the workers will be poached after receiving on-the-job training. Indeed, this is consistent with findings by Chen et al (2015) in a similar study in Nigeria, they found that some Chinese firms are reluctant to increase their workers' wages because of fear that after training them, they would leave for competitor firms.

These frustrations over low wages are worsened by the high levels of casualisation of staff; in all factories sampled, at least 75 per cent of the local staff were casual staff. SEZ firms hardly extended permanent contracts to local workers to avoid the obligations that come with it. Nigeria's SEZ policies stipulate certain benefits that should accrue to employees, including housing, holidays, and medical benefits. However, by casualising staff, these firms are not obliged to fulfil these benefits as they are only required to do so for their permanent staff. One of the Nigerian factory supervisors who had previously worked at a Korean hair manufacturing company, Expression, said;

'Even though the salary at Expression was not as high as it is here, we could go on leave, and we had a medical card which we could take to the hospital to receive treatment even if it was for a slight headache. They do not give us leave or medical insurance even though I have been working here for a year. They only care about their work; once you do not come to work due to illness or anything, they will not sign your timesheet for you'³⁶.

Another worker said;

³⁵ Worker 6.

³⁶ Worker 7.

'From experience, these people are quite different; all they want is their work, but the only thing with them is that when they employ you, they just need you around them. They won't sign you for that day once you don't come to work due to illness or anything. Even as a contract worker, that's how they treat people. In other places like Nigerian firms, once you are a staff, you are a staff. They will respect you, and once you complain about anything, they may take you to their clinic to take care of you. At my former place, once you are sick, you have your card already; you just go there and tell them your problem, complain, and they will take care of that. Here, when you are sick, they will just say go home and rest. The other days, nothing for you'³⁷.

Apart from not providing them with health insurance, in some firms, workers need to physically present themselves at work to prove that they are sick before they are given the day off and paid because they do not trust them. Cases of worker theft have contributed to this lack of trust; during break times, workers are asked to leave for lunch, and all factories are locked and will not be opened until a Chinese supervisor is present.

Finally, Nigeria's SEZ policy states that working hours should not exceed 8 hours per day, but when they do, it should be considered overtime work, and workers should be reimbursed for it. However, there were multiple cases of workers saying they did overtime work, for which they did not receive any acknowledgement or payment. Chinese managers justified this by claiming that some of them work overtime because they resume work late and are inefficient with their time. Thus, they argue that they have no obligation to make overtime payments as it is the workers' fault and not theirs.

5.3.3. Working conditions

Complaints about the working conditions of workers in SEZs are rife, and this mirrors public sentiments about how the Chinese treat their workers across the country. A NEPZA officer said that there have been cases where Chinese supervisors hit workers on the factory floor when they make mistakes. He was called to intervene after the worker complained, and the Chinese

³⁷ Worker 5.

employer promised not to do it again. Health and safety issues are often relegated to the background as well, according to a government adviser;

*'At the Calabar FTZ, we went to a factory which manufactures fridges and freezers, there were no hazard markings on the factory floor. Normally, areas with hazardous equipment should have red lines, and areas for passage should have yellow lines; none of that was there. Water flowed freely on the floor without any sign; people were welding without any masks or protective gear. If they work there long enough, those welders will lose their sight, and those doing the cutting will lose their hearing simply because there are no standards in the factory; anything goes'*³⁸.

More recently, during the COVID-19 pandemic, there was an uprising at the OGFTZ where workers claimed they were held against their will in the factories for days without adequate feeding and were being prohibited from leaving the zone. Hundreds of workers broke through the gates, threw stones, and destroyed the properties of companies in the zone. The Chinese Zone Managers claimed this was not what had happened, as they adopted an 'exit only, no entrance' policy during the nationwide lockdowns. This meant that they told those who wanted to leave to do so but to return only after the restrictions were lifted. Those who chose to remain, however, would be provided with feeding and accommodation. However, many remaining said they were not adequately taken care of and would have preferred to leave.

When issues like this arise, the SEZ policy stipulates that grievances between employees and employers should first be resolved amicably using their internal grievance procedures. However, suppose there is a failure to address it. In that case, either party should refer the matter to the board of settlement of disputes, which should be composed of the employer or their representative, the employee or their representative, or a representative of the Zone Management, which shall be the chairman and the head of the labour and employment services office in the zone. Indeed, with the COVID-19 lockdown incident, the matter was eventually resolved. A board of settlement comprising the Zone management, immigration services, zone

³⁸ Govt officer 4.

security team and the local police liaised with the protesters. Eventually, they stopped their violent acts, and the matter was resolved.

Discussions with workers, however, revealed that many of them have little faith in the grievance resolution procedures as the authorities tend to take sides with the employers. This is understandable because like most SEZs worldwide, governments and zone operators try to make it as easy as possible for employers to conduct their business without interruption from labour. This explains why unionisation is not encouraged within the NEPZA Act. While it does not explicitly ban the unionisation of workers, it does not encourage the intervention of the labour union in resolving labour disputes, as it states that NEPZA should be responsible for resolving issues between employers and employees. The Act also explicitly bans any form of strikes within the zones.

The willingness of zone authorities to weaken labour agitations to appease investors is highly consistent with studies which have shown that companies in low-skilled, labour-intensive value chains prefer countries with relatively weak labour institutions. It is important to note that the labour practices of these Chinese firms are, to a certain extent, a result of their size and limited international exposure; not all Chinese firms in Nigeria behave this way, especially the big multinationals with more sophisticated human resources management systems. A government officer blames the prevailing labour conditions in the zone on the quality of Chinese FDI, which the government is attracting. According to him;

*'If you go to China, you will find Chinese companies that are no better than slave labour camps, you will also find Chinese companies that are working pretty much global standards, in terms of the working practices and the way they treat their people. So, the question is, which type are we attracting?'*³⁹.

³⁹ Govt officer 4.

As suggested earlier, most of these Chinese firms in the SEZ are young and have been operating in Nigeria for an average of 5 years, so there is a possibility that as they grow older, they can improve their human resources management systems. Indeed, Various studies have shown that even though private Chinese firms may start operations with relatively poor non-wage conditions, they can adapt over time depending on demands from organised workers and the state (Lee, 2009; Tang, 2016).

5.4 Training and skills development

This section examines how SEZ firms support their employees' skills development and the implications for learning. It begins by discussing the role of on-the-job learning in skills development. It examines the barriers to the process, including workers' absorptive capacity and the language and cultural barriers. It briefly discusses how SEZ firms support skill development in the host communities through CSR (corporate social responsibility) activities.

5.4.1. On-the-job training

The primary way knowledge was exchanged between foreign and local workers in the LFTZ through on-the-job training. When a worker was hired, there was typically an initial period, i.e. 2-5 days, when they observe other workers get an understanding of what they are doing. They were assigned to a supervisor/manager whose activities they observed and imitated as illustrated in fig. 24. Subsequently, they begin to practice what they had observed what had been demonstrated to them and as they do it repeatedly, they begin to build their needed competencies. The supervisors evaluated their pace of learning, and if they were not impressed, they would continue to teach them until they get it right. They may have to let the person go if they observe that the worker is still not learning.

Figure 21: Nigerian workers and a Chinese Supervisor at a LFTZ truck assembly plant



Source: [LFTZ website](#)

However, the skills that local workers were exposed to were primarily simple assembly tasks, which reveal the predominant type of FDI in the zone. At the furniture assembly plant, workers' responsibilities include welding parts of chairs together and packaging the furniture. Similarly, the freezer assembly company's tasks include cleaning the compressor, welding parts, testing whether the fridge is working, and packaging it. These tasks involved in the primary assembly are repetitive and low-skill and only provide a limited range of skills transfer According to a worker;

'My job here is to pack the carton, arrange the attachment, all of us, we collaborate to do that. We tear the attachment, and after tearing it, we remove it. We cut the rubber on the attachment, and after cutting it, we arrange it inside the carton. Before, we used cellotape and tied it together. I was not here when production was ongoing'⁴⁰.

Most of the firms in the zone were primarily involved in Assembly-style manufacturing as so the primary production inputs have already been manufactured in China. The implication is that most of the high-skill, research and development-intensive aspects of the manufacturing

⁴⁰ Worker 2.

process had already been undertaken in China, automatically limiting the range of skills and knowledge to which local workers are exposed.

In addition, the size and scale of the firms in the SEZs also impacted their training and skills development practices. Studies have shown that more prominent and globally integrated companies have more sophisticated training systems, including establishing local training centres and periods of intense skill development. This is especially true when the firms are integrated into Global Production Networks (GPNs) where workers must ‘fit seamlessly into their production lines and perform the required operations quickly and with minimal errors’ (Oya and Schaefer, 2019, p. 62). While there are some affiliates of multinationals within the SEZs, their activities in Nigeria are typically not part of GPNs because they do not consider Nigeria a competitive location for exports.

Fundamentally, the type of skills to which local workers were exposed shows the failure of the government and its SEZ partners to attract the type of FDI which is most likely to train workers in more advanced skills. While Policymakers often emphasised knowledge transfer between workers as part of the objectives for establishing the zones, there were no clear articulations of the specific type of skills targeted through the zone programme. Consequently, this expectation of knowledge transfer was not codified into the policy governing zone operations.

There is sufficient empirical evidence showing how demands from the host country governments determine the type of training facilities companies adopt (Paus and Gallagher, 2008). In Nigeria, there is no evidence of such demands on any of the SEZ companies, and it may help explain some of the training practices they adopt. Many of the incentives which they provide to SEZ firms could be tied to such conditions, but they are not; a former government adviser re-iterated these points saying:

‘Skills respond to policy; people do not bring their skills and technology to a country and donate it; the problem is that we do not have a regulatory framework which gives people the

incentives to transfer skills or compels them to transfer skills in return for market access if you don't put those there, the skills transfer won't happen. China is the sort of place where they offer you a huge salad table, so you can pick your salad. So, if you bring people assembling fridges, maybe a low-budget brand fridge, in a sweatshop when they come, they will replicate only what they know how to do. But if you want to bring in investments in a focused way, you ask yourself, where are the Chinese companies at the top of the value chain for white goods? And then you tell them this is the sort of training and technology transfer I want to see. The countries that get technology transfer that is what they do. Ghana has something called the Ghana Vocational Training Centre. The facility is huge with technicians in every sector that can work to Asian standards of productivity⁴¹.

Attempts by NEPZA to enforce some form of skills transfer seem to have been poorly implemented. The implementation of the expatriate quota is an example of this. According to the NEPZA act, SEZ firms have no restriction on the number of foreign workers they can employ. But NEPZA officers insist that they only allow firms to bring in expatriate staff if they can prove that such skills cannot be found locally. Also, if firms bring in an expatriate, say, a Chinese Engineer, they must commit to working with two Nigerian technicians who will understudy them and learn what they are doing. They claim that if the firms fail to do that, they will not approve their registration applications. However, there were no clearly defined timeframes within which such skill transfer should occur, and there were no monitoring mechanisms to ensure learning was taking place.

Despite these observations of the type of skills and training that local workers receive, it is essential to note that they are still beneficial in helping these factory workers, who are first-time workers, develop industrial discipline and better attitudes to work. It is important to remember that Nigeria is a late industrialiser; the proportion of its labour force with the skills needed for modern industry, i.e. time management and workplace discipline, is very scarce. Therefore, its cheap and abundant labour force is not necessarily a competitive advantage. Because of this, training, regardless of its format, provides workers with basic skills that can

⁴¹ Govt officer 4.

help enhance Nigeria's industrial capabilities. While these sets of skills may seem basic, studies have shown that in the long-term process of economic development, on-the-job training is the most effective type of training (Amsden, 2001). A NEPZA official's comment reflected these sentiments, arguing that the SEZ firms provide Nigerians with skills they did not have. He said;

'Every employee in those enterprises, most of them come without skill. For instance, where they assemble shoes, they just employ anybody employable, so they can give instructions, teach some basic things, and you will understand. But if you go there now, the Nigerians can see and do virtually everything because they work with the expatriates. They are acquiring those basic skills. We don't have technical schools; we only have vocational centres, and even in those vocational centres, the shoes they make there - cover shoes and palm sandals, that kind of skills is different from what is needed here. Here you see Polypropylene, etc. Nigerians are there, they can do everything, the different sizes of the shoes - if you go there, you will see it'⁴².

5.4.2. Barriers to on-the-job training

a. Absorptive capacity of workers

Absorptive capacity refers to the broad skills needed to deal with the implicit component of transferred knowledge and the need to modify this imported knowledge (Mowery and Oxley, 1995). The primary argument of the absorptive capacity approach is that the ability to evaluate and utilise outside knowledge is a function of the level of prior related knowledge. This prior knowledge includes basic skills, shared language or even knowledge of technological developments within a given field (Cohen and Levinthal, 1990). Absorptive capacity, therefore, influences the transfer of knowledge between foreign and local workers because they are likely to possess varying degrees of absorptive capacity. In the case of SEZ firms, the prevailing complaint among employers was that local workers did not have the education or prior work experience needed to work in these factories, making training them a bit more challenging. Many workers had at least 10 years of education; however, many firms do not consider that

⁴² Govt officer 1.

very useful because the education did not necessarily equip them with the required skills.

According to a Chinese zone officer;

'Some of the workers are well educated but when it comes to the exact work, they have no idea about the work exactly. In this country, we don't have people who have done a similar job before. If they have done it before, they would just come to this zone and do the same thing but when you go there, maybe you are studying finance or politics, when you go there to be a canister, you find that the thing is Greek. The skills are scarce. Of course, when people come, they must be trained by the firms. For example, if I have a factory, I just can't hand over the machine to someone who has no idea about it. The person would just get it breakdown'⁴³.

Because of this, Chinese firms place a much higher premium on workers with prior experience in factories, especially other multinationals. Indeed, the Nigerians who held managerial positions in the SEZ firms had prior experience with other multinationals. This preference for workers with experience from other multinationals is consistent with studies which find that the productivity premium of workers with prior work experience is significantly higher than that of their colleagues without such experience (Balsvik, 2011). Vocational training centres supposed to equip workers with more practical skills have not succeeded. There is a vast dissonance between what the vocational centres teach them and what the firms need. Because of this, some Chinese managers said they prefer local workers who haven't attended these vocational schools because it is difficult to unlearn the irrelevant skills they have been taught.

b. Language and cultural barriers

Given that the main learning modes in the factory are observation, demonstration, and imitation - all of which involve significant face-to-face interactions- language and cultural barriers pose a significant challenge in these processes. Face-to-face interactions are significant because a lot of the knowledge transferred between workers in a factory is implicit; that is, they are often taught by demonstration or long periods of observation instead of being explicit, via manuals. Face-to-face interactions allow for multidimensional communication, which is the ability to

⁴³ Zone officer 7.

watch, touch and listen simultaneously (Bathelt, Malmberg and Maskell, 2004; Storper and Venables, 2004). These face-to-face interactions are enhanced when workers share similar interests, language, knowledge, norms, conventions, and long-standing relationships due to informal interactions. However, language barriers undermine rhetorical skills, as humour, symbolism sensitivity, negotiation, persuasion, and motivation require a very high level of fluency (Harzing and Feely, 2008, p. 10).

However, language barriers between Chinese and Nigerian workers undermine learning and prevent the flow of information between local and foreign workers. To mitigate this, almost all firms sampled had Nigerian translators; however, since a translator can't participate in multiple conversations simultaneously, workers could not always ask questions in real-time. Using interpreters also reduced the clarity and spontaneity of conversations and was sometimes time-consuming. A worker explained how the language barriers affected her on-the-job learning;

'Our supervisor can speak English, but his English is not very good. If you want him to come and check something, you must point it out to him. Sometimes, he will understand, but on some occasions, when he is describing some things to me, I may not understand, so I will make a mistake. And when it happens, he will be harsh and start speaking in his language; I cannot hear what he is saying, but I will know that he is very angry at that moment⁴⁴'.

Indeed, many of the Chinese workers in the zone cannot speak English. According to a Chinese Zone Manager, many of the Chinese who emigrated to Nigeria are usually not very well educated and cannot speak English, and those who can prefer to migrate to Europe, America, or other Asian countries. He said;

'Because of the media bias, when they think of Nigeria, the main image is Boko Haram. Even though Boko Haram only occupies a small portion of the territory, they don't believe that. Therefore, the highly educated ones are reluctant to come to Nigeria. It is only those who don't speak very good English and have limited opportunities in China that choose to migrate to Nigeria⁴⁵'.

⁴⁴ Worker 8.

⁴⁵ Zone Officer, 6.

More so, many workers suggested that these language barriers undermine the development of interpersonal workplace relationships between Chinese and local workers. Strong interpersonal relationships are essential as they allow for informal interactions and repeat conversations, both of which are essential for developing trust, which allows for the transfer of tacit knowledge. Indeed, some workers said that the Chinese tended to be more cordial and friendly with the translators, one of them;

'I don't understand the Language. They are freer with translators than workers who can't speak the language. They feel it is easier for them to communicate with translators. I should have learned the language because I don't like them. Not that they are bad; they respect me. Most of the Chinese people, like the 3 guys working with them, insist that they would not employ any interpreter and the guys must learn Chinese, and those guys are very good in Chinese now; they are now interpreters'⁴⁶.

These language barriers are also a leading cause of disputes in the zone; a NEPZA officer said that over 90 per cent of the labour issues reported to him are due to language differences. Cultural barriers also affect learning and interpersonal relationships within factories. Nigerian and Chinese workers identified cultural barriers, especially concerning time management and workplace discipline, as major sources of workplace tensions. Chinese Managers argue that Nigeria workers do not place as much value on time as they do; a zone manager said:

'Nigerians are too patient and not in a hurry to do anything. If you give them work to do, they feel like if they can't finish it today, they can do it tomorrow, and if they can't, you can finish it tomorrow. They don't have a timeline for their work. In China, it's different; if a supervisor gives you a deadline, say 4 pm, you must deliver the work at 4 pm. You cannot tell your boss that you have not finished and will complete the work tomorrow. In Chinese culture, if you do not finish what you are supposed to do, you will not be paid overtime because that is your task. The supervisor will only pay you overtime if they have specifically requested that you work overtime. I am not saying that the Nigerian culture is bad, but most Chinese are not used to working that way. So, we try to let our local colleagues know how our methods can improve efficiency'⁴⁷.

These inefficiencies with time may lead to productivity loss as studies have shown that culture defines organisational cohesiveness and impacts organisational success and performance. This

⁴⁶ Worker 5.

⁴⁷ Zone officer 6.

may explain why Chinese managers may resort to strict factory rules to minimise the negative impact of these differences. A NEPZA Officer said;

'The Chinese are very punctual with their time, but Nigerians use 'African time'. If the Chinese say you should resume by 8 am, you must be there at 8 am. So, when a Nigerian worker comes at 8.30 am, they want to penalise the worker, maybe with a 200 naira or 500-naira surcharge. They also do not condone workers sleeping during the night shift. So, how they view time is completely different from our view'⁴⁸.

However, given that many of the workers sampled did not have prior factory experience, the popular sentiment among them was that there were too many rules on the factory floors; examples include taking permission before using their phones and only ten-minute bathroom breaks. However, many rules and emphasis on punctuality may not necessarily be due to culture as these are features of the modern industrial organisation regardless of nationality. This view is consistent with arguments by Tang and Eom (2019) that the 'conflicting perceptions of work ethics between Chinese and Africans are instead caused by evolving notions of time that accompany a transition from a pre-capitalist manner of production to that of industrial capitalism' (p. 461). These tensions result from the unique perceptions of time and work ethics in industrial capitalist societies such as China, which differ from the more traditional work ideas in societies such as Nigeria.

These language and cultural barriers also undermined the social embeddedness between Chinese workers and their colleagues. Social embeddedness refers to the idea that economic relations are, to some extent, always embedded in a social context (Granovetter, 1985). Social relations play a role in building trust and limiting opportunism; this leads to a preference for transactions with people of known reputation, learnt through social relations (Dayasindhu, 2002). The more socially embedded the relations are between factory members, the more opportunities there are for interactive learning to take place, as the trust which emerges from social embeddedness enables the exchange of tacit knowledge, which is more challenging to

⁴⁸ Govt officer 3.

communicate. Like other Chinese immigrants in the country, Chinese workers in the zone like to socialise with themselves and not with the locals. According to a Nigerian worker;

'They do not like to mingle with us. If you invite them outside the zone, they will not come, unlike Indians, who will always come. The Chinese have this idea that they are too different from us and that if they get close to us, we will harm them. Once you move close to them, they will think you are after something'⁴⁹.

Indeed, this comment was consistent with findings by Chen et al (2015) which revealed that Chinese firms in Nigeria were not very integrated into local economic relations as only three of the twenty-four Chinese firms they studied were members of the Lagos Chamber of Commerce. However, the reluctance of the Chinese to be embedded within their local communities is not without reason, as there have been several incidents of kidnapped Chinese workers across Nigeria. However, this may affect their ability to learn more about the culture and social norms, essential for developing better relationships with their Nigerian colleagues.

The implementation of corporate social responsibility (CSR) initiatives is another way the SEZ and firms within it contribute to the training and education of members of their host communities. The Zone managers work together with leaders of the local community to look for vacancies in the SEZ and facilitate their employment. In addition, they invest in general education for members of the host community. These education interventions include scholarships from primary to tertiary levels of education to members of communities displaced by the SEZs.

In 2020, The LFZDC completed and furnished a block of classrooms for one of the primary schools in the host community. They also invested in vocational skills training like tie and dye, bead making and computer training. These investments in education have been motivated by the fact that even when there are vacancies available for members of host communities, some of them do not have the requisite skills for the jobs. Thus, they believe that by making these

⁴⁹ Worker, 7.

investments, many of which will only materialise in the long term, they are creating a future labour pipeline for firms in the SEZ.

One of the companies in the SEZ that manufactures petroleum pipelines has a structured training programme with the Nigerian Content Development and Monitoring Board (NCDMB). The NCDMB has the mandate of promoting capacity building for the oil and gas industry, so the training for Nigerian Engineers is part of the local content requirements of the petroleum industry. According to the Chinese Manager of this company;

'We help the Nigerian government train many local engineers. When we commence production, the local content board sends us Engineers to train them. They understudy the Chinese Engineers and learn from them. They are usually here for 27 months. When we finish training them, they return to the local content board because most of them are already employed by the government'⁵⁰.

5.5 Knowledge spillovers through vertical linkages

As discussed in the analytical framework, backward linkages offer a significant opportunity for knowledge spillovers between foreign and local firms. Backward linkages, which can occur by patronising local suppliers or sub-contracting to local firms backward linkages defined as 'transactions that go beyond arm's length, one-off relations as in buying standardised products off the shelf and involve longer-term relations between firms' is argued to offer the most significant potential for knowledge spillovers UNCTAD (2001, p. 127). These long-term business relationships involving multiple interactions between local and foreign firms can enhance local firms' managerial and technical competencies by putting pressure on them to improve the quality of their services to meet the demands of foreign firms (Auffray and Fu, 2015).

⁵⁰ Manager 1.

At the OGFTZ and LFTZ, there is little evidence of knowledge spillover happening through linkages. However, a few cases of backward linkages exist, particularly in sectors that require raw materials, which Nigeria has in abundance. Two companies that manufacture insecticides purchase their core inputs - gas and kerosene from Nigeria because they are by-products of crude oil, which Nigeria has in abundance. However, they import the steel required to package the finished product from China. The second company specialises in manufacturing ceramic products; the primary input they use is Kaolin, a raw material that Ogun state has in abundance, so they source about 80% of their inputs locally.

However, most firms import all their production inputs from China, which cuts across sectors; there is hardly any significant evidence of local sourcing or subcontracting. The major explanation for this is the type of Chinese FDI within these zones and the extent to which the Nigerian government has been applying to deploy strategies and incentives to influence their behaviour.

All the companies operating in the LFTZ are engaged in assembly-type manufacturing. This means that all the raw materials required for the final product are imported from China. For example, the furniture assembly company imports armrests, chrome legs, wood, and foam from China. The only things they purchase locally are cartons used for packaging the assembled product. Likewise, the freezer assembly company imports compressors, fans, aluminium boards, copper pipes, wires, and folding machines from China to assemble within the zone.

The local firms' linkages with SEZ firms were generally limited to non-core, low-value-added activities like transportation, marketing, distribution, and supplying cartons. Besides, local firms also provided services like food supply, cleaning, and construction materials like sand to SEZ firms. However, these activities are non-core in nature, which undermines the knowledge spillovers. Moreover, these are often one-time services, and they are not the core competencies

of SEZ firms. Therefore, SEZ firms are less likely to receive any support from Chinese firms to develop their capabilities.

Second, these firms' global sourcing and production strategies also influenced their ability to develop the vertical linkages that engender knowledge spillovers. This is because the potential for local firms to supply a multinational depends on the multinational's global production and sourcing strategy. If production is highly internalised because a large share of value added is considered a core competency, multinationals would have little incentive to source locally except for tradable services and inputs such as packaging materials. Also, if a multinational company sources globally, it may adopt a co-sourcing strategy that relies on established suppliers abroad. This is particularly true for multinationals with production plants in multiple countries that want to ensure the same quality and specifications of inputs are used.

At the LFTZ, some Chinese firms were affiliates of multinationals, and their global sourcing strategy is as described above. A quintessential example is Company 7, one of Nigeria's only two companies that manufacture petroleum pipelines. Because of the nature of its products and its clientele base, which is other multinationals, Company 7 has strict quality and standards specifications. The Chinese Manager I spoke to said they import their main production inputs from China or Japan because they cannot find them locally. Even when they find them locally, they do not purchase them because the local retailers import low-quality versions of their inputs from China to sell in Nigeria, so it makes no sense for them to patronise them. Given the existing long-term relationships between their parent company and their suppliers, it is also cheaper for them to import. According to him;

'This type of pipeline is used for oil and gas, not water, so they have specific qualifications – they must reach API and ISO standards; otherwise, our clients who are international oil companies may not purchase them. While we are serious about sourcing raw materials from Nigeria, unfortunately, most are not up to standard. We have our supplier list, our suppliers

*are big and famous companies in China, we know each other very well, and quality control is very important to us*⁵¹.

Because of these global sourcing strategies, the affiliates do not have the degree of autonomy that will allow them to source these inputs locally. The only areas where they influenced sourcing decisions were in tradeable services. Indeed, the Manager at Company 7 said that they use Nigerian firms for packaging, distribution, marketing, transport, and clearing services.

According to him;

*'We have a local partner that we use for marketing. He is a high-level person who has worked in the oil and gas industry for many years. It is easier for him to do marketing for us because we are foreigners. It would be difficult for us to meet different kinds of companies and customers. But he is a Nigerian who knows how to talk and communicate with them, so we have been in partnership with him for many years*⁵².

As previously discussed, there is little opportunity for spillovers in the supply of tradeable services as these are not the core competencies of the SEZ firms. Also, inputs' technology, scale and diversity may affect local sourcing decisions. Truck assembly, for instance, involves a variety of inputs such as breaks, headlamps, air conditioning units, radiators, mirrors, windshields, bumpers, etc. Similarly, telecommunications masts also have a variety of inputs, including antennas and mounting equipment, connectors, couplers, and attenuators. Domestic firms in Nigeria can manufacture only very few of these items at a significant scale, meaning that foreign firms cannot source all the inputs they need locally. Therefore, since they cannot source all their inputs locally, they are more likely to import from countries where they can get the volume and diversity of inputs they require. In this case, Chinese SEZ firms import all these parts from their home country.

⁵¹ Manager 1.

⁵² Manager 1.

5.6 Host country SEZ policy and strategy

As discussed in the analytical framework, the policies and strategies of a country's SEZ programme affect the ability of SEZs to foster knowledge exchange through either of the mechanisms presented above. From the foregoing analysis, it is apparent that the weakest of these mechanisms is the vertical linkages, which have failed to develop into anything meaningful. A significant explanation for this stems from a poor strategic approach as Nigeria's SEZ strategy and incentives have not been applied in such a way that makes it likely for the country to attract the kind of FDI most likely to foster linkages.

In terms of strategy, official documents and media discussions with policymakers suggest that a core objective of Nigeria's SEZ programme is to foster industrialisation by exposing workers to foreign knowledge and, therefore, enabling them to develop their skills. However, when NEPZA was established in 1992, the SEZ programme was not linked with industrial policy goals; no national strategy identified priority sectors, value chains, and the sort of linkages the government wanted to develop. The NIRP (Nigeria Industrial Revolution Plan) launched in 2014 was the first attempt to achieve that alignment, but its effectiveness was undermined because while lofty goals were outlined in the document, the critical 'how' part of the implementation process was missing. The ERGP (Economic Recovery and Growth Plan) was introduced in 2017 to rectify this; however, the implementation of different parts of the ERGP was assigned to different parts of government with no sustained attempts to coordinate the implementation.

The failure of strategic planning means there haven't been requisite investments into developing the capabilities of local suppliers and the value chains needed to support the identified sectors. Zeng (2016) recommends that zone development requires meticulous planning, which includes assessing the local market conditions, what investors want, supply chain issues and the business environment. For instance, the government identified Cotton,

textile, and garments as priority sectors; however, beyond identifying and prioritising these sectors, little effort was put into developing the value chains that would support the industries.

According to a government adviser;

‘The fact that cotton can grow in your economy does not necessarily mean you will have a cotton, garment, and textile sector. You must do the deliberate work of joining the bits together, creating the right conditions for investments and sending a coherent set of signals to the private sector.....If you say that you are prioritising cotton, textiles and garments, then you want to see a value chain strategy which shows how the government plans to link farms with fashion’⁵³.

The consequence of this poor strategic planning is that many domestic firms simply do not have the absorptive capacity, i.e., skills and capabilities needed to become suppliers or subcontractors to SEZ firms. Indeed, almost all the firms surveyed expressed frustrations about their inability to find their inputs locally because it would be cheaper for them to purchase them locally. As discussed previously, the parts needed for manufacturing things like telecommunications masts and trucks are not manufactured to any reasonable scale in Nigeria. Metals and machines needed to manufacture these parts account for about 23.7 per cent of Nigeria’s total imports and 42 per cent of its imports from China (OEC, 2019). Even for materials such as kerosene and Kaolin, where Nigeria has a relative comparative advantage, most of the items are still in raw material form without any level of processing, thus reducing the depth of linkages that can develop. According to the former government adviser:

‘When you are talking about linkages, the most important thing is to go to the heart of your industrial policy and say, what are the goals of our industrial policy? Are there sectors we are targeting? Are there factor endowments we have identified that we want to translate into real advantage? Is there a latent advantage we have identified that we want to translate into a real advantage? So, if we do not focus on the resources, we can use to develop domestic value chains or if we don’t look at the things we have a competitive advantage in, we have not even started’⁵⁴.

⁵³ Govt Officer 4.

⁵⁴ Govt officer 4.

The scarcity of these inputs locally is also evident in the fact that despite incentives by NEPZA and the LFTZ to encourage the use of local inputs, it has not significantly impacted firms' sourcing decisions. NEPZA requires firms to have 35 per cent local content in their production; if this is not included in their application, their request to establish in the zone would not be granted, and they won't be allowed to sell to the customs territory, i.e. domestic market. In addition, the LFTZ promises a discount on land prices and 30 per cent off management fees for firms who commit to sourcing these items locally.

However, both NEPZA and LFTZ officers admit that it makes no difference because many firms simply cannot find what they are looking for, so they eventually would need to import the items. What this tells us is that while fiscal incentives may attract firms to the SEZs, ultimately, they cannot compel them to source for goods which do not exist; for linkages to develop, there must be 'consistent policies to promote indigenous linkages capabilities, policies embedded in a broader strategy to expand domestic knowledge-based assets' (Paus and Gallagher, 2008, p. 76).

Figure 22: Local workers assembling an office chair at a furniture assembly plant



Source: [LFTZ website](#)

Not only has the weak strategy made incentives ineffective, but some incentives have also encouraged foreign firms not to seek out local suppliers. In Nigeria, SEZ firms have been granted import waivers that create incentives for assembly activities. Many of these firms choose to set up within the SEZ because importing raw materials and assembling them locally is more profitable than importing finished goods. This is because the duties paid on finished goods are significantly higher than those paid for raw materials. A government Adviser describes it as follows:

'What the Chinese are doing is to give themselves privileged access to the domestic markets. They are taking advantage of the tax regime that guarantees zero corporate taxes. They are taking advantage of the duty-free concession, which allows them to bring in the raw materials free of duty and only pay duty when the goods are going into the customs territory. So, they are using SEZs to address the domestic markets...They ask themselves - should we bring in freezers from China? What about the air space inside? Because when you bring in a fully built fridge, there is air space inside. You're paying for the volumetric weight of all that air but if you bring flat panels, your shipping cost is lower, and you just assemble here for distribution in the local market, so that's what they're doing'⁵⁵.

Finally, the poor strategy is also reflected in the design of the SEZs, especially the locations where they are located. The OGFTZ and LFTZ are in the country's sparsely populated areas and far away from markets and the centres of economic activities. Worse still, there are no local firms within the zones because many cannot afford the fees. Lowering the minimum capital requirements for local firms will not only reduce the distance between them and foreign ones. Still, it may also help them benefit from the superior infrastructure and one-stop-shop services, which may help them enhance their capabilities.

The state of transport facilities worsens the consequences of these poor locations, further undermining the connections between foreign and local firms. The Lagos and Ogun state governments responsible for the roads linking the LFTZ and OGFTZ SEZs to the local economy have failed to ensure that they are of good quality. More so, information asymmetry also prevents SEZ firms from finding local suppliers of inputs. There have been cases where

⁵⁵ Govt officer 4.

Chinese firms have attempted to import inputs from China even though such raw materials were available locally. According to a NEPZA officer:

'Anyone coming from China to do business in Nigeria does not know much about Nigeria and does not have any contacts in Nigeria. One Chinese investor wanted to import Soybeans from China. I told him, no way! Nigeria is one of the largest producers of Soybeans. In fact, I can personally provide you with Soybeans'⁵⁶.

Zone Managers try to bridge this information and distance gap by organising platforms where their firms can connect with local firms. According to one of them:

'We purchase booths for our firms at local exhibitions and trade fairs, transport our investors from our zone to these places, and represent them because we understand that many of them are Chinese and may not be able to engage with Nigerians actively. So, we organise these things to ensure that they have enough interactions with the local community. We also have our exhibition tents where we organise events and invite local suppliers to come and meet our firms'⁵⁷

However, given that meaningful backward linkages require long-term and repeated interactions between local and foreign firms, these one-time purchases and interactions may not be enough for solid linkages to develop. Also, these distances may preclude the development of agglomeration economies.

5.7 Conclusion

In this chapter, we have studied the learning and knowledge transfer process in the Lekki Free Trade Zone (LFTZ) and how it affected the development of critical manufacturing capabilities. An analytical framework was presented to analyse the knowledge transfer between Special Economic Zones (SEZs) and the local economy through employment, training and skills development, and vertical linkages.

The research revealed that Chinese SEZ firms have employed many local workers in the zone, mainly due to the low cost of local labour compared to expatriates. This employment has also been motivated by their Corporate Social Responsibility (CSR) commitments. However, the

⁵⁶ Govt officer 1.

⁵⁷ Zone officer 2.

study also revealed that local workers were not allowed to hold managerial positions, which were more likely to lead to knowledge transfer through labour mobility. Chinese firms claimed they could not find local workers with the required managerial skills. Still, other SEZ actors argued that they struggled to attract highly skilled workers due to non-competitive compensation packages compared to Western multinationals and poor human resources management practices. Additionally, the degree of foreign ownership of firms in the zone and the length of their presence in the country also played a significant role in the representation of locals in managerial positions.

In addition, although SEZ companies paid more than the national minimum wage, their wages were frequently lower than those of other multinational corporations, resulting in high employee turnover rates. These businesses also had many temporary employees, exempting them from providing certain benefits such as health insurance, vacation time, etc. These firms have been chastised for having poor health and safety conditions that undermined the well-being of their staff in terms of working conditions. Although dispute resolution mechanisms were in place to alleviate these issues, employees believed these processes were biased in favour of the employers because zone management avoids upsetting them.

Regarding training and skills development, the primary mechanism of training local workers, the majority of whom are factory-floor workers, was through on-the-job training. These workers are exposed to simple assembly tasks because almost all the firms are involved in assembly-type manufacturing. The poor strategy of Nigeria's SEZ programme means that the government has not been able to attract the type of FDI most likely to invest in training and skills development. They have also been unable to effectively compel current SEZ firms to make such investments. Indeed, many of the firms were small, involved in assembly-type manufacturing and barely integrated into global production networks (GPN), making them less likely to prioritise investments in worker training.

Measures by NEPZA to encourage the mentoring of local technical workers have been poorly monitored and implemented. However, despite this limited scope of training of workers, this exposure to factory work equipped many first-time workers with the rudiments of industrial discipline, including time management and better attitudes to work. It was not only the characteristics of SEZ firms that affected their ability to train workers; the absorptive capacity of workers was also a crucial factor. While many of the workers had secondary education, they did not have the skills required to work in the factory, undermining their ability to learn fast.

Moreover, language and cultural barriers undermined face-to-face interactions and multidimensional communication. Given the importance of observation, demonstration, and imitation in the learning process, these factors affected the transfer of tacit knowledge. These barriers also became a major source of arguments, disputes, and tensions in the workplace. SEZ firms also supported education through CSR investments in schools and the provision of vocational training opportunities for members of their host communities.

Finally, the weakest mechanism of knowledge transfer observed was through vertical linkages. This was because apart from firms that used raw materials, which Nigeria had in abundance, there was hardly any evidence of the SEZ firms' significant use of local suppliers or subcontractors. As these vertical linkages did not exist, there was hardly any opportunity for knowledge transfers through this channel. The assembly-type manufacturing of most of the firms and their global sourcing and production strategies meant that all the inputs required for production were imported to the zone for assembly.

Furthermore, Nigeria's poor SEZ strategy means that investments have not been made to support the development of the capabilities of local suppliers in this value chain. Worse still, the import waivers granted to SEZ firms meant that they simply imported production parts and assembled them in the zone instead of importing finished goods, as the duties on the latter were

significantly higher. Finally, the existence of information asymmetries between SEZ firms and local suppliers meant that some SEZ firms were unaware even when local inputs were available. NEPZA was not always proactive in creating ways to bridge these asymmetries. More so, the physical distance between foreign and local firms (none of which was present in the zone) undermined their ability to have repeated interactions, which are essential for tacit knowledge transfer.

6. The role of entrepreneurs and non-state actors in building entrepreneurship institutions in the Yaba cluster.

6.1 Introduction

This chapter introduces the Yaba cluster, an industrial hub that has created an entrepreneurship ecosystem (EE), making it one of Africa's most active tech clusters. Although this phenomenon exists globally, little is known about many African clusters in the academic literature, as most studies have focused on entrepreneurship clusters in advanced economies in Europe and North America (Bruton et al, 2008). The EE frameworks have been mainly based on research conducted in developed countries, which largely do not reflect how entrepreneurship is practised in emerging and developing economies.

The study of entrepreneurship in many developing countries has focused mainly on describing entrepreneurship attitudes rather than developing frameworks that allow one to understand the components of ecosystems. However, the need to study and understand the nature of the entrepreneurial ecosystem in developing regions cannot be overstated, especially as new venture creation has become an essential driver of economic growth and regional development in recent times (Stam and Van de Ven, 2018).

In Africa, there is limited scholarship on how entrepreneurs operate in these contexts, making it challenging to develop the targeted policy interventions required for them to grow. A cursory look at renowned ecosystems cited in the literature will reveal places like the US (Silicon Valley, Los Angeles Hub, New York Hub and Boston Hub), Canada (Toronto Hub, Vancouver Hub. And Waterloo Hub), UK (London Hub, Cambridge Research Triangle), France (Paris Hub) Germany (Berlin Hub) Isreal (Tel Aviv Hub), Australia (Sydney Hub, Melbourne Hub), Russia (Moscow Hub), Brazil (Sao Paulo Hub), India (Bangalore Hub) and Chile (Santiago Hub) (Startup Genome, 2012).

Africa is conspicuously missing from this list despite evidence of emerging ecosystems in places like Nigeria (Lagos hub), Kenya (Nairobi) and South Africa (Capetown) (Partech, 2022). There is, therefore, an urgent need to conduct more research to understand the entrepreneurship ecosystems in regions that scholars have overlooked. Such knowledge will assist policymakers in developing appropriate policies that may unleash productive entrepreneurship across the economy.

Therefore, this chapter analyses the Yaba cluster to understand how institutions and organisations supporting entrepreneurship have emerged. The chapter does so by identifying the critical domains of the current entrepreneurial ecosystem in the cluster and understanding the role of entrepreneurs and other non-state actors in developing these ecosystem domains. This analysis is essential because, like many EEs in developing countries, entrepreneurship is constrained by resource gaps and institutional voids due to weak market-supporting institutions such as capital markets, labour markets and legal systems (Bruton et al, 2008).

While these institutional voids pose severe constraints to growth, entrepreneurs and other non-state actors in this cluster have built institutions to address these constraints and support the emergence of a relatively vibrant EE. The main argument of this chapter is that entrepreneurs and other non-state actors in the cluster have built institutions to close the resource gaps. In the domains of human capital development, entrepreneurship support and finance, they have created organisations to upskill the workers in the cluster and provide entrepreneurs with access to finance, infrastructure, business acceleration and networks. The findings from this analysis hold valuable lessons from the Yaba experience that can be applied to other developing country contexts with similar characteristics. The chapter is organised as follows.

Section 6.2 introduces the theoretical framework for the chapter. It begins by discussing the entrepreneurial ecosystem framework concept, its components, and why it is better suited to study regional entrepreneurship clusters than traditional cluster theories. It then discusses entrepreneurship's challenges in developing countries, precisely the resource gap. It argues that the challenge for entrepreneurs in developing countries is building the institutions necessary to address these resource gaps.

Section 6.3 presents the main findings and empirical analysis. 6.3.1. discusses how institutions of human capital development emerged to address the lack of highly skilled technical and entrepreneurial talent in the cluster. It argues that three sets of actors have been responsible for building these institutions; they include (i) entrepreneurs who developed training institutes to meet the demand for software programmers by start-ups, (ii) large companies and mature start-ups that provide entrepreneurs and software programmers with on-the-job training to accumulate tacit knowledge and build the skills required by start-ups and (iii) communities of practice that provide support learning and knowledge exchange among software programmers.

Section 6.3.2 analyses the role of entrepreneurship support organisations in the cluster, precisely the role co-working spaces and incubation hubs have played in helping start-ups develop their capabilities. It argues that these co-working spaces have provided entrepreneurs with infrastructure, business acceleration services and access to critical networks. It also discusses other non-governmental organisations that have supported the entrepreneurs in the cluster. Section 6.3.3. addresses the increasing role played by entrepreneurs in unlocking additional sources of finances through their foreign networks and building local venture capital firms. Section 6.4 presents some discussions while 6.5 concludes.

6.2 Theoretical framework

6.2.1. The Entrepreneurial Ecosystem concept

The Entrepreneurial Ecosystem or EE concept has recently gained popularity in academic and policy circles. In the academic literature, the concept's popularity was ignited by Isenberg's (2010) article in the Harvard Business Review and Feld's book titled 'Start-up Communities' (Feld, 2012). Both books highlighted the idea of a community of actors that provide the support an entrepreneur needs and the role of education, policy, and economic environment in creating new ventures' resources. In practitioner and policy circles, organisations such as the World Bank, Kauffman Foundation, OECD and the World Economic Forum have been leading promoters of the EE concept (WEF, 2014; Mason and Brown, 2014); in the wake of the global financial crises and weakening of faith in markets, the EE was seen as a new form of market-oriented industrial policy and therefore adopted and deployed by many governments across the world (Brown and Mawson, 2019).

Despite the concept's popularity, there remains a lack of agreement amongst scholars on how best to define this term. However, we can examine what the words constituting the term mean. Entrepreneurial can be defined as processes in which opportunities for creating new goods and services are explored, evaluated, and exploited (Schumpeter, 1934). The entrepreneurship ecosystem approach often restricts this definition to 'high-growth start-ups' arguing that these are the forms of entrepreneurship that drive innovation and productivity. The literature consistently emphasises that the EE approach does not encompass traditional entrepreneurship measures such as self-employment or SMEs (Stam *et al.*, 2012; Mason and Brown, 2013; Stam and Spigel, 2016).

A widely accepted definition in policy and academic circles refers to EEs as 'a set of interconnected entrepreneurial actors, institutions, entrepreneurial organisations and

entrepreneurial processes which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment' (Mason and Brown, 2014, p. 5). Regardless of the definitional differences, most scholars agree on entrepreneurs' central roles within these ecosystems (Feldman, 2014). While the entrepreneurial ecosystem approach has conceptual similarities to the cluster and Regional Innovation System (RIS) approaches, as discussed in section 3.5.2, the critical difference is that the entrepreneur rather than the firm is the focus of analysis.

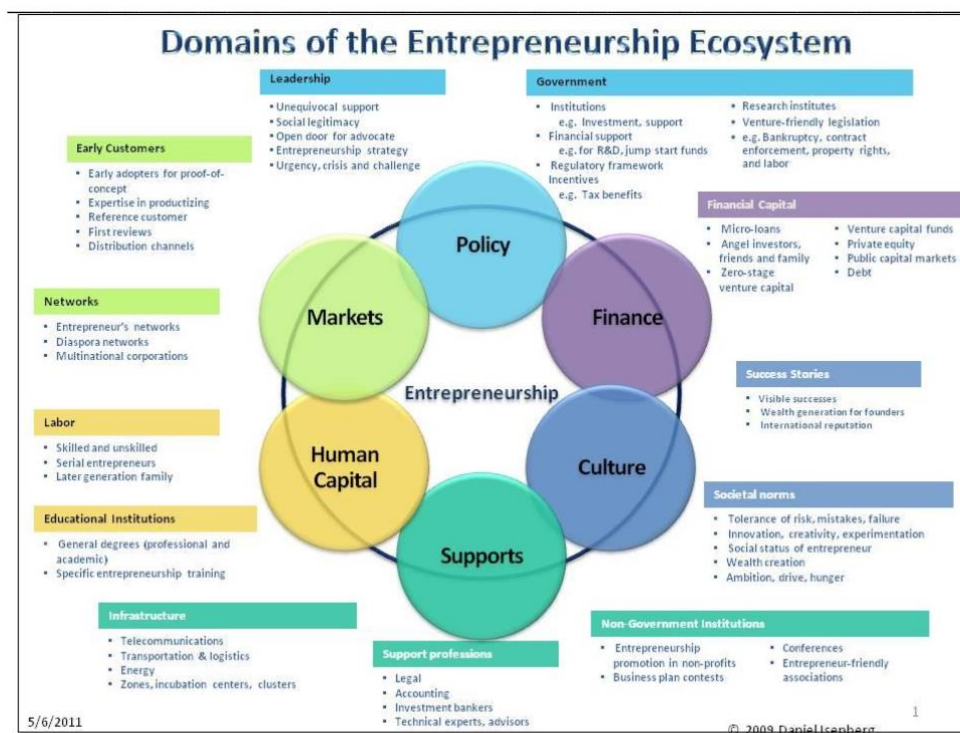
The cluster and RIS literature do include a role for entrepreneurs, (Henry and Pinch, 2000; Cooke, 2001); however the focus is not specifically on them but on their role in the broader value creation and innovation system. They, therefore, view these start-ups as smaller versions of more extensive, international firms instead of as unique organisational entities with different (and more constrained) capabilities and resources. Relatedly, there is also a problem with how knowledge is described in cluster studies. In cluster research, knowledge refers to the technical know-how needed to develop new products and technologies and the market knowledge necessary to know which products will succeed in the marketplace (Cooke, 2001).

While this knowledge is essential, the EE approach emphasises the importance of a third type of knowledge about the entrepreneurial process. This includes skills such as business planning, pitching ideas, etc. This knowledge is not always sourced from universities but from entrepreneurs' experiences, books and websites on entrepreneurship and interactions with more experienced entrepreneurs and mentors (Aldrich and Yang, 2014; Spigel and Harrison, 2018).

There are several entrepreneurial ecosystem models and a particularly influential approach is by Daniel Isenberg, who articulated 'an entrepreneurship ecosystem approach for economic development'. Isenberg argues that an entrepreneurship ecosystem approach is needed as a pre-

condition for successfully implementing cluster or innovation systems strategy (Isenberg, 2011). According to him, an EE comprises six domains – conducive culture, enabling policies, availability of finance, human capital, markets, and a range of institutional supports. These domains constantly interact in highly complex and dynamic ways thus, he argues that identifying a generic casual path may not be very useful as each ecosystem emerges under a unique set of circumstances.

Figure 23: Domains of the entrepreneurial ecosystem by Daniel Isenberg



Source: [Daniel Isenberg](#)

Entrepreneurial ecosystems tend to emerge in regions or places with certain place-specific assets, making them desirable places to live due to certain cultural attractions or physical attributes that make them appealing to entrepreneurs (Florida, 2003). In these locations, there is usually a large pool of skilled employees with expertise in critical areas such as technology and business. This is why EEs (Entrepreneurial Ecosystems) are often connected to universities, as they are a reliable source of talent. However, it is essential to note that not every

ecosystem has access to leading universities, which means their role is not always prominent (Ebdrup, 2013). More so, university spin-out companies are rare, and high-growth spinouts are even rarer (Harrison and Leitch, 2010).

Next to human capital, ecosystems require financial capital, including venture capital, business angels, seed investing and other forms of financing (Stam and Spigel, 2016). These institutions, mainly seed and start-up investors, are essential to providing funding and hands-on support to new and emerging start-ups. Even if local venture capital funds are unavailable, they can be imported; for example, the Israeli government 1992 established the Yozma Fund explicitly to bring mainly US investors and expertise into the country (Lerner, 2014). Large firms also play an essential role in the development of human capital. These companies train their employees, allowing them to rise to the hierarchy, and it is through these processes that they develop the management and technical skills required for start-up entrepreneurship. Some employees leave to start their businesses, and their work experience in these large firms becomes valuable. Besides, these large businesses can also be a source of new businesses for start-ups.

A thriving entrepreneurial ecosystem also benefits from leadership, which refers to a set of visible entrepreneurs who are committed to the development of the region. It also requires a strong network of mentors and advisors committed to giving back to the community. Related to this is the idea of ‘entrepreneurial recycling’ (Mason and Harrison, 2006) which refers to entrepreneurs that have built successful companies and leave them after it is sold. But they remain in the cluster, becoming serial entrepreneurs and giving back to the community as angel investors, mentors, board members, etc. They are also involved in lobbying the government for legislation that supports entrepreneurship.

Finally, EEs contain Entrepreneurship Support Organisations (ESO), which can be defined as ‘organisations whose primary purpose is to support individuals and collectives, through

(in)direct and (im) material assistance as they seek to initiate and progress through the stages of the entrepreneurial process' (Bergman and McMullen, 2022, p. 5). Although several organisations, such as governments, universities, and financial institutions, support entrepreneurship, this is usually not their sole focus and objective. On the other hand, ESOs are specifically designed to support entrepreneurial activities and are solely focused on this objective.

This means that while all ESOs support entrepreneurs, not all organisations that support entrepreneurs can be classified as ESOs. Important examples of ESOs are coworking spaces and incubators that provide entrepreneurs with (i) shared office spaces and facilities, (ii) business support services, including training, mentoring and coaching and (iii) the provision of internal and external networks (Colombo and Delmastro, 2002; Collinson and Gregson, 2003; Hackett and Dilts, 2004; Chan and Lau, 2005; Clarysse *et al.*, 2005).

6.2.2. The role of entrepreneurs in building the institutions to close the resource gaps in entrepreneurial ecosystems.

The different domains of the entrepreneurial ecosystem imply that the strength of EEs is dependent on the availability of resources required for each domain to function appropriately. However, extant literature reveals that these domains are poorly developed in many developing countries because of resource constraints. Critical ecosystem elements such as angel investors, venture capital (VC) and specialised human capital may be missing in these contexts as these elements tend to be location-specific.

Limited financing is one of the critical factors affecting the growth of entrepreneurship in developing countries, as there is often a lack of private investments in those countries. Concepts such as angel investing or venture capitalism remain new in those countries and are still at a

nascent stage of development (Guerrero and Urbano, 2017). Entrepreneurs also often lack the political relationships that may allow them to access institutional credit through banks or government funds (Adly and Khatib, 2014). This constraint is further exacerbated as foreign VCs are often unwilling to invest in developing countries, given the cultural, geographic, and institutional distance between them. Where they invest, it tends to be limited to later financing rounds and later-stage ventures (Dai and Nahata, 2016).

Human capital constraints are reflected in the lack of high-quality and innovative founders as well as the lack of employees with specialised skills. This explains why even though there are supposedly more entrepreneurs in developing countries, most of them are involved in necessity-driven entrepreneurship instead of being motivated by innovation. Relatedly, there is often a lack of entrepreneurship-related knowledge, such as business model experimentation and critical sources of entrepreneurship knowledge, such as mentors (Davidsson and Honig, 2003; Goswami, Mitchell and Bhagavatula, 2018). Physical infrastructure constraints include the poor quality of roads, bridges, telecommunication networks, power plants, water, and sanitation facilities (Manimala and Wasdani, 2015; Sheriff and Muffatto, 2015).

Institutions and organisations are required to address these resource constraints. Extant literature has long established the relationship between institutions and economic development; however, the role of institutions in determining the quantity and quality of entrepreneurship has received far less attention (Sobel, 2008; Dorado and Ventresca, 2013). Chowdhury et al's (2019) conceptual framework on the relationship between institutions and entrepreneurship provides a good starting point for this analysis. Their framework is based on North (1990, 1994, 1997), Baumol (1996), Williamson (2000) and Whitley (1999) and argues that the institutional environment creates the conditions for individual decision-making, influencing entrepreneurship quality (Sobel, 2008).

Institutional theory thus reveals how institutions that are external to the firm enforce standards of desirable, proper, appropriate behaviour within certain socially constructed norms, values, and beliefs (Scott and Meyer, 1984). This explains why the quality of entrepreneurship varies across countries as the;

‘Institutional framework within which an activity is performed often determines whether the activity is productive, unproductive, or destructive’. (Douhan and Henrekson, 2010, p. 630).

Some scholars argue that entrepreneurs can change the institutional environment by generating ‘new organisational models and policies that change the direction and flow of organisational activity’ Hwang and Powell (2005, p. 179). Thus, the challenge for entrepreneurs in developing countries is building the institutions and organisations required to close the resource gap. Chowdhury et al (2019) suggests that given the influence of institutions on human behaviour, entrepreneurs take the initiative to change the institutions that are beneficial to them over time.

Maguire et al (2004, p. 657) refer to these individuals as “‘institutional entrepreneurs’ ‘actors who have an interest in particular institutional arrangements and who leverage resources to create new institutions or to transform existing ones’”. These actors ‘create a whole new system of meaning that ties the functioning of disparate institutions together’.(Garud et al, 2002). DiMaggio (1988) argued that ‘new institutions arise when organised actors with sufficient resources see in them an opportunity to realise interests they value highly’ (p.14). Since entrepreneurial decision-making is determined by the quality of institutions (Sobel, 2008) productive entrepreneurship will generate more rewarding experiences for the entrepreneurs as the quality of the institution changes (Baumol, 1990).

North (1990); Whitley (1999) and Williamson (2000) propose four institutional factors that influence a country's entrepreneurial activity quality. They describe informal institutions as the highest layer as they are embedded in society and can become habitual. The second is formal

regulatory institutions that can reduce the risk and uncertainty associated with entrepreneurial activity even though they can be burdensome and undermine entrepreneurship. The third is the governance layer, which drives resource allocation, and all these layers influence the fourth and last layer- resource allocation. These critical resources include conducive culture, enabling policies, availability of finance, human capital, markets, and a range of institutional supports. The quality of the institutional environment influences the attitude of entrepreneurs and the ability to mobilise resources.

Based on the foregoing discussion, this chapter analyses the role of entrepreneurs and other non-state actors in building the institutions and organisations required to overcome the resource constraints in the cluster.

6.3 Findings and empirical analysis

While the list of entrepreneurial ecosystem components as proposed by Isenberg (2010) and other scholars are present in this cluster, this analysis focuses on the role of key actors in the emergence of three critical institutions in the cluster; (i) human capital (ii) entrepreneurship support and (iii) finance.

6.3.1. The role of non-state actors in building institutions of human capital development

As is widely acknowledged, an essential input to a vibrant entrepreneurial ecosystem is a broad, deep talent pool of employees in all sectors and areas of expertise. This includes technical workers and more business-oriented workers such as salespeople, marketers, and business development professionals (Stam and Spigel, 2016). Universities are generally considered an ideal resource for start-up talent and should be well-connected to the community. In more advanced ecosystems, universities are essential platforms for research and development and produce many spin-out companies.

Yaba is one of the oldest neighbourhoods in Lagos, home to two government-owned tertiary institutions - the Yaba College of Technology (Yabatech) and the University of Lagos (Unilag). It also hosts the Nigeria Medical Research Institute, a vocational training school and tens of secondary schools. However, these institutions have struggled to equip students with the skills required by companies in the ecosystem. This is especially evident in the field of Software Programming, which is a significant technical skill required by almost all the firms in the cluster. Most of the Software programmers interviewed for this study said their universities did not sufficiently equip them with the skills they use for software development.

Many interviewed had degrees in Computer Science, Computer Engineering, Cybersecurity, and related fields and expressed dissatisfaction with the curriculum used in universities. They stated that the curriculum was outdated, with little practical application of what was learned, and irrelevant to the needs of the labour market. For instance, students were taught coding languages like Fortran, while most companies required programmers to understand Java. The curriculum not only failed to equip students with the required technical skills but also lacked emphasis on soft and commercial skills such as communication skills, teamwork skills, project management skills, and more.

The Nigerian government has directed universities to establish technological entrepreneurship centres to address some of the country's pressing problems. However, the centres have not materialised much due to insufficient funding, and private-sector support has also been challenging. Moreover, the Computer Science Programme in most Nigerian universities does not align with the demands of local and international labour markets. Some scholars argue that universities' institutional resistance to change is why the curriculum has not changed to meet the needs of the labour market.

It has been observed that there is limited evidence of intentional efforts to create collaborations between universities and professional associations such as the Nigerian Society of Engineers, Computer Professionals of Nigeria, and the Nigerian Computer Society. This lack of cooperation between academia and industry is evident in the curriculum content, which remains irrelevant to the demands of most employers. As a result, many graduates, despite completing a Computer Science degree, do not feel adequately qualified to take on programming projects.

A key player in the ecosystem said that;

‘To put it bluntly, when it comes to computer science (and related fields) education, graduates of most universities in the region who rely solely on what they are taught in school are not equipped with the basics that will enable them to kickstart a career in tech. By “kickstart a career”, I mean get hired into an entry-level role that enables you to learn on the job’ (Afigbo, 2022, p. 1).

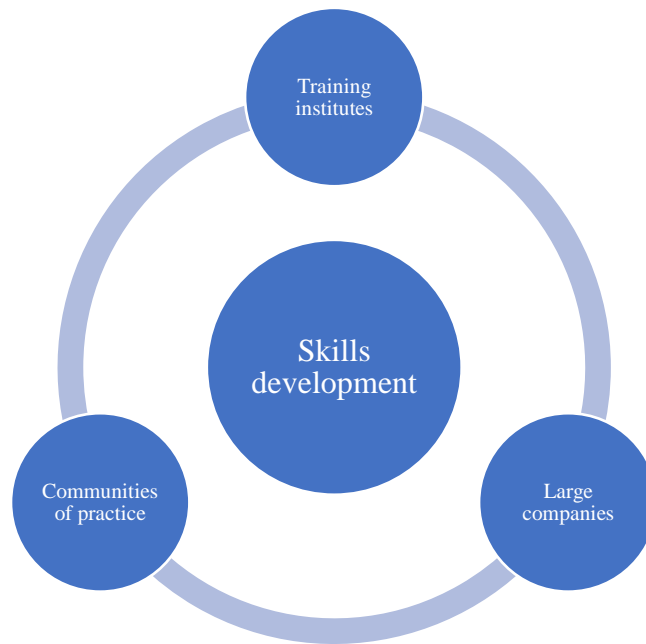
Many of the programmers interviewed for this study needed to enrol in boot camps or take short courses to compensate for their skills gap. For instance, a Software Engineer shared that despite earning a Computer Science degree from a Nigerian university, he was not proficient in programming. This led him to enrol in Andela (a training institute that will be discussed in this chapter) to improve his skills. According to him;

‘Even though I had a background in Computer science, my journey in Andela at that point was almost as if I was a novice in software development because it was a different ballgame. Therefore, joining Andela was the real starting point in my programming journey’⁵⁸.

The implication of this is that, unlike places such as California, where Stanford played a leading role in providing a skilled workforce or Bangalore, Hyderabad, and Pune, which have benefitted from skilled workforces from the Indian Institutes of Technology, this has not necessarily been the case in Yaba. Instead, skilling supposed graduates has become a collective responsibility of training institutes established by entrepreneurs in the cluster, communities of practice and experience derived from large companies.

⁵⁸ Programmer 1.

Figure 24: Institutions of skills development



- **Training institutes**

The emergence of an entrepreneurial ecosystem in Yaba led to upgrading the cluster's skills base to meet the start-ups' needs. To cater to this demand for software programming skills, Andela, a global talent marketplace that connects software programmers with remote software engineering jobs, was established in 2014 in Yaba by a Nigerian entrepreneur, Iyinoluwa Aboyeji, who had returned from Canada. Having schooled and worked in Canada, he recognised the potential to equip young Nigerians with software programming skills to meet the increasing demand for software programmers. He convinced an American entrepreneur, Jeremy Johnson, to partner with him to develop the business model and provide funding. Together with other co-founders, they made Andela a reality.

Andela eventually established a campus in Yaba; at the Andela campus, fellows (as the students were called) were provided access to workspaces, equipment, training, and mentorship. For people who lived far away, they were provided with transportation and food. These fellows

had to undertake 6-months of intensive advanced training in software programming, after which they had a paid four-year apprenticeship period where they worked for an Andela client company, mostly abroad or large domestic companies. After this, they could continue working for Andela full-time or other companies.

Although institutions like Andela were initially created to attract individuals who had little or no experience or education in software, data from Andela reveals that roughly 80 per cent of their participants had previously completed a 4-year degree in Computer Science or Engineering. For instance, a Senior Software Engineer with a degree in Computer Science stated that after completing his degree, he began taking programming courses on his own using online resources; when he reached a certain level of proficiency, he applied to Andela's boot camp program. However, he failed the test to enter the program three times before being accepted on his fourth attempt. According to him, at Andela;

'They introduce you to technology and what the technology does, and they give you a task and ask you to use the technology to accomplish the task within a short period; what they are testing for is not who has the best technique but those who are teachable and have a growth mindset. Anybody can learn how to code, but not everyone knows how to receive or give feedback. The boot camp is designed to separate those who demonstrate this from those who don't'⁵⁹.

Andela's impact was not limited to the direct outcomes, i.e., the number of software programmers trained, but included these alumni's impact in the ecosystem. Andela alumni, including fellows, staff, and founders, have shared their knowledge within the cluster and beyond through labour mobility as they have established their start-ups. Others have occupied leadership roles in some of the most promising local start-ups or become investors in start-ups. Many have organised programmes to mentor young women and teenagers in coding or have become active participants in Facebook and Google developer communities to share knowledge and collaborate with other members of the tech ecosystem. However, since 2019, Andela changed its business model as the market for junior programmers in recruiter countries

⁵⁹ Programmer 1.

like the US became saturated. It closed its campus as its operations became fully remote and focused on providing opportunities for more experienced software programmers.

Andela's success had a demonstration and replication effect on the market as other entrepreneurs realised there was an opportunity to create businesses out of training the talent required by the growing start-ups. An example of such an institution is Utiva, which describes itself as a;

'Technology Workforce Development company that helps people learn premium technology skills virtually and partners with companies to hire the best talents and invest in workforce development'⁶⁰.

Utiva offers virtual courses in Data Science, Data Analysis, Product Management, UX/UI Design, Cloud Development, Front-end/Backend Development, and Full-Stack Development. Employers also acknowledge paying for their staff to enrol in programs offered by the platform as part of their investments in their technical development. Utiva's virtual model appeals to many aspiring programmers as they only require a laptop and internet connection to participate. The classes are conducted in real-time, which allows them to ask questions and receive feedback immediately. They also can collaborate with colleagues to work on class projects.

Unlike University degrees, these courses are typically short-term, lasting for a few weeks or months, and they equip students with skills demanded by the growing number of start-ups. Some of these institutes are beneficial as they serve as talent pipelines for companies. This is due to the high demand for tech talent, which leads some companies to partner with these schools and hire their students. Additionally, some start-ups or companies within the tech cluster enrol their employees in these schools as part of their efforts to invest in skills. The table below presents an overview of some of the training institutes in the Nigerian tech ecosystem that have benefitted the Startups in Yaba. The number of these institutes has also

⁶⁰ Founder 8.

grown as the EE continues to grow. A table of some of the most prominent ones and their business models is presented in the table 5 below.

Figure 25 : Training institutes

Training Institutes	Year of establishment	Model
Andela	2014	<ul style="list-style-type: none"> • 6-month bootcamp undertaking training in Software Programming. Students must have some familiarity with coding. • The 3.5-year period after bootcamp where programmers are outsourced to local or international Andela partners. • Income-sharing agreement to facilitate payment of course fee
Slatecube	2014	<ul style="list-style-type: none"> • Slatecube is a technology company that develops AI-powered SaaS (Software-as-a-service) platforms for learning and workforce development. Their online platform Accelerate allows students and graduates to take courses in Software Programming, Design, Data Science, Artificial Intelligence and Digital Skills.
Utiva	2015	<ul style="list-style-type: none"> • Utiva is a 100% online learning platform which offers a variety of tech courses including Software Programming, Cloud Computing, Data Science, Product Management and Design. Training are offered either as courses, incubators or accelerator programmes.
Stutern	2015	<ul style="list-style-type: none"> • Stutern is a skills development and job placement platform that trains and connects students with long-term employment. Courses offered include Data Science, Software Programming and design. To make the programme more accessible, students can make payments in instalments; pay through an income-sharing agreement or apply for a scholarship.
NESA by MAKERS	2017	<ul style="list-style-type: none"> • 3-month Software development training programme designed for people with no prior experience in coding. • Face-to-face teaching of relevant computer programming and product development concepts with the opportunity to build personal projects throughout the course of the programme
Coven Labs	2017	<ul style="list-style-type: none"> • Coven labs offer courses in Artificial Intelligence, Software Programming and other relevant areas. They also have a 6-week Data Science Bootcamp
University	2017	<ul style="list-style-type: none"> • University is a tech school which offers courses in Software Programming, Data Science, Design, Programme Management etc. Learning is done using a project-based approach. • Upon the completion of the training, graduates are connected to jobs in local and international companies.
Semicolon	2018	<ul style="list-style-type: none"> • Semicolon offers training to aspiring Software Engineers without any prior knowledge in the field. Courses offered include Software Engineering, Software Programming, Data Analysis, Database Management, Design Thinking amongst others. • The programme provides a flexible tuition payment option and the tuition covers meals, health insurance, learning materials and a laptop.

		<ul style="list-style-type: none"> • Students work on real projects and can get hired by Semicolon partner companies at the end of the programme.
Decagon	2018	<ul style="list-style-type: none"> • Bootcamp. 6-month training programme with no upfront payment, payment made upon completion of training Accommodation, feeding, laptop, electricity, internet, and monthly stipends are provided to students for a 6-months training period.
Data Leum	2019	<ul style="list-style-type: none"> • Data Leum provides training in different areas of Data Science targeted towards people with little or no experience in the field. • Courses are delivered both online and offline and students are connected to mentors to accelerate their learning.

The Lagos State government has supported residents interested in acquiring software programming skills by patronising local training institutes. The effectiveness of these institutes has led to the establishment of the ‘Lagos Innovates Talent Development Programme’ by the Lagos State Employment Trust Fund (LSETF). This program is intended to help Software Programmers and startup Founders access high-quality skills and learning. Three local training Institutes - Slatecube, NESA by Makers Academy and Univelcity - deliver the training courses. These courses include Full stack development with Javascript, Python Programming for Web and Data Science, Frontend Design and Engineering, and more. The state facilitates the learning program by providing loans of over 80 per cent of the program attendance costs to students at any of these institutes. The loans are available for up to 15 months and attract an interest rate of 5 per cent. According to the Programme’s Director, the state introduced the programme to support residents interested in Software Programming but could not pursue such ambitions due to funding constraints. She said;

‘We have training partners, so we pay the schools to avoid diversion of funds. Because obviously, we know that Lagos's unemployment rates are very high. And you might apply for, and then in between, you know, application or receiving the money, you might have some needs you want to meet. And then, to avoid diversion, the loan is paid directly to the school. And there's equity as the beneficiary pays equity, a percentage equity so that we know that you're also invested in what you're doing. Because, you know, research shows that when you give people things for free, they don't necessarily take them up as when they pay for them. And we know that you might not be able to afford this, and you need some sort of intervention or assistance, so we give you access to this finance, but you must pay a percentage of the fees to the school as well⁶¹’.

⁶¹ LASG 1.

- **The role of large companies in human capital development**

Large companies and mature start-ups also play an essential role in training future entrepreneurs and their workforce. Indeed, this role of firms in the development of human capital is highlighted by (Bell and Pavitt, 1993), who argued that while certain studies tend to give primary emphasis to formal education and institutions operating outside the firm as critical to the development of human capital, little acknowledgement is given to firms which are primarily seen as users and not creators of the human capital which they require. However, experience obtained through on-the-job training is often relevant to developing tacit knowledge.

The interviews showed that mature start-ups and large firms significantly trained entrepreneurs and software programmers in the cluster. The previous experience with larger companies helped entrepreneurs develop business management skills and expand their networks. Many interviewees claimed that this experience helped them understand the significance of management practices and corporate structures such as legal, finance, and human resources for the operation of modern software companies. Entrepreneurs believed that years of corporate experience gave them the necessary managerial skills to succeed without a university degree.

Many of the CEOs of start-ups in the cluster had prior experience and were able to anticipate potential problems in their businesses. They could develop appropriate mechanisms and structures to address these issues. However, there were a few instances where CEOs did not have significant prior experience and built their businesses immediately after completing their degree. Even in these cases, the CEOs acknowledged the value of experience. They tried to hire individuals who could compensate for their potential areas of weakness resulting from a lack of experience. According to an entrepreneur;

'I'm not saying it's impossible to succeed without experience, but it's harder if you have a very small network... So, there are just a lot of things you will not have without already having built

*out some type of business or working experience. So, I think that my working experience gave me a lot of real-world connections and a bigger network to tap into, which I didn't have before all these experiences. But I think those experiences were more valuable in terms of, you know, my, my ability to, for example, price products*⁶².

This experience is also essential in gaining investor confidence. Some investors contacted for this study said that while the product or service an entrepreneur wants to deliver is very important, their experience in managing or working in a mature start-up or large firm makes them more confident in entrusting their funds. According to an Investor;

*'As an investor, experience is one of the things we look at, we ask.... have they led organisations? If they worked in corporate, were they in any leadership role? How much responsibility did they take? What are their co-workers saying about them? What did their boss say about them? Have they started a business before? Did he fail? Did he succeed? All those help us determine if this founder is fit enough to lead a successful company. This is not to say that we cancel out first-time founders without experience, but this helps because there is a track record to base your due diligence*⁶³

This experience also benefits software programmers by providing them with exposure to complex projects and different programming languages. As these software programmers get exposed to new projects, they could contribute to product development and fix problems that occur along the way. As codes need to be changed or updated based on the requests or feedback made by customers or clients, many say that they have learnt how to transform this feedback into a product feature.

Mature start-ups and large firms provide junior programmers with more complex engineering projects, which allows them to develop more sophisticated skills. Working on complex projects exposes programmers to various tasks and problems for which they must find solutions. They must also devote time to learning new things or consulting with their colleagues to develop solutions as they work to provide solutions. For instance, while a programmer may be able to write the code for a project that scales to 10,000 users, the requirements for a product that scales to 100,000 people may be different, and as such, significant learning is required to achieve that.

⁶² Founder, 6.

⁶³ Investor 1.

Additionally, working on diverse projects in a firm can make them more versatile. According to a programmer;

*'If your first task was to build an e-commerce website and the second and third tasks were also to do the same thing, you will not grow like that because the only thing you will be doing is copying and pasting with a few adjustments. So, the good thing that happened to me in my career is that each client came with a different idea entirely different from the last one. This exposed me to more tools I can use as a software developer and improved my efficiency'*⁶⁴.

One of the main differences between junior or intermediate programmers and senior ones is their experience in handling complex projects and proficiency in various programming languages. Typically, after at least 5 years of professional experience, junior programmers can advance to intermediate or senior-level programmers and acquire more advanced skills to lead software engineering projects. While junior programmers are often given specific instructions on what to do, senior programmers can develop conceptual and technical skills over time to think of more innovative projects and possess the necessary resources and skills to accomplish them. With this knowledge, they collaborate with project managers responsible for assigning coding tasks to junior programmers.

Relevant experience is crucial for programmers who want to progress in their careers, whether looking for new job opportunities, taking on managerial positions or starting their own companies. Many employers prioritise experience over formal degrees or certificates during the hiring process, as they value practical skills such as coding ability and problem-solving with minimal supervision. As a result, employers often request that programmers provide proof of their technical capabilities by demonstrating past projects they have worked on. Additionally, it's common for employers to assign projects to applicants during the hiring process to assess their experience. According to an employer;

'We don't care about the education so much; we care about the experience or put differently the skills. What can you do? Demonstrate what you can do. I think 70 per cent of the people you know who come through our pipeline fail our test for our engineering team, for example.

⁶⁴ Programmer 3.

You know, we started considering, “Okay, you know what? Even if you fail the test, come, and work and do a one-month trial, you know. Do a one-month remote trial. Work remotely or whatever. You know, in your spare time do the following things, and then how you perform determines how we’ll engage you”. One of our best programmers doesn’t even have a university degree. We hired her when she was 19, but she was already performing like an Engineer with 4 years’ experience at 19’. Given that most of the firms interviewed were SMEs with limited budgets for training, it is easy to see why they preferred to hire programmers who already possessed the requisite skills⁶⁵’.

This experience also provided many start-up programmers with critical soft skills. Many interviewees have stated that their experience in such firms allowed them to develop communication and teamwork skills. They learned how to interact with clients, understand their requests, communicate them with their team members, and work with their teammates to transform client requests into products or features. One interviewee even mentioned that working in a firm helped him develop better teamwork skills, which he did not possess when he worked as a freelancer. According to him;

‘Before I got this job, I used to work on personal projects. Once I had an idea, I would work on it as fast as possible and complete it. However, once I started working in this company, I noticed a big change in my behaviour. I started learning to embrace other people’s ideas and work on a project with the mentality that ‘we are in this together’. I stopped referring to projects as ‘my project’ instead of ‘our project’⁶⁶’.

Finally, these mature start-ups and large firms invest significantly in skills upgrading. The training opportunities include payment for short courses, conference sponsorship, and mentorship opportunities. According to one of the software programmers who worked with a more established start-up;

‘At the beginning of 2021, my company paid for training with AWS (Amazon Web Services); it was fully funded, and the skills I got from the experience can be transferred to other jobs I can take on in my career’⁶⁷’.

He also said that one of the benefits of working with larger companies was the opportunity to be mentored by senior colleagues. The experience allowed him to work with senior engineers with significantly more experience, working on exciting, innovative, and complex projects that

⁶⁵ Founder 6.

⁶⁶ Programmer 3.

⁶⁷ Programmer 5.

fast-tracked his learning curve relative to his peers without a similar opportunity. By contrast, start-ups have limited resources for training or mentorship opportunities because of a leaner budget. As many start-ups cannot hire senior programmers full-time due to cost considerations, most senior programmers who would otherwise have served as mentors to the junior ones are only engaged on a part-time or a contractual basis. As a result of the nature of these engagements, senior programmers are almost always exclusively focused on executing technical tasks and have little or no obligations towards mentoring the younger workers.

- **Communities of Practice**

Big tech companies like Google and Facebook have played a critical role in developing the technical skills of software programmers in the Yaba EE through their facilitated software developer communities. These communities provide a space for software engineers and technologists to connect, share knowledge, and collaborate online and offline. Google has created communities of practice such as the Google Developer Groups (GDGs) and Developer Student Communities (DSC), which are local groups for programmers interested in Google Products. While Google does not own or manage these groups, it supports them in using Google products. Members of these groups organise physical and virtual workshops, training, events, talks, and meet-ups to discuss various technical topics. Additionally, these communities offer opportunities for programmers to network, share ideas, and build their careers.

The DSCs, conversely, are targeted towards student programmers on university campuses nationwide. Like the GDGs, DSCs are independent organisations with no affiliation to Google, even though they receive support from the tech giant. These communities of practice have gone a long way in training an entire generation of Software programmers with competencies

required for programming that is required by many of the start-ups in the cluster. A member of a DSC in Yaba said;

'I like the DSC in my university because I see my peers doing amazing and challenging things. They share their projects and ask questions requiring solutions, which requires people to brainstorm so I get challenged. The fact that my peers are doing great things pushes me to do more'⁶⁸.

Facebook also has a community for programmers known as Facebook Developer Circle, of which many programmers interviewed for this study admitted to being members. There are at least 14 Facebook Developer circles in Nigeria, the Lagos chapter to which most of the Yaba programmers belong has at least 57,000 members. The community is hosted as a Forum on a Facebook page. It describes its mission as 'a forum for programmers in Lagos and its surroundings interested in building on the Meta platform to interact and collaborate with other programmers with similar interests.

Discussions often revolve around how programmers building Facebook products can make the most of the company's technologies, including artificial intelligence, virtual reality, gaming, open-source technologies, social integration tools, and business technologies. The communities of practice within this cluster are not only limited to those started by big tech companies but also include locally founded ones. For example, Forloop Africa is one of the largest communities of software programmers on the African continent, with over 2500 members in their Slack community (Okunola, 2019). Since its establishment in 2016, the community has hosted hundreds of meetups, training sessions, and hackathons to support the professional development of software programmers.

According to Okunola (2019), the community's founder, Ridwan Olalere, was motivated to establish it in 2015 while working as the Engineering Manager at Hotels.ng, a company located in the Yaba Cluster. He faced difficulties finding local programmers to fill positions as few

⁶⁸ Programmer 10.

local developer communities at that time. As interest in the community grew in Yaba and Lagos states, it expanded its presence to university campuses to support student programmers' development. These university groups eventually became the foundation for various state based Forloop communities across Nigeria.

For many software programmers, being self-taught is common. That's why communities like Forloop are essential in helping them establish connections and relationships with mentors and senior programmers. Unlike communities established by tech companies, Forloop supports its members regardless of their software or programming language preferences. Initially, Forloop was a community for software programmers in Nigeria, but its success has seen it expand to seven other African countries. They recently launched a newsletter with over 4000 subscribers and a podcast with over 3000 downloads. These digital platforms have accelerated community development by providing software programmers with global updates on the latest news, technologies, and events.

6.3.2. Co-working spaces as providers of entrepreneurship support

Entrepreneurship Support Organisations such as co-working spaces have played an essential role in unlocking resources such as financing, mentorship, infrastructure, and networking opportunities for entrepreneurs. One of the key events that marked the evolution of Yaba from a mere tech cluster to the foundation of the tech ecosystem in Lagos state was the establishment of the Co-creation Hub, or CC Hub as it is popularly called, in 2010. CC Hub is Nigeria's first start-up incubation hub, which has thus far incubated at least 120 hubs (Adeoye, 2021).

Femi Longe and Bosun Tijani (Nigeria's current Minister of Communications, Innovation and Digital Economy Minister) founded Cchub with sponsorship from MTN, Google, Nokia and Mainone. It provided workspaces for entrepreneurs and incubator support, including training, mentoring and connections to potential investors. Its progress also encouraged the

who realised the need for such facilities in the ecosystem. For instance, the NEST Incubation Hub was established after a realisation that there were few decent spaces for people to work, meet and collaborate. According to one of the co-Founders,

*'Before now, if you want to meet, you go to a restaurant or cinema or find somewhere to eat, where you're meeting, and stuff like that. So, we took all of that and went into a process of building a one-stop-shop or a one-stop facility that allows us to do many things that we couldn't do before'*⁷⁰.

They run a hybrid model to achieve these objectives, combining a co-working space and an incubator programme. They have shared office spaces, meeting rooms and private offices that start-ups can rent. Its incubator programme is driven by the founders' commitment to entrepreneurship as they are entrepreneurs themselves who have had experience running multiple businesses and still consult for businesses within the cluster. A Co-founder said;

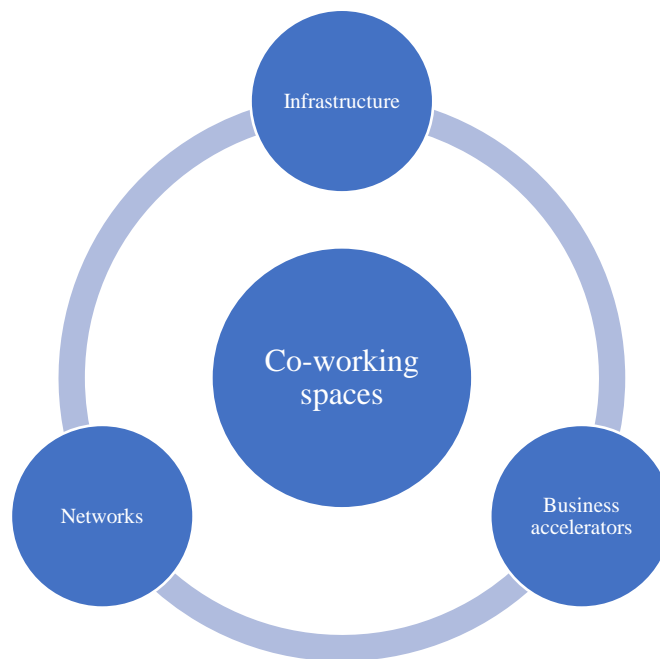
*'We asked ourselves how people within the co-working space gain access to our digital assets to leverage the fact that they are within our ecosystem. So, we started something called the foundry. The Foundry is our start-up incubation acceleration programme that we designed to walk them through several things you need to do- setting up your organisation, legal structure, registration, and marketing sales, so we do a clinic with them regularly. We do a mentor's programme, where some mentors converse with members'*⁷¹.

My discussions with co-working space founders, managers and members revealed that they provide entrepreneurs with three main things: (i) Infrastructure, (ii) Business accelerator programmes and (iii) Networks. We examine each of these.

⁷⁰ Hub 1.

⁷¹ Hub 1.

Figure 27: Functions of co-working spaces



- **Infrastructure provision**

Due to the rapid growth of the ecosystem, the demand for office spaces has increased significantly, leading to a shortage of available office real estate in Yaba. This has made it difficult for entrepreneurs to rent suitable business spaces. The Yaba area, one of the oldest neighbourhoods in the state, is characterised by small one-story buildings and narrow roads that can barely accommodate the traffic in the city. Until recently, real estate developers had not shown much interest in the area, exacerbating the shortfall in commercial real estate supply. Another challenge is that landlords and rental agencies in Lagos and most of Nigeria usually require tenants to pay 1-2 years rent in advance, which poses a significant obstacle for many businesses.

According to an entrepreneur;

'In the beginning, when co-working spaces like CCHub started popping up all over the city, it presented a lucrative opportunity for real estate programmers. Many of the buildings in Yaba were old, dating back to prehistoric and colonial eras, so these programmers began converting them into offices. As the popularity of start-ups increased, so did the demand for real estate, causing prices to rise. However, co-working spaces have helped reduce this demand and provide affordable spaces for entrepreneurs. Nevertheless, the costs of using co-working spaces have also increased. In the past, with either N500 or N900, entrepreneurs could get a virtual address to use as their company's office address and access internet and printing services. This made operations very convenient and affordable'⁷².

When it comes to providing office space, co-working spaces usually offer a 'hot desk' or shared worktables used by multiple members. Some also have private offices, meeting rooms, and board rooms for a more private experience. Additionally, co-working spaces have kitchens, receptions, printing rooms, and coffee stations. They also provide business support services, including accounting, human resources, legal advice, and business addresses for their tenants. The subscription packages are often flexible and typically include hourly, daily, weekly, monthly, quarterly, and annual subscription plans. This prevents entrepreneurs from locking in much-needed capital into long-term rental fees, as they can choose the best arrangements.

According to a co-working space founder:

'If a team of two or three people only need a desk to work, there is no need to rent a two-bedroom flat when they can use a shared space. They have everything they need with access to light, internet, and shared reception, including a boardroom and training room. That's why we created private offices, workstations, tables, and desks for different teams and individuals who want to work. We have start-ups and small businesses with teams of three or four who are just starting. They do not need a fancy space yet; they just want to use a private office. For example, we have a drug company with 4-6 team members who supply drugs to pharmacists. We also have an architect's company that designs very, very good structures. They use our space, and when their team grows to 12 or 15 people, they may need a bigger space, so they move out'⁷³.

Electricity cost savings is also one of the benefits that accrue to businesses in co-working spaces. Electricity access is one of the significant constraints to the private sector in the country; the 2020 World Bank Ease of Doing Business report ranks Nigeria 171 out of 190 countries in getting electricity and electricity access (World Bank, 2020). Electricity provision in the country is often characterised by poor quality, voltage fluctuation and consistent power

⁷² Investor 1.

⁷³ Hub 3.

outages, which disrupts the provision of services by small businesses; this has been extensively documented in the literature (Omokanmi et al, 2020; Bassey and Imoh, 2021). Therefore, the ability of these co-working spaces to provide an uninterrupted power supply cannot be considered a trivial benefit. Co-working spaces have helped entrepreneurs reduce costs by eliminating the need to purchase generators, inverters, and fuel.

Providing affordable spaces, facilities, and electricity can significantly reduce the overhead costs incurred by start-ups and save them time that would have been spent liaising with individual service providers. Co-working spaces offer entrepreneurs amenities such as meeting rooms and reception services they may not prioritise in the early stages of building their business. The Lagos State Government acknowledges these co-working spaces' significant role in closing the office real estate infrastructure deficit. In support of this, the Lagos State Employment Trust Fund (LSETF) has established a program for co-working space owners and users. The LSETF offers a hub loan program that funds co-working space owners to upgrade their facilities and scale their operations. The interest rates are favourable relative to market rates, encouraging co-working space owners to take advantage of this facility.

The state government has taken steps to support entrepreneurs, freelancers, and other knowledge professionals who work in co-working spaces. As the number of start-ups has increased in the state, the demand for co-working spaces has also grown. Many small businesses cannot afford to rent office spaces, so co-working spaces have become a practical option. To help entrepreneurs access co-working spaces, the Lagos State Employment Trust Fund (LSETF) has launched the Workspace Voucher program. The LSETF provides entrepreneurs vouchers they can use at any of the 37 co-working spaces they have partnered with, ten of which are in Yaba. An officer with the LSETF said that:

'The program benefits these start-ups because they don't have to pay for space. They have internet where they're working from, and they also have support. Another thing we always

underestimate is that they have networks. Because as they're working from these workspaces, there are other businesses in those workspaces, too. I know many people who have told me the immeasurable values of working from a workspace because you have that peer support. A lot of people are doing the same thing as you're doing, and you can also get to meet people through those networks. So yeah, networking in the workspaces is one of the greatest benefits to the startups⁷⁴.

- **Business accelerator programmes**

In addition to providing infrastructure, some co-working spaces in the cluster serve as incubation hubs, offering entrepreneurs critical entrepreneurship knowledge and skills often not taught in Nigerian universities. Many start-ups that use these spaces lack essential business knowledge, such as business development, product development, finance, marketing, sales, and human resources management. This lack of capabilities can limit the growth of these businesses, making it harder for them to scale and become larger enterprises. Unfortunately, most start-ups have limited resources and funding, so they cannot invest in developing these skills. To address this challenge, many co-working spaces now offer business incubation and acceleration programs, going beyond just providing infrastructure. According to one of the co-Founders of the NEST;

'For our SME Bootcamp, we selected about 60 people out of 200 that applied, and basically what we do with them is take them to a short Bootcamp on basically about their businesses – access to funds, how to raise funds, how to be accountable, accounting, bookkeeping, setting up properly, how to use these digital services to pursue their businesses, how to properly structure their businesses and most importantly, access to funds, some of them may not be a 50,000 or \$100000 investment body. But what they need a lot of time is access to very low-interest rates on loans that they can use to buy an extra machine or raw materials. And so play within that space as well'⁷⁵.

The co-working space offers a start-up incubation acceleration program providing entrepreneurs with critical information for establishing their businesses. These programs are called 'clinics', and they guide users through the steps required to establish elements of a modern technology business, such as legal structuring, registration, marketing, sales, etc. They also have a mentorship program inviting mentors to share their knowledge with co-working

⁷⁴ LASG 1.

⁷⁵ Hub 1.

space members. These events are usually held in a town-hall style where a host allows the mentor to share some of the experiences and challenges faced when trying to build their business.

After the mentor finishes speaking, members of the co-working space can ask questions during an interactive session. As these interactions are face-to-face, they allow for instantaneous feedback and multidimensional communication. Sometimes, users may meet with these mentors after these discussions to ask additional questions and request follow-up meetings. The request may not be granted; however, it is possible for the mentor to be interested in someone's idea or business, and this may evolve into a mentorship relationship in the long term.

For example, a Software developer and space A member said;

'The events at the NEST enable you to connect with new people. At one of such events, I could connect with someone who had a company but had also become a leader of Python Nigeria in an offline community, and that is a connection that I can use to do other things, for example, get a job offer'⁷⁶.

Many start-ups in the cluster face the challenge of funding. Co-working spaces organise events to make it easier for entrepreneurs in their space to find funding opportunities. For instance, the NEST holds a 'Pitch Night' event every quarter, where start-ups can meet select investors. During these events, entrepreneurs can present their business ideas, and experienced entrepreneurs ask critical questions about their business models, target markets, revenue projections, etc. Sometimes, investors provide feedback on how presentations can be more sophisticated and how entrepreneurs can become better communicators. These pitch events are precious to entrepreneurs, as they can gain experience and improve their ideas and business models based on feedback. The investors may decide to invest in some cases, while in others,

⁷⁶ Programmer 6.

they may decline. The entrepreneurs say these events are beneficial, particularly those that connect them to prospective investors. According to an entrepreneur;

'I think the hubs try. They sometimes host monthly Zoom calls with established founders or company leaders who have built successful start-ups. They also send email newsletters including resources and updates on who has raised funds or accelerator programmes, I think, for every start-up, it is important that you connect them to investors or people that can help them, you know, grow their business, right'⁷⁷.

The Co-Creation Hub is the leading co-working space in the cluster. It offers a pre-incubator program for social enterprises, guiding social entrepreneurs to experiment, build, and prove their concepts and develop a minimum viable product. The hub invests \$5000 in each of these businesses. Entrepreneurs whose products have proven their business model are accepted into the incubation programme, where the hub invests up to \$25,000 for a 7 per cent equity stake.

- **Networking**

Entrepreneurs who run start-ups and SMEs often face resource constraints such as a lack of finance and human resources. In addition, they may not have access to the networks that could help them overcome these constraints. Co-working spaces recognise this issue and offer networking as one of the key value propositions to their members. Co-working spaces provide entrepreneurs access to internal and external networks, ensuring their networks do not limit networking opportunities. Formal and informal events are organised by the founders and managers of co-working spaces to connect entrepreneurs who might be potential collaborators. This approach helps entrepreneurs access the resources they need to grow their businesses.

According to a co-working space -founder;

'We see cases of people coming in individually and eventually establishing a company together. We know some people have skills others might need, and we try to introduce them. For instance, we introduced an Architect to a person whose company does Facebook Ads and lead generation, and now they are doing something together. We even patronise people who provide

⁷⁷ Founder 5.

*the services that we need. For example, we wanted to do this card clocking system, and we found out that a member's company provides the service, so we decided to use them*⁷⁸.

These comments are consistent with the experience of an entrepreneur who describes the co-working space as a 'community' and says, 'What space A is trying to do now is to build a family'. He said that he has been introduced to other members of the co-working space whose skills, interests or services may be relevant to his work. He admitted that without the efforts of the owners of the co-working space to make those introductions, it might have been a bit difficult for him to find such information by himself. In his words,

*'At the NEST, you get to talk to people you never even imagined you would talk to, and before you know it, you guys are talking. They build a family around it where we all just communicate. The last time I spoke there, I was introduced to a set of new guys, and before you know it, we were already planning to meet up again. And you know how the tech world is; it's all about connections and connecting*⁷⁹'.

Entrepreneurs can accelerate their growth by collaborating with other start-ups and acquiring new knowledge and capabilities. This also provides them with social capital, credibility, and legitimacy in the marketplace, increasing their chances of survival. Co-working spaces offer platforms for entrepreneurs to organise semi-formal events, share ideas, and network. For example, teams may want to launch their products and organise launch events where they discuss their products with other users of the space and ask for their feedback. Similarly, space users may want to discuss a topical issue in the industry, such as the launch of a new product by Google. In such cases, co-working spaces typically allow them to organise events and interact with each other. These events usually have no rigid agenda, as people are free to share their thoughts and ideas on the topic at hand. This often leads to open discussions and debates. On other occasions, they invite professionals or experts in specific fields.

According to the Manager of Passion Incubator;

⁷⁸ Hub 1.

⁷⁹ Founder 4.

'Sometimes we call professionals to talk about that particular line of profession, maybe debunk some myths about that profession, and tell people and make them understand how to scale through, maybe encourage some people considering joining the profession'⁸⁰.

Co-working spaces facilitate internal networking and serve as intermediaries for connecting their members to external networks. As entrepreneurs, the founders of these spaces have established networks with various funding organisations such as venture capitalists, angel investors, and government grant-making entities. Therefore, joining a co-working space can benefit new start-ups that lack access to such funding organisations, as many co-working space founders actively connect their members to investors and sometimes even invest their own money. Additionally, the founders of these spaces have networks of potential customers, marketers, sales representatives, and employees, which they can recommend to their members. These networks provide valuable information, knowledge, and expertise, which are often crucial for a firm's survival.

Networking opportunities in co-working spaces extend beyond formal events and introductions, as they also occur during leisure and social events. For instance, the NEST has a business lounge on its rooftop that members use for recreation and socialisation. The lounge's design is conducive to discussions, and the Managers organise weekly social events in this space to encourage members to meet and interact with each other and other members of the Yaba cluster, including investors and software programmers. These events include game nights, karaoke, live bands, and more. Users of the space are also free to organise events, host guests, or have informal conversations with each other.

According to its co-founder;

'We have something on the rooftop, a business lounge. So, we must create something like that for recreational purposes, so people come in, and you want to work, relax, or do some social activities. So, you can go to the rooftop, hang out there, and even start-ups find a place to hang out. So, people within the building have access to that facility, they can take coffee, they can buy some drinks, and they can also add some food. So, they don't have to leave the building or

⁸⁰ Hub 4.

*work for so long to get the needed stuff. When they feel they can relax, we create some days and different opportunities for them. On Thursdays, there is a game night where we bring out the games for them to play, and just chill in the evening, Fridays, they can sing karaoke after work, that starts like 7 pm., so we've created that series of events within the community, that makes it very, very compelling*⁸¹.

Indeed, this lounge is one of the reasons why users choose to work at the NEST. A member said he likes working there because of the lounge. You can relax with other people there after work and have informal conversations with them, which can also be very valuable. It also allows networking with potential business partners, technical talent, and co-founders to secure new contracts.

Another member said he likes to use the Lounge because of its opportunity to connect with other members. According to him;

*'Most people in co-working spaces are programmers or young programmers, so once they are done with work and maybe just want to chill. So, the lounge is for when programmers are done writing some kind of code; they are just done for the day and can just go up to the lounge and relax a bit. If you check the menu of the lounge, you will see things like the 'Javascript menu', menus are named based on what freelancers are doing. So, this is a lounge built with the members in mind. They can also work from the lounge; sockets and the internet are everywhere. Otherwise, they could simply relax at the Lounge and go back downstairs to continue their work*⁸².

Food, drinks, and music are provided at a typical social event at the NEST Lounge as people interact. The fact that almost all attendees at these events are members of the space is usually an area of shared interest that can be the basis for initial conversations. Sometimes, there are no tangible outcomes to these conversations; however, in cases where people share the same occupational interests, i.e., in the same industry or studied the same course, these conversations may be the beginning of long-term relationships, which may eventually result in a business collaboration or partnership.

For instance, there was an example of a user who was very good at UI/UX design at the NEST lounge. He met someone who was very good at developing applications, and they continued

⁸¹ Hub 1

⁸² Founder 4

interacting and developing trust. They eventually decided to establish a media company. Even in cases where there might not be an apparent tangible outcome to conversations had at the lounge, these social events are typically held every Friday, and this provides an opportunity for people to meet again, continue these conversations and potentially develop a relationship.

- **Other providers of entrepreneurship support**

In addition to the co-working spaces, other support providers include local NGOs, Development Finance Institutions (DFIs), multilateral organisations, foreign governments and other non-governmental organisations that have also actively supported these start-ups.

The Tony Elumelu Foundation (TEF) was Nigeria's first local private philanthropic initiative that engaged with the Yaba tech cluster. In 2013, they provided CC-Hub with \$90,000 to award \$5000 each to 20 tech ventures that focused on solving social problems in Nigeria. This partnership with Cchub was a success and led to the launch of the Tony Elumelu Foundation Entrepreneurship programme in 2015, the most extensive entrepreneurship programme of its kind in Africa. The programme provides training, mentoring, networking opportunities and \$5000 in seed capital to at least 1000 African entrepreneurs annually, including many start-ups in Yaba. The Foundation also researches entrepreneurship, and its Founder uses his influence to advocate for policies that improve the welfare of entrepreneurs in the cluster.

Similarly, Fate Foundation, one of the country's oldest entrepreneurship support organisations, is also active in the EE. Its programmes and activities are organised around three pillars – start, grow, and scale. Programmes under the start pillar are focused on supporting aspiring entrepreneurs with the basic skills and knowledge required to start a business. In contrast,

programmes under the ‘grow’ element focus on those who have started and seek to grow. The scale element targets those with significant traction and seeks to scale even further. According to a Fate Foundation staff;

‘We have three levels of support that we render, for businesses that are starting, businesses that are trying to grow, and for businesses that are trying to scale. Because for each of them they have their peculiarities, and they have their issues. I might have been in business for a while, and I am just looking for that edge to go to that next level; maybe I'm looking for some growth financing that can just take my business to the next level. So, each of these stages requires support, and we render support in each of these areas. We support businesses that probably tried and maybe failed once or twice, and we help with business recovery. It's a whole school on its own, so it's called a Fate school, and we are industry experts.⁸³’

An important observation of the role of Foundations in the ecosystem is that they have become a vehicle for multilateral institutions, development finance institutions and foreign governments seeking to support entrepreneurship in Nigeria. Rather than develop their entrepreneurship programmes, they partner with these organisations to target the type of entrepreneurs they want to support in terms of sector, age or gender. For example, TEF has established partnerships with the United Nations Development Programme (UNDP), the African Development Bank (AfDB), the European Commission, the French and German Development agencies, i.e., AFD and GIZ and the United States, Department of States. While emphasising the programme's core pillars of training, mentorship, networking, and seed funding, these partnerships focus on different target groups. For example, the partnership with GIZ targets female entrepreneurs and tech-enabled businesses, while the UNDP partnership is for young entrepreneurs regardless of their sector.

Despite their best intentions, these organisations have faced criticism from entrepreneurs and ecosystem leaders. One of the criticisms is that their interventions are too broad, targeting high-growth innovative start-ups and extending to self-employed individuals and small-to-medium enterprises in general. While some innovative start-ups may benefit from their programs, critics

⁸³ NGO 1

argue that their efforts would be more impactful if the focus were exclusively on this category of start-ups, as they have the most significant potential to impact economic development. Additionally, these organisations are viewed as being run by individuals who lack entrepreneurial experience or have not led high-growth entrepreneurial companies. Therefore, they may not be best equipped to design interventions to help entrepreneurs as they lack the requisite knowledge.

Big tech companies like Google and Facebook have also provided support to entrepreneurs in the cluster. In 2018, Facebook partnered with Cchub to launch NG_Hub, an incubation hub for startups to collaborate, learn and share ideas. The hub includes workspaces, meeting rooms and training programmes for students, women, and entrepreneurs in general to improve their digital literacy and business management skills. In 2017, Google launched its Launchpad accelerator programme for African start-ups which is an incubator programme that provides training and mentoring for these start-ups, some startups from the Yaba cluster have benefited from this programme and especially appreciate the mentorship from more experienced entrepreneurs.

According to a Google representative;

'So the Google for start-ups accelerator program, Africa program is based on the idea that a rising tide lifts for start-ups that will be able to support each other; able to support each other, we'll be able to strengthen the ecosystem and build a great ecosystem. That is, sell anything to them in turn, they come back and use one of our products and because they'd have grown our students with big start-ups, right. So, it's also a strategy for philanthropic efforts, right? Because it's us saying that we believe in empowering these start-ups. It's been running for three years now. This is the fourth year. And we identify and select some start-ups from across the continent. We used to provide funding no longer, we identify start-ups in different verticals and engage with them and mentors, which is also really for start-ups. We do three bootcamps – tech & products; tech & people; tech & growth. For tech people we want to understand the leadership style of the founder. How they manage this business and the organizational culture. We work with them to improve this while also looking at their technology. For the growth programme, we help them scale and introduce them to our investor network. for the mentoring part, our external mentors have run successful businesses in the past, and they're successful or they are reputable tech leaders. So, we tell them these people have made the same mistakes as you, we don't need you to make the same mistakes that they've made. And this covers things

*like design and financials. So, they look at different areas of the business and provide feedback on the approach that they are taking*⁸⁴.

Figure 28: Google Developer Space, Lagos



Source: [Techpoint](#)

In 2020, Google followed Facebook's steps to launch its first ever developer space for Africa in Ikoyi, approximately 14km from Yaba. The space is free and allows developers and start-up founders host trainings, code labs, hackathons, trainings, bootcamps etc.

6.3.3. The role of entrepreneurs in increasing access to finance

Access to finance is a significant challenge for entrepreneurs in Nigeria, as discussed in Chapter 4.3. Due to this challenge, many entrepreneurs interviewed for the study had to rely on their

⁸⁴ Google 1.

funds for their start-ups. In an ecosystem dominated by software and related technology companies, funding is crucial for the growth of these start-ups, as they need to hire skilled talent, invest in product development, and market their products. As the ecosystem has grown, entrepreneurs have been able to unlock additional sources of finance for the ecosystem through two means: (i) leveraging their networks to access foreign venture capital and (ii) building local venture capital firms.

Foreign venture capital played an important role at the nascent stages of the ecosystem and still plays a critical role. The involvement of foreign venture capitalists in Nigeria's business ecosystem was initially driven by returnee entrepreneurs who leveraged their networks abroad to attract these investors. Between 2010 and 2014, favourable macroeconomic conditions encouraged many Nigerians in the diaspora to return and found businesses. As a result, around 2012, there was a surge of repatriates with entrepreneurial zeal seeking to contribute to the country's growth. Many of these individuals had received education from top US and European schools and gained valuable work experience from leading global companies. They had strong technical and managerial skills and networks that were valuable for fundraising. Their foreign education and work experience gave them an advantage over their local counterparts, as they could quickly build networks abroad and communicate in a language and style that investors were familiar with.

During that period, two prominent e-commerce companies emerged: Jumia and Konga. Jumia was founded in 2012 by Tunde Kehinde and Raphael Afaedor, who were Harvard Business School (HBS) graduates and had previously worked for renowned companies such as Goldman Sachs and Diageo. They returned to Nigeria to establish Jumia after spotting potential opportunities in the technology sector. JP Morgan and Germany's Rocket Internet funded their venture (Olusina, 2013). Similarly, Konga was founded by Sim Shagaya, who also received his MBA from Harvard Business School. He established Konga in Nigeria due to the rise of

the middle class and the corresponding increase in retail. Like Jumia's founders, Konga was able to access international finance and secured funding from Swedish investment firm Kinnevik and South African media giant Naspers (Coetzee, 2014).

In 2016, the Chan Zuckerberg Initiative, which is a social investment fund owned by Facebook Founder Mark Zuckerberg and his wife Priscilla Chan, invested \$24 million into Andela. Andela is a start-up with American and Nigerian co-founders. While multiple reasons motivated this investment, the vast networks of the American co-founders in the US financial and tech industries played a critical role in bringing this Nigerian start-up to the attention of these US investors. This investment garnered global attention and paved the way for increased foreign venture capital activity within the Yaba tech ecosystem. The decision by a well-respected innovator like Zuckerberg encouraged more VCs to take an interest in the market, leading to a significant boost in its activities. According to a local investor;

'Foreign companies have started investing directly in start-ups; they are investing in these start-ups to understand the local market; they are also using their investments in these companies to develop their pipeline of customers in the long run. Visa, for instance, invested in the two top competitors in the fintech space – Flutterwave and Paystack. These foreign investors also suffer from FOMO (fear of missing out) as they want to be a part of the next big thing on the African continent'⁸⁵.

This investment, combined with the coming of age of most of the startups founded at the start of the decade, led to a significant shift in the funding landscape in 2016 and paved the way for additional foreign venture capital. Before 2015, the number of start-ups that received external funding was negligible. However, the number of start-ups that have received funding has increased by over 250% - from 30 in 2015 to 107 in 2022 (Disrupt Africa, 2022). As the number of start-ups receiving funding has grown, so has the volume of funding they have received. The total funding received by start-ups in the cluster increased by over 1400 per cent between 2015 and 2022 (Disrupt Africa, 2022).

⁸⁵ Investor 1.

Foreign venture capitalists (VCs) are crucial for start-up entrepreneurship in the ecosystem as traditional local investors tend to be conservative with investment decisions, often because they are unfamiliar with start-up entrepreneurship. Founders have revealed that local investors tend to have a limited understanding of start-up technology and processes, often different from what is obtained in traditional industries. The involvement of foreign VCs goes beyond providing funding as they offer validation and credibility to start-ups, mentorship, and introduction to essential networks necessary to grow their businesses. However, it is worth noting that the Fintech sector receives most foreign VC funding. The most significant acquisitions in the EE have been in Fintech, such as Visa's \$200m acquisition of a 20% stake in Interswitch in 2019 and Stripe's \$200 million acquisition of Paystack in 2020. Additionally, all five Nigerian start-ups that have attained unicorn status have been in the Fintech sector.

Foreign venture capitalists have a limitation in that they are typically involved in funding later-stage businesses and more significant funding rounds, with investors such as Tiger Global, Sequoia Capital, SoftBank Vision Fund, and Fidelity Investments, among others, being involved in financing significant deals that are above \$100 million. As a result, foreign VC participation in seed-stage deals is limited, but many emerging local VCs are bridging this gap. Therefore, the growth of the local VC industry is essential, as they tend to focus on seed-stage deals, which are typically smaller, around \$200,000, and where foreign VC participation is less prominent. Many successful entrepreneurs have started paying it forward by establishing their VC or angel investing funds. One of these entrepreneurs is Iyin Aboyemi, the founder of Andela, whom we discussed in section 6.3.1. His VC fund, Future Africa, is very active in this space and has allegedly raised over \$1 billion in additional capital. According to him;

'There's a massive early-stage funding gap for African startups. All the data we were looking at pointed to the fact that work needed to bridge that gap. We simply couldn't go on the journey

*alone to fix the gap and decided to build Future Africa Collective to democratise access to African start-ups. We think of ourselves as pioneers in this field*⁸⁶.

Local VCs typically possess more local knowledge and insights into the most promising and feasible deal flows. Thus, many funding rounds now include foreign and local investors, as both groups derive value from co-investing. Entrepreneurs also find the unique strengths of both groups quite valuable in growing and scaling their businesses. The role of local VCs, however, goes beyond the provision of mere funding. They are crucial in helping these start-ups improve their management and business practices. Since they tend to invest in seed-stage companies, this support is vital as it improves the quality of deal flow available to foreign VCs who typically invest in later stages. According to a start-up founder.

*'We have had our fair share of investors who want to make money. But I realised that growing a business is beyond that; it's having investors who share the same vision as you. So those are helpful investors, like Ventures Platform; they are helpful to the ecosystem. Because they are connecting us to global VC firms, we need more funds from them, and they give us things we need because they are also entrepreneurs. Because they have done it before, they are building a bridge, growing a business beyond, and there is a vision*⁸⁷

Ventures Platform is another leading local VC firm that aims to support African development through entrepreneurship and innovation. They have raised at least \$500 million and has about 60 start-ups in its portfolio. They provide capital to businesses while also ensuring that they are sustainable in the long term. According to a representative;

'So, for us, it's not about making money. It's not about returns, even though those things matter, right? Because we are a venture capital firm. But we strongly believe that when you support entrepreneurs, you are involved in building the continent. The smallest support a founder will get from VP is our cheques; we support them in many ways. We make introductions to partners, customers, also investors. So, for example, when we invest in a company, and the company still needs more investors to come on board, we can make those introductions, right? So yeah, that's the first thing. That's the first point of contact for portfolio support. The second is that we have subject matter experts committed to the Ventures platform team, not full-time, but they are incentivised to provide advisory services to the portfolio, right? We call them Venture Partners. And these people are on call every week, right? So, they have dedicated times every week, any founder who needs to talk to them can simply go on that link, book a time with them, and have a conversation with them. Right. And these guys are some of the best minds on the continent.

⁸⁶ Iyin Aboyeji in Kene-Okafor (2021)

⁸⁷ Founder 3.

*They've been founders themselves and investors. I think all of them are angel investors now. So, they have experience working with early-stage founders and building products altogether. And they all have their areas of expertise*⁸⁸.

6.4 Discussion

This chapter aimed to analyse the role played by entrepreneurs and other non-state actors in building critical entrepreneurship institutions in the Yaba cluster. While the entrepreneurship ecosystem comprises, several domains articulated by Isenberg, the analysis focused on human capital, entrepreneurship support, and finance. The development of these domains is critical for the proper functioning and dynamism of the ecosystem, as many scholars have pointed out; however, this study reveals some similarities and differences in these areas when compared to ecosystems in more developed countries.

First, in the literature, universities are widely seen as critical actors in the entrepreneurial ecosystem (Guerrero *et al.*, 2016). The university and other institutions of higher learning in the Yaba cluster are expected to contribute to developing skilled labour, supporting research and development, and enabling the emergence of university spin-out companies. However, these academic institutions have not been able to fulfil these roles effectively due to a lack of funding, capacity, and other issues. As a result, entrepreneurs and other non-state actors have developed alternative means to provide skilled labour, especially in software programming, for the growing number of start-ups in the cluster. Software training institutes founded by entrepreneurs and communities of practices established by programmers have played an essential role in bridging this skills gap. This highlights the critical role played by entrepreneurs in identifying resource gaps and building institutions that can address them, especially in contexts where state institutions like most universities are incapable of closing these gaps.

Additionally, large firms and more mature start-ups have played an essential role in human capital development, providing start-ups with the required skills. Consistent with findings by

⁸⁸ Investor 3.

Neck *et al.* (2004) and Feldman *et al.* (2005), these large companies hire new graduates and offer them comprehensive training in business, technical, and management skills. This is a valuable resource for start-ups, who may not have the resources to invest in employee training programs and often expect new hires to be ready to work immediately. Additionally, many current start-up founders developed their managerial competence while working as employees of these large firms.

Second, this study revealed the critical role of co-working spaces and incubation hubs established by entrepreneurs. The literature articulates their role in providing coaching, funding, and networking opportunities (Clarysee *et al.*, 2015), this study confirms this while highlighting an important role played by these co-working spaces that are often overlooked in the literature. These spaces provide crucial office infrastructure, especially valuable in countries with limited and expensive office space and poor power and internet supply. These factors can significantly increase the overhead costs for start-ups. In many developed ecosystems in developing countries, power and internet supply are taken for granted. However, these infrastructure deficits in developing countries like Nigeria significantly constrain entrepreneurship and business.

Finally, entrepreneurs have played a vital role in bringing additional finance into the ecosystem by leveraging their foreign networks and reinvesting in the ecosystem as venture capitalists. Although the venture capital scene is still in its early stages, many entrepreneurs, particularly those with foreign education, work experience, or collaborators, have helped to bring foreign venture capital into the ecosystem. This is consistent with arguments by Bathelt *et al.* (2004) on the role of global pipelines or linkages in the early stages of ecosystem formation in increasing access to critical resources, such as finance, which may not be available locally. Also consistent with the literature on entrepreneurial recycling (Mason and Harrison, 2006). Some of the older entrepreneurs, such as the Andela Co-Founder, have become venture capitalists, helping to

provide start-up funding to new start-ups while providing them mentorship and access to critical networks.

The dynamism of the entrepreneurial ecosystem is apparent in the fact that entrepreneurship institutions have been built through the largely uncoordinated actions of individual entrepreneurs. These entrepreneurs are active participants in the daily life of the ecosystem and are aware of the critical challenges they and other entrepreneurs face. Furthermore, they often have the capabilities and access to critical networks and resources to address these challenges and are thus better positioned to tackle them. This will become more evident in the following chapter, where attempts by governments to support start-ups through the development of hubs failed due to information, capability, and political constraints. This further emphasises the inherent difficulties in attempts by governments to build or develop entrepreneurial ecosystems, often without adequate support and engagement of entrepreneurs.

6.5 Conclusion

This chapter aimed to examine the role played by entrepreneurs and other non-state actors in creating institutions and organisations which are essential for supporting vital entrepreneurship domains in the Yaba cluster. This was achieved by analysing key players within three primary domains of the ecosystem, namely human capital, entrepreneurship support, and finance. The main argument in this chapter is that entrepreneurs and other non-state actors have contributed to the development of critical institutions within the ecosystem, thus helping to narrow the resource gaps.

The analysis discovered three primary sources of human capital development within the ecosystem. Firstly, entrepreneurs have founded training institutes to aid the development of software programming and other technical skills required by start-ups. Secondly, large companies and older start-ups have been a significant source of skilled talent for start-ups. They have provided entrepreneurs, software programmers, and other relevant talent the opportunity

to gain on-the-job experience while enhancing their tacit knowledge of their respective fields. Finally, communities of practices established by big tech companies and entrepreneurs have been crucial learning and skill development platforms.

The primary actors in entrepreneurship support organisations are co-working spaces and incubation hubs. These spaces help entrepreneurs overcome infrastructural constraints, receive business acceleration support, and gain access to relevant networks. Additionally, entrepreneurship-focused NGOs have become a channel for DFIs and international organisations to support entrepreneurs in the cluster.

Finally, in terms of finance, the chapter discusses the role of foreign and local investors in helping entrepreneurs overcome funding constraints in the cluster. While foreign VCs continue to play an important role, over time, older entrepreneurs and local investors have actively cultivated the emergence of a local venture capital industry, increasing access to financing, especially early-stage funding for these entrepreneurs.

7. An analysis of the role of the state in the development of the Yaba cluster

7.1 Introduction

The previous chapter shed some light on the significant role of entrepreneurs and other non-state actors in developing the Yaba cluster's entrepreneurial ecosystem. However, it is essential to remember that this cluster operates within a larger political, institutional, and regulatory framework, which gives the state the ability to impact its results. Over the years, different state and federal governments have attempted to implement programs and policies to influence the outcomes of this ecosystem. This has led to debates about the appropriate role of the government in the ecosystem, as these interventions have produced varying degrees of success. These discussions align with the debates within the entrepreneurial ecosystem literature, where scholars have differing opinions on how these ecosystems come into being.

In the literature, it is often argued that entrepreneurial ecosystems either emerge naturally from the bottom-up without any active state intervention or are created through top-down efforts by the state. However, empirical evidence shows that the development of ecosystems is not always so straightforward and there is often some level of collaboration between the state and ecosystem actors. This level of collaboration can vary greatly between countries.

Indeed, the development of Entrepreneurial Ecosystems (EEs) can occur organically, but they do require certain regulatory and institutional support, usually provided by the government, to truly flourish. Universities and research institutions rely heavily on state funding, venture capital depends on the rules of financial markets, and the state typically provides public goods. Despite the crucial role played by entrepreneurs in the emergence of EEs, collaboration with the public sector is often necessary. Thus, policymakers in many countries take on various roles to intervene and promote the positive externalities that EEs can bring to their economies. However, the complexity and dynamism of EEs can lead to information and capability failures, which may undermine the effectiveness of government interventions. This is why the attempts

of many developing countries to create their own 'Silicon Valley' have not always been successful.

This chapter contributes to ongoing discussions about the state's role in developing entrepreneurial ecosystems. It does so by analysing the various interventions by the state in the Yaba cluster. The chapter proposes three different ways of thinking about the state's intervention in the ecosystem: (i) the state-led approach, (ii) the helping-hand approach, and (iii) the ecosystem-led approach. The difference between these approaches lies in the degree to which entrepreneurs are organized and the existence of platforms to facilitate interaction between them and the state's agencies. The state-led approach, which had minimal success, suffered from limited engagement with entrepreneurs and a lack of political commitment that undermined the program's continuity.

The helping-hand and ecosystem-led approaches proved to be more effective in addressing the problems of entrepreneurial ecosystems. This was due to the existence of platforms that facilitated strong collaborations between the state and entrepreneurs. This chapter contributes to the growing literature on the state's role in entrepreneurial ecosystems and provides new insights by highlighting previously overlooked areas. It also lays the groundwork for future research, encouraging additional scholarship on different forms of state intervention in ecosystems, particularly in developing countries.

The chapter is organised as follows: Section 7.2 presents the analytical framework for this chapter. It first introduces the current debates on the role of the state in entrepreneurial ecosystems, i.e., the bottom-up vs. top-down approaches, highlights the advantages and disadvantages of both approaches and proposes the need to consider the state-business relations literature which points to the possibility of collaboration between the public and private sectors.

Finally, it concludes by presenting an analytical framework with three approaches on how to think about the state's role in the ecosystem.

Section 7.3 analyses the various interventions by state and federal governments in the Yaba entrepreneurial cluster. These interventions align with the approaches discussed in Section 7.2. Section 7.3.1 presents the state-led approach, which lacked consultation with key ecosystem actors and political support, thus affecting its effectiveness. Section 7.3.2 discusses a helping-hand approach, demonstrating how the involvement of nodal agencies and robust stakeholder engagement led to relevant interventions for the entrepreneurs in the ecosystem. Section 7.3.3 presents an example of the ecosystem-led approach. These two approaches reveal the organization and coordination of ecosystem actors can position them to define the nature of state intervention, allowing them to co-create and implement government policies effectively.

Section 7.4 analyses the public policy implications of these approaches in terms of (i) potential trade-offs; (ii) the role of global linkages and (iii) the implications for skills development. Section 7.5 concludes.

7.2 Analytical framework: the role of the state in entrepreneurial ecosystems

Two main perspectives regarding the state's role in developing entrepreneurial ecosystems exist. The first perspective advocates for a bottom-up approach, which suggests that the members of an autonomous ecosystem are coordinated and motivated by an invisible hand due to their self-interested behaviour. This perspective limits the role of top-down policy approaches, emphasising a view of an entrepreneurial ecosystem as a dynamic, self-regulating network with multiple actors and drivers (Isenberg, 2010). It excludes any governance issues beyond the invisible hand and provides no rationale for policy intervention.

However, this perspective fails to acknowledge the existence of market failures, which are especially pervasive in developing countries and may undermine the proper functioning of EEs. These market failures affect (i) technology learning, (ii) human capital, (iv) finance, and (v)

coordination amongst other domains of EEs. While entrepreneurs in developing countries may not necessarily engage in novel innovation, they often copy, imitate, or apply technology developed elsewhere. This process requires a significant amount of learning, but it may be undermined by externalities of the learning process and the public good aspects of technological knowledge (Justman and Teubal, 1995).

First, ‘there might be uncertainty and externalities among early users learning about the application of the new technology while acquiring information, is costly to obtain and appropriate for individual firms; secondly, the codification and standardisation of experience and knowledge can offer social benefits in that they permit rapid diffusion of the technology as well as knowledge about it, but individual firms will not be able to appropriate all benefits of developing a new standard; finally, network externalities arise when new users of technology depend on the existence of a large user and support staff base’ (Te Velde 2006, p. 5).

Market failures can occur regarding human capital when individuals cannot access training, are unaware of the need for future educational investments, and may not recoup all the benefits of educational investments. In developing countries, firms often lack knowledge of best practices in training and may not fully benefit from investing in skills. Educational institutions may also be unaware of the industry's needs. These market failures are reflected in the lack of high-quality and innovative founders and the absence of employees with specialised skills in developing countries. This explains why, even though there are supposedly more entrepreneurs in these economies, most are involved in necessity-driven entrepreneurship instead of being driven by opportunities for innovation. Relatedly, there is often a lack of entrepreneurship-related knowledge, such as business model experimentation, and critical sources of entrepreneurship knowledge, such as mentors (Davidsson and Honig, 2003; Goswami et al, 2018).

Entrepreneurs require access to finance to bring their ideas to life. Ideally, capital markets should provide funding to those with the skills and expertise to execute profitable projects. However, market failures and uncertainties about the future profitability of projects can lead to credit constraints. Additionally, the costs associated with screening, monitoring, and enforcing contracts may create obstacles to lending. These challenges are particularly pronounced in developing countries where access to capital markets is limited to those with political connections.

As a result, start-up entrepreneurs often have difficulty accessing institutional credit from banks or government funds (Adly and Khatib, 2014; Radauer and Roman, 2016). More so, concepts such as angel investing or venture capital remain new in those countries and are still at a nascent stage of development (Guerrero and Urbano, 2017). This constraint is further exacerbated as foreign VCs are often unwilling to invest in developing countries, given the cultural, geographic, and institutional distance between them. Where they invest, it tends to be limited to later financing rounds and later-stage ventures (Dai and Nahata, 2016).

Coordination failure occurs when economic agents cannot coordinate their actions, which can prevent an economy from reaching a higher level of development. For instance, if training systems and technological development are not actively coordinated with human resources and investor needs, countries with limited skills may become trapped in a low-skill, low-growth cycle even after opening to investment and trade due to uneven specialisation. A consistent, strategic, and market-friendly human resource policy is required to address this issue, which should be designed with the help of appropriate government policies.

These market failures provide a rationale for state intervention in EEs and are the basis for arguments that rationalise the second perspective. In this top-down approach, the ecosystem is considered an open system where necessary resources are provided by the governments (Stam, 2015). This approach, therefore, assumes that there is a need for a holistic approach to embracing the several activities in the ecosystem and facilitating co-creation (Stam, 2015). The top-down approach implies that policymakers can shape ecosystems and is reflected in a top-down governance structure where decision-makers strategize from the top. Thus, this approach is more interventionist, advocating for a more active role of the government in building institutions or positioning government or local authorities as relevant system feeders (Stam, 2015; Audretsch and Belitski, 2017; Colombo et al., 2019).

However, the risks of government failure mean that this approach is unlikely to be effective for several reasons. First, governments are unlikely to have perfect information and, therefore, may be unable to identify what is needed to overcome market failures. These information asymmetries are significantly exacerbated in EEs due to the tacit nature of information about them, which also tend to have a geographically defined boundary with inter-connected actors such as human capital, networks, and institutions (Alvedalen and Boschma, 2017).

Thus, relevant information updates about EEs are contained within a specific place and time, are not explicit, formalised, and easy to communicate, but are embodied in human capital and only acquired through experience (Hospers et al, 2009). The implication is that government officials are often not well equipped to know these tacit forms of knowledge within these EEs. As they are not as involved in the daily life of the ecosystems as the entrepreneurs themselves, they cannot tell what sort of interventions would be required.

Second, the government may be unable to address the coordination issues faced by EEs due to the complex and dynamic nature of EEs. They are complex because of the number of institutions and organisations involved - markets, finance and human capital, and support (Isenberg, 2010). Each of these domains have different stakeholders that interact and engage in specific processes that govern the proper functioning of these ecosystems (Mason and Brown, 2014). These stakeholders, including entrepreneurs, mentors, investors, etc., are heterogeneous in their attributes, that is, in how they perceive opportunities and respond to them and in their interactions with each other and the external environment (Chen et al, 2015; Roundy et al, 2018).

The dynamism of EEs can be seen in their self-organisation and self-regulated operations, in the sense that the agglomeration benefits they can provide emerge from the uncoordinated semi-autonomous actions of individual actors. While individual agents such as essential firms or entrepreneurs may have influential roles, they cannot control the actions of other actors in the ecosystem (Feldman and Zoller, 2012). The implication of this is that if there are attempts to lead the activities of an EE using a top-down or heavy-handed approach, this may not be successful as it may undermine the cohesiveness of the system (Feld, 2012).

Moreover, state intervention may undermine EE dynamism because of moral hazard problems in that the private sector may not act once the government has provided the incentive. Indeed, what tends to happen is that policymakers try to replicate characteristics that are associated with a mature EE, such as developing a local research university, a strong venture capital industry and adequate support services. However, these factors tend to lag rather than lead to cluster formation (Feldman, 2001).

The above analysis examined the advantages and disadvantages of both state-led and bottom-up approaches. Still, it overlooks the potential for a third scenario where the state and ecosystem actors could work together. The literature on state-business relations (SBR) emphasises the possibility of collaboration between the public and private sectors, ranging from formal, regularly coordinated arrangements to informal, ad hoc interactions (Leftwich, 1995). The SBR literature proposes a helping hand approach where effective collaboration between the public and private sectors can address market, coordination, and government failures, leading to an improved investment climate, market-enhancing public investment, and greater policy certainty. According to Te Velde (2006), effective SBR comprises the following elements:

- **The Way the Private Sector Is Organised Vis-À-Vis the Public Sector:** This refers to the idea that when more firms are involved in business associations, it is easier to coordinate policy between government and business (Weiss, 1998). Business associations are said to play an essential role in formulating, implementing, and monitoring economic policies and providing feedback to the government (Hisahiro, 2005). Specifically, all-encompassing business associations are likely to engage in collective action by advocating for policies that bring about economy-wide growth (Olson, 1989).
- **The Way the Public Sector Is Organised Vis-À-Vis the Private Sector:** This refers to how the state can organise itself to interact with business. An indicator of this is the presence of an Investment Promotion Agency (IPA) that advocates for the private sector or the presence of a governing unit specifically for the private sector.
- **The Practice and Institutionalisation of SBRs:** This refers to a mechanism for public-private dialogue, i.e., a forum. It can come in different ways: open to all and autonomous of government intervention or an informal suggestive body with no entrenched power. This is

because effective SBRs require the cooperation of the public and private sectors, and having an institutionalised mechanism facilitates such cooperation.

This SBR model applies to the entrepreneurial ecosystem approach, given empirical examples of collaborations between state and ecosystem actors to develop the ecosystem. Thus, in addition to the bottom-up and top-down approaches to ecosystem development, we can consider a third approach, a helping-hand model, that captures the state-ecosystem collaboration. While the foregoing analysis provides a foundation for the state's role in the ecosystem, it is essential to note that the extreme cases of either an entirely bottom-up or top-down approach hardly occur in practice as there is often an element of cooperation between the state and ecosystem actors. Instead, what varies is the party that takes the leadership in any given intervention. Based on this, I present the following propositions on different ways of state intervention in the ecosystem.

- **The state-led approach:** In this approach, a government agency or department is responsible for deciding on the priorities for state involvement in the ecosystem. Entrepreneurs often lack the organisation to articulate their priorities for state intervention, and few institutionalised platforms exist to facilitate interactions between the state and ecosystem participants. Even if such platforms exist, entrepreneurs' proposals are not considered much.
- **The helping- hand approach:** This approach involves the development of programs or agencies with a clear goal of promoting collaboration between the state and ecosystem actors. The state leads this approach through a nodal agency to foster collaboration between the government and ecosystem actors. Although entrepreneurs may not oversee decision-making, institutionalised means exist to engage and interact with the government. These include surveys, focus group discussions, town halls, and chat meetings. These platforms

allow the nodal agency to identify entrepreneurs' challenges and work with relevant actors in state agencies or the ecosystem to address them.

- **The Ecosystem-driven approach:** Entrepreneurs can be formally or informally organised in this approach. This organisation allows a coalition of entrepreneurs to identify priority areas for state intervention, engage relevant government agencies and explore ways to address them. While there may be a state agency dedicated to entrepreneurs, the entrepreneurs hold significant influence over the priorities for state intervention and are involved in implementing policies. Interactions are facilitated through various means such as surveys, focus group discussions, town halls, chat meetings, etc. There may also be more institutionalised engagement means, such as a council comprising entrepreneurs and state actors.

Figure 29: Different approaches to the state's intervention in the ecosystem

Approach	Programme
State-led approach	The IDEA Hub Programme
Helping-hand approach	The Lagos Innovates Programme and the Presidential Enabling Business Environment Council (PEBEC)
Ecosystem-led approach	The Nigerian Start-up Act

In the following section, this chapter will critically analyse various state programs in the Yaba cluster closely aligned with the approaches mentioned earlier. These interventions, presented in Table 6, provide practical examples of these approaches and their implications for ecosystem development.

7.3 Findings

7.3.1. The State-led approach

- **The IDEA Hub programme**

An entrepreneurial ecosystem emerged in the Yaba cluster, prompting the federal government to launch the Information Technology Developers Entrepreneurship Accelerator (iDEA) hub programme. The ICT Ministry led this initiative with the National Information Technology Development Agency (NITDA) and private sector players. The goal was to support Nigerian entrepreneurs in establishing successful businesses by providing funding, training, mentoring, business support services, and workspaces. Two incubation hubs, the iDEA Hub, were established - one in Calabar, Cross River state, and the other in Yaba, Lagos.

As per the plan, NITDA was supposed to provide funding for the first three years of the tech hubs' operations. After that, the expectation was that they would rely on private financing. The objective was to support the establishment of 25 tech businesses by the year 2015. The state governments, including Lagos, where these hubs would be situated, were also expected to support their operations. In the same year, the government launched a \$15 million venture capital fund, with an initial investment of \$3.6 million from NITDA. The plan was to encourage local and international investors to mobilise counterpart funding. The Fund aimed to support promising commercial ideas from the iDEA incubation centres and invest in firms that could eventually have initial public offerings (IPOs).

This venture capital fund was launched alongside a project called the Tech Launchpad Initiative. The objective of the project, which was to be supported in part by the \$15m ICT-aimed venture capital fund, was;

'To identify and support new, locally developed software that might benefit the Nigerian energy and financial services sectors, both of which are major economic contributors. Techlaunchpad financing will be put toward projects with positive implications for banking analytics, payment and collection systems, digital marketing, subscription monitoring and fraud management. The programme will also fund software projects to streamline real-time monitoring in the oil and gas industry'.

To oversee the iDEA hub programme, a Governing Board consisting of public and private sector representatives was formed to provide guidance and management support for the

program's implementation. The private sector members of the board were leaders of either established companies or entrepreneurship-focused foundations and organisations. Interestingly, none of the younger founders of new start-ups or incubation hubs were selected to be board members. This might have been because the ecosystem was still very new, and its leaders had not yet organised themselves.

These board members were mandated to:

- Provide overall strategic support and leadership to the National ICT Incubation Programme Commission.
- Evaluate the strategic plans and key performance indicators at the national and individual incubation centre level.
- Guide the establishment of the centres and provide management oversight functions.
- Approve policies and procedures, including tenant admission and tenant exit processes.
- Select and recruit management staff for the incubation centres and review the performance of management staff.
- Review and approve incubation selection criteria and processes developed by the incubator's local management.
- Support and assist Incubator Business Managers in creating links to local and international investment and professional resources that support the centres' success.
- Ensure the overall financial viability of the incubation centres, including seeking external funding and financial assistance, evaluation of annual operating budget, and approval of significant capital expenditures and equity investments.

As part of a state-led initiative to support the developing entrepreneurship ecosystem, the government attempted to direct the solutions that start-ups incubated in the iDEA hubs should develop rather than letting the market drive these decisions. The Minister was interested in

ensuring that the government-supported start-ups were building solutions relevant to local industries and, as a result, identified priority sectors for these start-ups. According to her:

'The government has also intervened with the set-up of the iDEA hubs in Lagos and Calabar (with more to come), which aim to cover both the innovation and ideation process and accelerate the process from ideation to business creation. Our first cohort of incubates at the iDEA hubs were drawn from the developers that provided solutions adjudged as having potential by the Oil and gas and financial sectors. Our next cohort will be tasked with building solutions for the agriculture industry, an effort being designed with USAID... We are open to ideas as to what solutions should be tackled next as we believe that software solutions that come out of our industry should be designed to meet needs, commercial as well as social and of course be exportable to other countries' (Communications Weekly, 2013).

Initially, the initiatives undertaken by the iDEA hub seemed successful, as publicly available reports indicate that it incubated over 50 start-ups, raised approximately \$800,000 in funding, and hosted about 1500 people for seminars, workshops, and training. However, by the end of 2015, problems had started to emerge at the iDEA hub, as some start-ups began to leave the premises leading to a decline in patronage. The hub's CEO at the time stated that NITDA had failed to provide the 30 per cent of the funding it had promised to support the hub, which led to the issues it faced.

Upon closer examination, one of the reasons for the program's failure was the limited engagement with the entrepreneurs involved in the emerging ecosystem. Although there was an attempt to engage them, the program's governing board did not adequately represent this emerging class of entrepreneurs. As a result, some entrepreneurs felt that if the policymakers had more robust engagements with the entrepreneurs in the ecosystem, they would have been better informed on how to effectively deploy these resources.

According to one of them;

'Because CChub was private, the government wanted to be seen as doing something. But people wondered why they decided to build a hub in the first place. The government started

*planting hubs everywhere. Were they trying to waste money? Honestly, initially, they made a positive impact but at what cost? They could have done more impactful work*⁸⁹.

Re-echoing these sentiments, another entrepreneur suggested that there were more effective ways that the government could have intervened to support these start-ups. According to him;

*'The government could have done things differently; instead, they decided to compete with CC Hub instead of helping them. They set up iDEA hub next to it which eventually died anyway. The government pays lip service to these things. I kept telling people that a very simple thing they could have done was give start-ups tax breaks*⁹⁰.

The second factor accounting for the programme's failure was political commitment, which undermined the engagement of the state in this project. For the state-led approach to entrepreneurial ecosystem development to be successful in the long term, the project must receive continuous political support throughout its lifespan. In electoral democracies, there is a risk that a change in government may lead to a new administration that is less enthusiastic about the entrepreneurial ecosystem or has a different vision of their role in economic development.

This is precisely what happened in this case because in 2015, a new President, Muhammadu Buhari, was elected, and the ICT Ministry, established by his predecessor, was disbanded and subsumed under the 'Ministry of Communications' leading many stakeholders to believe that the ICT industry was not a top priority for the new administration. Also, the new Minister of Communications was not seen as having the same capacity and sharing the same enthusiasm as his predecessor. As a result, there was a lack of political and bureaucratic support for these initiatives, inadvertently leading to their collapse. This lack of commitment was not only limited to the federal government level, as state governments also failed to support the administration of these hubs. According to Adedotun Suleiman who was a member and Chairman of the Governing Council;

⁸⁹ Hub 1.

⁹⁰ Investor 4.

'Omobola Johnson, the first Minister of Information Technology in Nigeria, formed a program to set up six incubation hubs across the country, and we managed to set up two, one in Lagos and one in Calabar. As I speak to you, the one in Calabar died almost two years ago because the State Government that made all the commitments to support that initiative did not uphold its promises....wow, the one in Lagos sadly closed shop ...because even though it was a government initiative and they promised to support when we signed a Memorandum of Understanding with an agency of government, they only came up with funding for one year and that was it'(Akiyode, 2017).

7.3.2. The Helping-hand approach

- **The Lagos Innovates Programme**

As elements of the EE in Yaba, Lagos started to take root, the Lagos state government decided to actively support the growth of start-up entrepreneurship in the state, Yaba included. In 2016, the Lagos state government launched the Lagos State Employment Trust Fund (LSETF) with an initial endowment of 25 billion naira to tackle employment and promote entrepreneurship in the state. A relevant pillar of the programme is the Lagos Innovates programme, which involves a series of programmes targeted towards innovative and technology-driven start-ups in the state. The Lagos Innovates programme was designed to help start-ups by increasing access to (i) high-quality workspaces and infrastructure, (ii) learning, (iii) early-stage investment capital, and (iv) investor and peer networks.

The programme consisted of three main pillars to achieve their goals - the Workspace Voucher Programme, Hub Loans, and Co-Investments. The Hub Loans and Workspace Voucher Programme were created to cater to the needs of entrepreneurs across the state, including those in the cluster. The Lagos state programme designed its intervention differently by supporting market players instead of attempting to replace them. This approach was perhaps taken after learning from the failed attempt of the federal government to build and manage its hubs.

According to the Executive Director of the LSEFT in 2016, Akin Oyeboode;

'In doing all these, LSETF will only be an enabler of the ecosystem, complementing existing players by being a market maker and advocate. The government has incorrectly tried to participate directly in markets they should be enabled, thereby competing with the ecosystem. This will not happen here. The best example of being a market maker is our Workspace Voucher Program, where vouchers ensure start-ups can afford to pay for workspaces. At the same time,

their businesses gain traction, enhancing their runway. On the other side of the market, since more start-ups now use workspaces and occupancy is increasing, workspaces can also price lower because growing revenues better cover their fixed costs. Once market equilibrium is reached, LSETF will simply move its capital to the next problem' (Oyebode,, 2018).

The Hub Loan Programme of LSETF did not aim to create state-owned hubs. Instead, it sought collaboration with private sector actors by providing loans to operators of co-working spaces or incubators in the state to improve or expand their capacity. The programme was highly appealing as it offered a lower interest rate than the market rate. Additionally, entrepreneurs found the Workspace Voucher Programme very helpful as it provided them with vouchers to access these co-working spaces. According to the Director of the Lagos Innovates Programme;

'The programme was launched to address problems many businesses in the state face in accessing workspaces. Therefore, we partnered with 37 hubs across the state and provided vouchers to entrepreneurs to access these hubs depending on the stage of their business. Even though some of the hubs are in Yaba, they are also spread across the state to make it easier for accessibility'⁹¹.

The programme has also provided networking and community-building opportunities for the beneficiaries of these vouchers. According to an LSETF staff;

'The program benefits these start-ups because they don't have to pay for space. They have internet where they're working from, and they also have support. Another thing we always underestimate, too, is that they have networks. Because as they're working from these workspaces, other businesses work in them, too. I know many people who have told me the immeasurable values of working from a workspace because you have that peer support. Many people are doing the same thing as you're doing, and you can also get to meet people through those networks. So yeah, networking in the workspaces is one of the greatest benefits to the start-up that even supports'⁹².

The state government also established the 'Lagos Innovates Talent Development Programme' to address the talent challenges start-ups face in the cluster and the state. This program was designed to support Software Developers and start-up Founders with access to high-quality skills and learning. To deliver this training, the government partnered with three local training institutes - Slatecube, NESAs by Makers Academy, and Univelcity, with the last two institutes located in Yaba. These institutes offer various courses, including Full-stack development with

⁹¹ LASG 3.

⁹² LASG 1.

Javascript and Python Programming for Web and Data Science and Frontend Design and Engineering. The state facilitated the learning programme by providing students with loans of over 80 per cent of the programme attendance costs at any of these institutes for up to 15 months at an interest rate of 5 per cent.

The LSETF program has supported 413 technology entrepreneurs and professionals through the workspace voucher and student loan programs. Entrepreneurs who have benefited from the program have reported finding the workplace vouchers very helpful in reducing the cost of rent and providing a space for their teams to work in, as well as the opportunity to connect with other start-ups that use the co-working spaces. The program's effectiveness results from extensive consultation with ecosystem actors during the design and implementation phases. Some platforms allow for regular interactions between the entrepreneurs and programme managers, supporting the continuous refinement of the programme. According to the programme's Director:

'We currently also have a radio slot once a month on two radio stations, where we bring, depending on what the topic is, the stakeholders in that sector. We have hosted the Special Adviser to the Governor on Innovation and Technology to interact with stakeholders so that he can know what is happening in the ecosystem. Through these radio shows, we can interact with 'regular Joes' who, even though they may be entrepreneurs, may not know the meaning of an 'ecosystem' and what the government is doing to support them'⁹³.

While the ecosystem actors have not formally organised themselves to engage the Lagos state government, they are consulted through town hall events organised by LSETF. Also, many informally contact LSETF staff if they have problems with any Lagos state government agencies. LSETF contacts the government agency to see how the issue can be resolved.

According to a staff:

'Like for product registration, we have beneficiaries that tell us that they want to register their business, but NAFDAC (National Agency for Food and Drug Administration and Control) is giving them a hard time. So, we have helped them secure product registration; we provide them with the right information and ensure that they have done all the necessary things they need to

⁹³ LASG 3.

*do to qualify their product for registration. We got these registrations done for many businesses, increasing their market value because most of these businesses need that registration before exporting their products. If they have a problem with Lagos state government agencies, we go to their office to find out what needs to be done to help the business address the problem, and we work with the government officer to address the issue*⁹⁴.

The success of these programmes and their relationship with entrepreneurs also means that the agency has become the focal point for the governor's office anytime the state wants to do anything regarding entrepreneurs. According to the Programme Director;

*'When the governor wanted to meet with representatives of the tech ecosystem, they approached Lagos Innovates to say, 'Where should we go? Who should we speak to? Who do you think?' Because you know we're the ones feeling the ecosystem for the governor, we'll give him a list of people that we think he should engage. We say, 'These are people we think we should hear from', but ultimately, the decision is made by the governor or, you know, the state itself, but they will come to us and ask us what we think, that will always happen. That happens all the time. An example of this relationship is about three weeks ago; the governor wanted to get to meet with some people. So, we convened, you know, the hub, the entrepreneurs, the stakeholders in the ecosystem to talk with the governor. That was successful, and we had feedback. And then following that, we had another one the following week because the governor was so impressed with the first one*⁹⁵.

The government has established the Lagos State Employment Trust Fund (LSETF) as the main agency responsible for managing the state's entrepreneurial ecosystem. Unlike typical government bureaucracy, LSETF is led by young and experienced individuals from the private sector. This unique approach has enabled them to engage more effectively with the ecosystem and implement a more innovative and creative program than would have been possible with the regular government bureaucracy. Moreover, the Governor being from the same political party as his predecessor who introduced the LSETF program has provided the program with unwavering political support. This has prevented the emergence of continuity problems that undermined the success of the iDEA hub program.

B. The Presidential Enabling Business Environment Council (PEBEC)

⁹⁴ LASG 1.

⁹⁵ LASG 3.

In 2016, President Muhammadu Buhari established the Presidential Enabling Business Environment Council (PEBEC) to remove the constraints to starting a business in Nigeria. The Vice President, Professor Yemi Osinbajo, chaired the council. It comprised 10 Ministers representing relevant ministries, the Head of the Civil Service of the Federation, the Central Bank of Nigeria (CBN) Governor, and representatives of the Lagos and Kano state governments, the National Assembly and the private sector. The Enabling Business Environment Secretariat (EBES) was established to implement the reform agenda of PEBEC, this agenda includes:

- To move Nigeria upwards in the Doing Business 2018 Rankings as Nigeria was ranked 169 out of 190 economies in the World Bank Doing Business Rankings as at July 2016.
- To remove critical bottlenecks and constraints to doing business in the country and make Nigeria a progressively easier place to do business and thrive.

PEBEC was motivated by Nigeria's poor performance in the World Bank's Ease of Doing Business ranking, which ranked Nigeria 169 out of 190 countries. Though the World Bank has since discontinued this index, higher rankings, i.e., a low numerical value on this index, implied that a country had a better, more straightforward, and more favourable way to do business in that country. As a result, it had a very strong potential to shape investor perceptions about a country. The Nigerian government was, therefore, motivated to improve its performance on this index, mainly because of the direct benefits it would have on entrepreneurs in the country.

According to the EBES Secretary, Dr. Jumoke Oduwole:

'When the administration came into office in 2015, what was met on ground was the private sector agitating for a friendlier business climate. The private sector always wants more and deserves to have more. I wouldn't say that nothing was happening before 2015, but there was

a lack of coordination. So, you might have one ministry working on a reform and another ministry or agency working on another reform. There was also a big trust deficit between the private sector and government, so we did some fact-finding, engaged with the private sector, and looked at international best practices, and the World Bank had this ease of doing business programme. It was immediately clear that the interventions to steer the nation to increased economic development needed to be driven at the highest political level. This led to the establishment of PEBEC in July of 2016. It is put at the presidential level because you need a high level for proper synergy. The Minister of Industry Trade and Investment is the Council's Vice Chair because there has to be a coordinating agency. Now, it has the Secretary to the Government of the Federation, Head of the Civil Service of the Federation, and several ministers on it. It is a convening power to pull together all the decision-makers and all the influencers to work hand in hand to deliver an enabling environment for the private sector because no ministry can deliver it alone; they need each other. The agencies and parastatals under the ministries need to coordinate their work overlaps' (Hassan, 2023).

The Presidential Enabling Business Environment Council (PEBEC) focused on priority areas, such as starting a business, obtaining construction permits, getting electricity, registering property, getting credit, paying taxes, trading across borders, and entry and exit of people. Therefore, the task of the Secretariat was to work with the relevant Ministries, Departments and Agencies (MDAs) responsible for these priority areas to address the challenges faced by businesses operating in those domains. According to the Secretary, the first thing they did was obtain an executive order from the presidency that addressed the issues of transparency and efficiency in the public sector. This executive order mandated all public agencies to have a website listing the requirements for all their services and the required timelines.

They also prioritised agencies that worked directly with entrepreneurs, such as Customs, Immigration, the Corporate Affairs Commission (CAC), the National Agency for Food and Drug Administration and Control (NAFDAC), and the Standards Organisation of Nigeria (SON). Engagements with this agency were done using interviews, focus group sessions, etc. As this was a federal-level initiative, there was a need for these reforms to be domiciled at the state level as well, so a partnership was entered with the National Economic Council (NEC), which comprises Governors of Nigeria's 36 states and meets monthly to deliberate on economic issues and coordinate with the federal government on economic planning. There were also efforts to engage entrepreneurs to understand their challenges in running a business

in Nigeria. Town hall events and focus group interviews were organised with entrepreneurs to identify specific challenges and engage them in developing a solution, according to a PEBEC officer:

'We organise stakeholder forums with the entrepreneurs and hear directly from them. Town halls, focus group discussions and surveys are organised to engage entrepreneurs. After the reforms are implemented, we go to the private sector and ask them how things are. How have things been? Are things better? Are you able to resolve this faster? Is it cost-effective? Many of these business owners know us, and they can contact team members directly to highlight their issues, and we try to solve them'⁹⁶.

To engage entrepreneurs at the state level, PEBEC organised events known as LITATIONS (Listen, Implement and Track), which are town halls where entrepreneurs can interact with government officers in that state. An example of what happens at these LITATION is discussed below;

'At these LITATIONS, entrepreneurs come, we have panel sessions, inviting entrepreneurs to discuss their business experience, and we host the fireside sections, where the state governors are put on the spot, and entrepreneurs can directly ask questions. In Jigawa state, we had a northwest forum where someone asked about the automobile industry. The governor set up a committee on the spot and added the person that asked the question to the committee, and we followed up on them'⁹⁷.

PEBEC also conducted mystery shopping exercises to monitor the activities of the MDAs. PEBEC officers would visit these MDAs incognito and ask them questions about the processes to see whether the reforms worked. They also developed an app, a platform for entrepreneurs to submit complaints or feedback about their experience with an MDA, afterwards PEBEC would intervene and address the issues. The PEBEC's efforts were deemed largely successful, as Nigeria jumped 39 places in the World Bank's Ease of Doing Business Index between 2017 and 2020. The team implemented over 150 business climate reforms across all levels of government. Some of these reforms include:

- A reduction of the time for filing corporate income taxes from 14 days to 72 hours

⁹⁶ FG 4.

⁹⁷ FG 4.

- A 60 per cent reduction in the time to register property.
- A 24-hour automated company registration portal
- Company registration no longer requires lawyers: Made it optional for SMEs to hire lawyers to prepare registration documents.
- Online searches on the National Collateral Registry: Interested parties can conduct online searches of secured interests on movable assets on the National Collateral Registry.

This initiative greatly benefited from having significant political backing, as it was a top priority for the current administration. The Vice President led the Council, while Dr. Okey Enelamah, the Minister of Trade, Industry, and Investment, served as the Vice Chair. Dr. Enelamah was enthusiastic about these reforms, recognising their importance in supporting small and medium-sized businesses and enhancing the country's overall investment appeal.

According to him:

'When I served in government..... one of the most critical policy initiatives I was particularly interested in is the ease of doing business and enabling environment. What I tried to persuade my colleagues in government and the president, who was the head of the government, is that this is the closest you're going to get to a silver bullet – that if you create the right enabling environment, it will create employment, it will help infrastructure, it will attract investments, and that the key is for government to position itself as being there to help others succeed. Because if you look at the things we are trying to do, nobody can play that role better than the government – to just help people, whether they're looking for regulatory approvals, or they're trying to create the right enabling environment for those that want to invest so that they feel their investment will be safe. Even government spending could be more catalytic, more enabling, versus where it's going for its return. It could almost act as leverage to carry other investments' ((HBS, 2021).

These high levels of support meant that whenever a given MDA was proving difficult, the Secretary could escalate issues to the Minister or Vice President, who could use their powers to intervene and ensure a speedy resolution. The constant engagement with entrepreneurs and other private sector actors through town hall events and other informal platforms enabled

PEBEC to prioritise reforms based on their urgency, highlighting the need for these institutionalised methods of state-ecosystem interactions.

7.3.3. The Ecosystem-led approach

- **The Nigerian Start-up Act**

This approach refers to policies motivated by a coalition of ecosystem actors entailing a more robust collaboration and articulation of vision by these actors to influence government policy in one or more areas of the ecosystem. This bottom-up intervention was evident in the recently passed Nigerian Start-up Act. In 2021, to address the absence of a legislative framework governing start-up entrepreneurship in Nigeria, a group of ecosystem actors collaborated to design a bill containing provisions on how the government can support the growth of the EE.

According to one of the architects of the bill;

‘So, the historical background is that some actors within the ecosystem came together and said that what we need is legislation that probably would help to attract and protect investments, help with, you know, creating regulatory certainty around technology start-ups, to be able to improve the ease of doing business for technology start-ups. And, you know, things that just concerned the overall macro environment for start-ups. So, it became like a collaboration between private sector practitioners, that is, start-up founders, start-up investors, those within the ecosystem, and the government and the presidency, to come together to now create a bill that can help us to harness the digital economy. So, this conversation started, and it was a case of, you know, this is going to be an executive bill. But what are those things? So, the government was like, you know, you guys, why don't we work together, share common knowledge, share insights on what can inform this bill, what can be the prospective ideas or contents of this bill? So, we came together and we started putting things together’⁹⁸.

This began a process of continuous engagement between these ecosystem actors and the presidency, leading to the formation of the Presidential Advisory Strategic Group members. Members of this group were quite representative of critical domains of the ecosystem. They included members who had either founded start-ups, led them, invested in them, advocated for

⁹⁸ FG 2.

them, or incubated them. These members and the ecosystem domains they represented are shown in the table 7 below.

Figure 30: The Presidential Advisory Strategic Group for the Nigerian Startup Bill

Name	Organisation	Ecosystem domain
Adaeze Sokan	Country Director, UK-Nigeria Tech Hub	Policy/DFI
Adia Sowho	CMO / MTN	Entrepreneur
Chinenye Mba-Uzoukwu	President Institute of Software Practitioners of Nigeria	Industry group
Emmanuel Adeboye	Managing Partner, Utopia, Lagos	Incubation Hub
Ife Adebayo	Special Adviser, Innovation to the Vice President, Federal Republic of Nigeria	Policy
Iyin Aboyeji	Founder / Future Africa	Venture Capital/ Serial Entrepreneur
Kasim Sodangi	Head of Compliance API	
Kola Aina	Founder Ventures platform	Venture Capital
Micheal Oluwagbemi	Founding Partner, LoftyInc Capital Management	Venture Capital
Mohammed I Jega	Funder Start-up Arewa	Incubation hub
Musa Ali Baba	CEO Teasy International	Firm (payments company)
Obi Asika	Founder Iba Ajje Hub	Incubation hub
Oswald Osaretin Giobadia	Senior Special Assistant, Digital Transformation to the President, Federal Republic of Nigeria.	Policy
Oge Modie	Senior Special Assistant, Strategic Communications to the President, Federal Republic of Nigeria.	Policy
Sanusi Ismaila	Funder Colab	Incubation hub
Titi Akinsanmi	Policy Lead, Google West Africa	Big tech
Tomiwa Aladekomo	CEO/Big Cabal Media	Media
Victoria Manya	Executive Director & Lead Researcher API	Academia
Victor Famubode	Project Manager Nigeria Startup Act	Policy
Yewande Adewusi	Group Executive Director, Commercial Tangerine Africa	Firm (insurance company)

This is a more diverse group and a marked improvement compared to the board of the iDEA hub discussed previously. However, this may be because the entrepreneurial ecosystem is at a more advanced stage now, so there are much more developed domains than in 2013 when the iDEA hub programme was launched. Thus, it can be argued that the power of the ecosystem to influence government policy in the entrepreneurial ecosystem is strongly associated with the

growth stage of the ecosystem. Beyond this core group, an extensive stakeholder engagement exercise was undertaken nationwide using interviews, town hall discussions and focus group discussions. This stakeholder engagement process was called the ‘Big tent approach’.

According to one of the architects of the Act;

‘The tent was open to all stakeholders, and that meant that we had to be as diverse as possible, ensuring that we can bring in, you know, thoughts, ideas, and inputs into the bill. So, we had this conversation with MDAs, we had that consultation, and it went well. Some things that we did not think of, you know, we got more understanding, and they shed more light on it, which was instrumental. After that, we did what we call focus group sessions, and after that, we recreated another second draft. And the second draft was when we started doing focus group sessions, you know, we divided those stakeholders into different stakeholder groups: early-stage start-ups, late-stage start-ups, early-stage investors, late-stage investors, VCs, private equity firms, and angel investors. So, we had different stakeholders; it was broad. So, we wanted to get a sense of missing things. We also opened the bill to them for people to make those input. Yes, it was really fun. It was stressful, but it was fun. So, we did that. And we also did what I will call regional town halls. The regional town halls were also very important; we did it across the six geopolitical zones. And that was where we started getting deeper insights into some of the Challenges that start-ups might be facing’⁹⁹.

This big tent approach is in sharp contrast to the top-down approach informing the iDEA hub; extensive discussions were held with representatives of each domain of the ecosystem to ensure their buy-in into all the provisions of the Act. After these extensive nationwide engagements, the Nigerian Start-up Act was signed into law on 19 October 2022 to provide a legal and institutional framework for developing start-ups in Nigeria. The provisions of the Act are ambitious and detailed in Table 8.

Figure 31: Provisions of the Nigeria Start-up Act

<p>A council for Digital and Innovation Entrepreneurship</p>	<p>Their mandate is to examine regulations of ministries, departments and agencies (MDAs) whose directives may affect the functioning of start-ups. The council has 14 members including 4 representatives of the start-up consultative forum¹⁰⁰ and the others representing relevant MDAs, some of whom are discussed earlier.</p>
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⁹⁹ FG 2.

¹⁰⁰ A forum comprising of industry stakeholders including start-ups, venture capitalists, angel investors, accelerators etc.

A Start-up support and engagement portal	A portal authorised by the council to allow start-ups to register with appropriate MDAs
Start-up labelling	Labelling start-ups which meet the definition of a start-up as above.
Start-up Investment seed fund	Managed by the Nigerian Sovereign Investment Authority (NSIA), it shall provide early-stage financing to these start-ups as well as funding to incubators and accelerators
Training, capacity building and development	Training programmes for start-ups; working with the National Universities Commission (NUC) to teach start-up education in tertiary institutions;
Accelerators and Incubators	Establish accelerator and incubation programmes to support start-ups.
Clusters, hubs, innovation parks and technology development zones Tax and fiscal incentives	Establishment of a framework to support the development of Clusters, hubs, innovation parks and technology development zones in every state of the federation. Start-ups shall be granted pioneer status incentives and receive the benefits accorded to such firms, also investors in start-ups shall be entitled to a tax credit of 30% of the investment they make in start-ups.

This is one of Nigeria's fastest bills to be signed into law, as the first draft was produced in June 2021 and signed into law about a year later. The passage of this bill was an outcome of a strong articulation of a vision by the coalition of entrepreneurs and support from the highest levels of the Presidency, which was able to instruct relevant MDAs (Ministries, Departments and Agencies) to lend their support to the project. According to one of the architects:

'So, the MDAs that we called on are MDAs that we must map, so we did a proper stakeholder mapping. So, for each section of the bill, which MDAs are relevant to this area? So, we did that scoping; it was a lot of work, and that was how we came up with those, you know, MDAs. Also, the presidency recommended the MDAs to work with based on their mandate. We worked in conjunction with them; that was how we got those MDAs, and the kind of input they made was relevant. You know, a lot of time, what we have is MDAs that work in silos, so what we're trying to achieve is to have MDAs understand that their mandates are overlapping, and they need to work with each other'¹⁰¹.

The law includes two provisions that enable the state and the ecosystem to interact in a structured manner. The first provision requires the creation of a "Startup Consultative Forum" which includes start-ups, venture capitalists, angel investors, incubators, accelerators, innovation hubs, and two relevant civil society groups. This forum shall guide decisions on

¹⁰¹ FG 3.

qualified start-ups, relevant incentives, local capabilities, representatives to the council, deliberations on a memorandum to be sent to the Council for consideration and other policy proposals that may be relevant to the Nigerian start-up ecosystem. The second provision is the establishment of a ‘National Council for Digital Innovation and Entrepreneurship’ or the Council, which will be the institutionalised platform to promote interactions between the state and the ecosystem. According to a Presidency staff:

‘Through the council, we create that idea of collaboration between entrepreneurs and government policymakers. Right, it creates a legal framework for that to happen. So, if you look at that bill, you will see that the council creates an environment where directives can be made. The ecosystem representative can present a problem to the president, directly engage him and discuss it with senior government members in the council. Collectively, they can decide on solving a problem, which is what the collaborative aspect of it is’¹⁰².

Members of the council shall include (i) The President, (ii) Vice President, (iii) Minister of Communications and Digital Economy (iv) the Minister of Finance, Budget and National Planning (v) the Minister of Industry, Trade and Investment (vi) the Governor of the Central Bank of Nigeria (CBN) (vii) four representatives of the Start-up consultative forum discussed above (viii) a member of the Nigeria Computer Society (ix) a member of the Computer Professional and (x) the Director General of the National Information Technology Development Agency. Some of the duties of the council include;

- Formulate and provide general policy guidelines for the realisation of the objectives of this Act.
- Give overall directions for harmonising laws and regulations that affect a start-up.
- Approve the programmes of the Secretariat established under this Act.
- Ensure the monitoring and evaluation of the regulatory framework to encourage the development of start-ups in Nigeria.
- Monitor and ensure the implementation of the policies and programmes of the Secretariat.

¹⁰² FG 3.

- Support digital technological development through grants to persons, research institutions, and universities pursuing postgraduate programmes in science, technology, and innovation.

Another example of this ecosystem-led approach was the Yaba fibreoptic project. At the nascent stages of the ecosystem's emergence in 2012, one of the key events that accelerated the growth of the ecosystem in the Yaba cluster was the installation of fibre-optic cables which greatly enhanced digital connectivity. In 2012, under the name 'project 1-HQ', the CC Hub founder (the first incubation hub in Yaba), Mr Bosun Tijani argued that the locational advantages of Yaba made it an ideal place to build an 'innovation city' however it lacked certain critical infrastructure.

Indeed, at that time, there were only about 6 active Start-ups in Yaba, due to this weak infrastructural situation. One area he felt that the government could play an important role was to support the installation of fibre-optic cables as the one provided by MainOne, its internet provider at the time, was slow and not sufficient for its connectivity needs. This also meant that other tech businesses in the neighbourhood were faced with similar challenges and could also benefit from stronger internet connections for their operations.

Therefore, to address this issue, he shared this concern with Key stakeholders at the time, including the ICT Minister, Omobola Johnson and Main One CEO, Funke Opeke and Technovision. Together, this group was able to convince the Lagos State Infrastructure Maintenance and Regulatory Agency to waive taxes and provide Mainone with the licences required to lay fibre-optic cables in the neighbourhood. As this would not involve any costs to the government, the agency agreed and therefore in 2013, a fibreoptic cable covering 27.014km in Yaba and neighbouring areas were installed. This collaboration between the private sector and the government would mark one of the first instances where the ecosystem leaders, led

efforts to invite the government to address problems within the ecosystem. The presence of this fibreoptic cable and improved connectivity became another pull factor to the region.

Mr Bosun Tijani is someone that would be defined as a ‘dealmaker’ in the ecosystem as he founded the first incubation hub in the Yaba cluster, which incubated some of the first set of successful businesses in the ecosystem. As a result of this, he had strong connections with some of the emerging entrepreneurs, private sector leaders and government officers. Because of this, he was strongly embedded in the daily life of the EE had access to tacit knowledge that policymakers were not privy to and could therefore, guide the government to intervene in addressing a problem that was pervasive and affecting the growth of businesses. By so doing, information asymmetries typically associated with government intervention were avoided.

7.4 Discussion – public policy implications of these approaches

This chapter was inspired by the observation that while the entrepreneurship ecosystem concept has enjoyed popularity, significant knowledge gaps exist in our understanding of the appropriate role of the state in the proper functioning of the ecosystem, especially in developing countries. To address this gap, we have based our analysis on extant literature on the role of the state and market as well as the state-business relations literature that argues for better collaboration between the public and private sectors. Using the entrepreneurial ecosystem in the Yaba cluster as the case study, we analysed some of the critical programmes implemented by both the state and federal governments to support entrepreneurship in the cluster.

7.4.1. Potential trade-offs associated with each of the approaches

- **The state-led approach**

The Idea Hub Programme was a state-led initiative to intervene in the state's entrepreneurial ecosystem. The programme was based on the idea that the ecosystem required crucial resources such as finance, infrastructure, and business acceleration support. To this end, an incubation hub and venture capital fund were developed. Despite its lofty ambitions, the programme only achieved limited success. This was due to the government's failure to engage with critical

members of the ecosystem and the absence of consistent political support across successive administrations.

While well-intentioned, the government lacked complete information about the actual needs of the cluster entrepreneurs and the capabilities required to run an incubation hub. The government's advisory council did not represent the cluster actors. As a result, many entrepreneurs felt that the government could have focused on other priority areas. Additionally, the programme was plagued by continuity problems as it did not enjoy the support of the successive administration.

This is consistent with arguments by Hospers et al (2009) that government officers often do not have a deep understanding of the dynamics of business life as they are far removed from those spheres of life. This is especially true regarding clusters, as significant information asymmetries between entrepreneurs and policymakers are likely to occur. Government officials are often not well placed to deal with the flows of tacit knowledge in clusters; as a result, they miss the know-what, know-how and experiences of the participants in the cluster they address (MacDonald, 1992). Feld (2012) strongly opposes government intervention in entrepreneurial ecosystems, advising communities not to depend on the government to lead these ecosystems.

The implication of this is that for this approach to work, there must be deliberate efforts to close the information gap between government officials and critical stakeholders to ensure that interventions are more effectively targeted. Practically, this will entail a shift from a strictly defined 'top-down' approach towards a helping hand model where platforms for collaborations are established. Additionally, government officers in charge of developing policies regarding the ecosystem need to be trained and equipped with the skills needed to develop these policies. It may be beneficial to recruit officials with prior experience working with entrepreneurs who have the necessary skills, information, and networks.

- **The helping-hand approach**

The Lagos Innovates Programme and PEBEC programmes are different examples of a helping-hand approaches. They showed how the state and ecosystem actors can collaborate to achieve mutually beneficial goals. The Lagos Innovates Programme addressed the ecosystem's challenges concerning working spaces and skills. Rather than the government becoming a provider of co-working and skills upgrading services, they identified service providers in the ecosystem. They became facilitators by making it easier for ecosystem members to access these services. Through their channels of engagement with the ecosystem, they understood that there were service providers that could provide these services more efficiently; therefore, they limited their role to enabling the process.

The PEBEC programme aimed to improve the business environment for entrepreneurs in the country. The programme worked with entrepreneurs to identify constraints and challenges faced while doing business due to government regulations and bureaucracy. Government agencies were the key actors that addressed these challenges. The ecosystem actors provided information on the key areas that needed state intervention through surveys, town halls, and focus group discussions. This ensured that the state's interventions were targeted and relevant. The collaborative approach distinguished these programmes from the state-led approach.

The effectiveness of this helping hand approach is consistent with findings by scholars that emphasise the need for public-private coordination to develop an entrepreneurial ecosystem. Isenberg (2010) argued that governments alone cannot develop the ecosystem and advocate for coordinating efforts between the public and private sectors, emphasising a significant share of the private sector for the ecosystem's success. Similarly, Autio and Levie (2017) argued that partnerships between the public and private sectors are essential due to the interconnected nature of entrepreneurial ecosystems. Candeias and Soumodip (2022) also argued that regardless of the government's role, it must coordinate its efforts with the private sector.

This approach has certain limitations. First, it could be potentially exclusionary, if the ecosystem is disproportionately represented by the stakeholders that have greater connections and influence creating a situation where they are able to set agendas that meet their specific needs without necessarily being representative of the entire system. Second, there must be sincere commitments by the government agencies involved in this process to ensure that they utilise the data provided by the surveys, focus group discussions etc. otherwise the approach may amount to nothing more than a window-dressing exercise, where the end goal is the creation of these collaboration platforms instead of an actual implementation of the recommendations from these platforms.

- **The ecosystem-led approach**

Finally, the Nigerian Start-up Act was an example of the ecosystem-led approach. A group of Nigerian entrepreneurs came together to address the lack of a legislative framework governing start-up entrepreneurship. They drafted a bill to address the gaps in funding, training, and business incubation for start-ups. The Presidency supported, and a Presidential Advisory Group was formed, comprising state and ecosystem representatives to lead the legislative process. The bill represented the ecosystem's needs and institutionalised platforms such as the Start-up Consultative Forum and the National Council for Digital Innovation and Entrepreneurship. These platforms will facilitate constant interactions between the state and the ecosystem, ensuring entrepreneurs are actively involved in implementing the act.

This approach may not be feasible in the early stages of ecosystem development when core domains of the ecosystem have not yet been developed and key ecosystem leaders have yet to emerge. Efforts to pilot this approach at such a nascent stage may create significant power imbalances in favour of the state, leading to a situation where the few stakeholders are unable to define an agenda that accurately reflects their needs. Additionally, when this approach is implemented when the ecosystem is relatively more mature, the ambitions of ecosystem

stakeholders tend to be lofty, such as the drafting of new legislation. Consequently, strong political commitment is needed, as the implementation of such grand ambitions typically requires a long-term horizon. Without such commitments by successive administrations, this approach may not be very successful.

7.4.2. The role of global linkages

The analysis in chapters 4 and 5 revealed the role that global linkages have played in closing some of the resource's gaps in the cluster, emphasising the importance of these 'weak ties' (Granovetter, 1973) for ecosystem development given the inherent limitations of local economies. In the Yaba cluster, this has been evident in the areas of (i) human capital, (ii) finance and (iii) supports. In terms of human capital, many of the founders in the cluster had their education and work experiences abroad, including in the United States and America.

These experiences provided them with exposure to best practices, enabled them to build their technical and managerial skills and aided the development of their professional networks, some of whom would become future collaborators. In terms of finance, entrepreneurs, including the founders of Jumia, Konga and Andela (discussed in Chapter 5), leveraged their professional networks to access venture capital financing from abroad, given the limited availability of local funding sources. Over time, as the cluster has proven its viability, there has been a significant increase in the volume of foreign venture capital funding¹⁰³. Tech multinationals such as Facebook and Google have also been active participants in the ecosystem by providing business acceleration services, incubator hubs, funding, and infrastructure investments in the cluster. Development finance institutions and ministries of foreign government have also adopted entrepreneurship as part of their foreign aid initiatives.

¹⁰³ Details of this is presented in section 6.3.3.

The role of global linkages in cluster development is consistent with findings by Owen-Smith and Powell (2002), Nonaka et al (2000) and Malecki (2000) that reveal the role that these linkages play in helping entrepreneurs access critical information, knowledge creation and innovation. However, while these linkages may be beneficial, they might pose some challenges for policymakers in terms of how to utilise them for economic development effectively. First, overdependence on these global sources of resources may increase the vulnerability of the cluster depending on what happens in the external economies. For instance, funding from venture capital funds for entrepreneurs in the cluster has recently witnessed a decline, mirroring the general global downturn in global venture capital financing. Additionally, leveraging these global linkages is often limited to a select group of people, such as those who schooled or worked abroad. Also, while the absorptive capacity of the entrepreneurs and their start-ups may be critical for utilising the knowledge sourced from these global pipelines, the quality of the institutional and policy environment, such as the rule of law, contract enforcement, etc., may limit the impact of this knowledge.

Considering this, approaches such as the ecosystem-led approach are essential in helping policymakers to diagnose and identify critical bottlenecks in the ecosystem that may undermine the effective utilisation of resources obtained through these global linkages. The Nigerian start-up act, for example, contains provisions that provide guidelines on financing, training and capacity development and the development of incubators, accelerators, clusters, hubs etc. Effective implementation of this act will, therefore, provide potential investors and entrepreneurs with a clear legislative framework on how these activities can be carried out. Moreover, the potential vulnerabilities that may arise from a dependence of these global linkages point to a need to strengthen local institutions, i.e., provision of incentives to local banks and non-bank financial institutions such as venture capital funds to increase lending to start-ups. Also, to the extent that not all entrepreneurs will have foreign education and work

experience, state support for innovation fairs, conferences, exhibitions etc, that attract foreign investors and entrepreneurs will go a long way in providing these entrepreneurs with exposure to strategic networks that can help them in their venture-building process.

7.4.3. Implications for skills development

Chapter five and six analysed the roles of SEZs and clusters in developing manufacturing and entrepreneurial skills respectively. These analyses provided some insight into the conditions that may ensure that these hubs are as supportive as possible to the development of these skills. Regarding the cluster, the challenge for policymakers is how to support the skills upgrading efforts in the cluster to meet the labour needs of a fast-growing cluster. The helping hand approach illustrated through the LSETF Lagos Innovates Programme is a promising model that can be scaled nationwide. This model recognises that while the government may not necessarily have the skills and information needed to run a hub or a skills training institute, they can partner with private sector actors who have the capabilities to do these more effectively. In this case, the government's role would be to address barriers to the potential supply and demand of these skills training facilities.

In the LSETF case, some of the barriers to the supply of more hubs for instance, was accessing loans needed to build these facilities. The state intervened by providing the hub developers with competitively priced and flexible loan arrangements instead of attempting to build these hubs by themselves. On the demand side, students or young professionals who wanted to use these hubs benefitted from the workspace voucher programme, while those who wanted to learn new skills benefitted from the partial bursary the state had provided to them. The lesson for policymakers keen on using these clusters to develop entrepreneurial or technical skills is to recognise the limitations of government interventions while embracing opportunities to collaborate with the private sectors to address factors undermining skills development.

Concerning the SEZ, challenges may arise from the reliance on FDI as a source of knowledge transfer. The experience of workers in the SEZ revealed how language and cultural barriers undermined interpersonal relationships between workers and impacted the knowledge transfer mechanisms. This implies the need for deliberate measures by multinational companies to address these issues. Indeed, some of them attempted to do so by hiring translators. However, these translators were often very few and could not participate in all conversations on the traffic floor.

MNCs, therefore, need to engage more translators whilst also providing incentives to attract home country managers with more bilingual skills to improve their relationship with local workers. Policymakers can enable this process by providing MNCs with incentives while addressing real issues discouraging more highly skilled bilingual foreign staff from working in the zone. This includes security issues such as kidnapping, as there have been incidences of Chinese workers being kidnapped in Nigeria and this has undermined the country's reputation amongst these workers.

While SEZs can play an important role in skills development via knowledge transfer, the effectiveness depends on the absorptive capacity of workers, i.e., education and prior experience. From the discussions, it was clear that education did not equip workers with the skills needed to work in factories and for many of them, it was their first time working in these factories. This indicates a need for broader investments in vocational education facilities across the countries where young people can learn practical skills that make them more employable in these factories. One way to do this may be to provide fiscal incentives to these SEZ firms that encourage them to invest in the building of these factories; indeed, this may be preferable as companies are more likely to be aware of in-demand skills than policymakers.

Additionally, it is important for policymakers to clearly define the type of skills that are being targeted as part of the SEZ programme to be able to determine the extent to which the SEZs are meeting to these expectations. Currently, there are some concerns among government officers that the SEZs are failing to equip locals with high-level and sophisticated skills, but the reality is that there are no policy documents that articulate the skills objectives of the SEZ programme and how they should be attained. This needs to be prioritised and appropriate policy instruments and incentives need to be developed to encourage SEZ firms to prioritise investment in high-quality skills upgrading.

7.5 Conclusion

The chapter analysed the state's role in developing the entrepreneurial ecosystem in the Yaba cluster, thus contributing to the broader debate on the state's role in ecosystems. The chapter proposed three approaches to analysing the state's intervention in the ecosystem: the state-led approach, the helping-hand approach, and the ecosystem-led approach. It was argued that these approaches differ regarding entrepreneurs' organisational level and interaction platforms between entrepreneurs and state agencies.

It argued that the state-led approach, exemplified by the IDEA Hub programme, achieved limited success due to insufficient engagement with entrepreneurs and a lack of consistent political commitment. On the other hand, the Lagos Innovates and PEBEC programmes, which represent the helping-hand approach, and the Nigerian Start-up Act, which represents the ecosystem-led approach, had relatively more successful outcomes. This can be attributed to platforms facilitating robust engagement between the state and entrepreneurs, ensuring that the programmes effectively addressed the ecosystem's challenges. The final section analysed the public policy implications of the proposed approaches in terms of potential trade-offs, the role of global linkages of implications for skills development.

8. Conclusion

This thesis examined the use of industrial hubs in Nigeria and the role they can play in the development of critical manufacturing and entrepreneurial capabilities required for economic development. This study scrutinised how these industrial hubs, including SEZs and clusters, have developed in Nigeria, revealing how they differ from the ideal-type conceptualisations and what this may tell us about the nature of these hubs in developing countries. The thesis leveraged existing literature, interview data, and non-participant observation data to analyse the micro-level dynamics within these hubs, using the Lekki Free Trade Zone and the Yaba cluster as case studies.

The Lekki Free Trade Zone was established in 2006 as part of the inaugural six Economic and Trade Zones (ECTZs) the Chinese government committed to developing in Nigeria. When it was established, the expectation was that by attracting Chinese FDI, local firms and workers would be exposed to learning and knowledge transfer opportunities to enhance their capabilities. This thesis sought to understand the extent to which this SEZ has supported the development of critical manufacturing capabilities and the implication this has for the viability of SEZs as an industrial development tool in Nigeria.

The SEZ was contrasted with the Yaba cluster, considered one of Africa's most vibrant tech clusters. It has given rise to a thriving entrepreneurial ecosystem and is the focal point of Nigeria's tech industry. The cluster has the most significant number of tech start-ups, co-working spaces, incubation hubs, and other critical actors in the country. However, there are knowledge gaps in our understanding of how the critical domains of this ecosystem were developed, given the existence of significant resource gaps. Therefore, this thesis aimed to understand the role of entrepreneurs and other non-actors in building critical entrepreneurship

institutions. It also analysed different types of state intervention in the ecosystem, their outcomes, and their overall implications for state-ecosystem relationships.

This concluding chapter summarises the study's findings and offers reflections on their implications for our understanding of industrial hubs. Section 8.1 summarises the findings in terms of the implications for learning and skills development and the role of the state. 8.3 discusses the implications for policymakers in Nigeria, while 8.4 presents areas for future research.

8.1 Summary of findings

8.1.1. Learning and skills development in the hubs

The study found that the SEZ firms did not have formal training programmes for their workers.

The primary training method for local workers, mostly factory-floor workers, was through on-the-job training, where they were exposed to simple assembly tasks. This is mostly because of the size and scale of these firms, as they were mostly small firms with limited international experience and robust human resources management systems, making them less likely to prioritise investments in worker training. Despite the limited scope of training, the exposure to factory work has taught many first-time workers the rudiments of industrial discipline, including better attitudes towards work and time management.

The ability of SEZ firms to train their workers was not just dependent on the firm's characteristics but also on the workers' absorptive capacity. Despite having secondary education, many workers lacked the necessary skills to work in the factory, hindering their ability to learn quickly. Furthermore, language and cultural barriers made it difficult for them to interact face-to-face, communicate effectively and build positive interpersonal relationships. These barriers often led to arguments, disputes, and workplace tensions, undermining the transfer of tacit knowledge, which relies heavily on observation, demonstration, and imitation.

Ultimately, language and cultural barriers negatively impacted learning and knowledge exchange in SEZ firms.

Additionally, the study found that SEZ firms significantly employed local workers for factory floor roles, but few local employees were in managerial positions; this limited their knowledge spillover channels through labour mobility. Although firms located in SEZ paid higher wages than the national minimum wage, they paid lower wages than other multinational corporations, which resulted in high staff turnover rates. More so, they relied heavily on casual staff, which meant they were not obligated to provide health insurance, paid leave, and other typical staff benefits. This had negative implications for worker motivation and affected the learning environment. Furthermore, there were significant concerns with the working conditions in the firms as not all of them upheld the required health and safety standards, consequently putting the well-being of their employees at risk. Although measures were implemented to address these issues, workers felt the dispute resolution process was biased towards the employers as the zone management was careful not to offend them.

Concerning the tech cluster, the main argument was that entrepreneurs and non-state actors respond to these resource gaps by building relevant institutions and organisations required for learning and capacity development. These institutions were observed in human capital development, entrepreneurship support organisations, and finance. In terms of human capital development, existing literature highlights the pre-eminent role of universities in these ecosystems as institutions for the development of skilled labour, research, and development. In the Yaba cluster, however, discussions with software programmers revealed that universities have struggled to perform these roles due to outdated curricula and a lack of collaboration with the industry. The analysis also showed how entrepreneurs, large companies and big tech companies have built institutions to make up for the shortcomings of universities.

Entrepreneurs in this cluster have established training institutes that offer short courses in high-demand fields required by companies. Larger and more established companies have played a crucial role in providing software programmers, entrepreneurs, and other relevant knowledge professionals with the on-the-job experience necessary for developing tacit knowledge. This experience has improved their technical abilities and equipped them with interpersonal and management skills. Lastly, the software developer communities initially pioneered by big tech companies like Google and Facebook have created communities of practice where software developers can interact, exchange ideas, and improve their skills. Given the critical role played by software programmers in tech clusters, these initiatives have helped to improve the supply of skilled labour in the cluster, thereby strengthening its skill base.

The analysis also revealed that entrepreneurship support organisations, such as co-working spaces and incubation hubs, have played a vital role in supporting entrepreneurs in various areas, such as infrastructure, funding, mentorship, training, and networks. These co-working spaces have provided infrastructure for entrepreneurs that helped them overcome the high real estate costs and reduce overhead costs associated with property maintenance. They have also trained entrepreneurs with critical business management skills to operate more efficiently and productively, accelerating their business growth. Finally, they offered entrepreneurs access to critical networks, including potential investors, that they might have struggled to access independently.

8.1.2. The role of the state in learning and capacity building in hubs

The SEZ analysis revealed that the policies and incentives of the SEZ program have not encouraged the development of linkages with domestic firms and the ability of SEZs to support learning in firms. One of the key issues identified is the lack of a clear definition of the specific skills required for the SEZs in the policy governing zone operations, despite policymakers considering worker training in SEZs to be necessary. As a result, the expectation of knowledge

transfer does not effectively encourage SEZ firms to invest in skills development. Despite attempts by NEPZA to encourage local technical worker training, poor monitoring and implementation have hindered progress.

Secondly, it was observed that the weakest mechanism of knowledge exchange in the SEZ was through vertical linkages. Only firms that relied on raw materials like Kaolin or fuel that Nigeria has in abundance used local suppliers or subcontractors. Due to the absence of these vertical linkages, there were limited opportunities for knowledge to spill over through this channel. Most of the firms in the SEZ adopted an assembly-type manufacturing approach. Their global sourcing and production strategies meant that all the inputs required for production were imported to the zone from China for assembly. These poor linkages are arguably an unintended outcome of Nigeria's SEZ incentive package and policy. SEZ firms have been provided with import waivers that make importing production inputs relatively cheaper than finished products.

Furthermore, there has been a lack of investment in the capabilities of local suppliers and in the development of relevant value chains. This is compounded by the fact that some firms within the SEZs are not aware of potential local suppliers due to information asymmetry, and NEPZA has not been proactive in addressing this issue. Moreover, the physical distance between foreign and local firms who do not have a presence within the zone has hindered their ability to have repeated interactions, which are vital for tacit knowledge exchange and learning.

With respect to the tech cluster, this study reviewed different programmes that have been implemented to support the development of capabilities and proposed three approaches to think about them; (i) the state-led, (ii) helping-hand and (iii) ecosystem-led approaches. The Idea Hub Programme was a state-led initiative to intervene in the state's entrepreneurial ecosystem. However, the programme had limited success as the government lacked critical information

about the actual needs of cluster entrepreneurs and the capabilities required to run an incubation hub. Moreover, the programme faced continuity problems due to the lack of support from successive administrations. By contrast, the helping-hand and ecosystem-led approaches had more successful outcomes, given the platforms that encouraged robust engagements between the state and entrepreneurs, ensuring that these programmes effectively addressed the ecosystem's problems.

The PEBEC and Lagos Innovate Programmes illustrated the helping hand approach. It showed how the state and ecosystem actors can collaborate to achieve mutually beneficial goals. The Lagos Innovates Programme addressed the ecosystem's challenges concerning working spaces and skills. Rather than the government becoming a provider of co-working and skills upgrading services, they identified service providers in the ecosystem and became facilitators by providing co-working spaces with competitive loans and providing student loans and workspace vouchers to entrepreneurs and other actors in the cluster. The PEBEC programme aimed to improve the business environment for entrepreneurs in the country by providing platforms to gather information from entrepreneurs and work with relevant government agencies to address them. The collaborative approach employed in these two programmes distinguished them from the state-led approach and significantly contributed to their relatively better outcomes.

The Nigerian Start-up Act was an example of the ecosystem-led approach. A group of Nigerian entrepreneurs and critical ecosystem actors came together to address the lack of a legislative framework governing start-up entrepreneurship. Through extensive engagement platforms, including town hall meetings, and focus group discussions, amongst others, they built consensus and articulated a strategy for the development of the start-up ecosystem. The organisation of the ecosystem actors, in part achieved by a more mature ecosystem, ensured that the ecosystem actors clearly articulated their demands and co-created the legislation with

government actors, leading to a bill broadly representative of the ecosystem's needs. This approach was advantageous as it was led by entrepreneurs and other ecosystem actors who had a deep understanding of the ecosystem, were deeply embedded in its daily operations, and could, therefore, organise and accurately articulate the priorities of the ecosystem. It did not suffer from the information asymmetries and capability constraints that undermined the state-led approach.

8.2 Implications for policymakers on the use of industrial hubs for Nigeria's economic development

This thesis analysed a Special Economic Zone (SEZ) and a cluster to understand how these industrial hubs could be utilised for developing critical manufacturing and entrepreneurship capabilities. Although the outcomes of these hubs have been mixed, the analysis shed light on the micro-level dynamics that occur within them and the factors and conditions that contribute to these outcomes. The study also examined the state's role and how government policies and incentives can influence the effectiveness of these hubs. The implications of these findings for Nigeria's industrialisation strategy using industrial hubs are discussed in this section.

The first implication is that while the state is vital in developing industrial hubs, the nature of such interventions will depend on the hub type. For instance, SEZs are, by design, constructed hubs by state or private actors, while clusters tend to emerge more spontaneously. However, SEZs operate within a given incentive, policy, and political environment, and these are avenues through which the government can influence the outcomes of SEZs. In Nigeria's case, apparent government failures revealed that implementing a successful SEZ programme goes beyond the provision of industrial spaces and fiscal incentives as other critical factors matter, including (i) the nature of FDI, (ii) Skills base, (iii) infrastructure and (iv) value chain development.

If Special Economic Zones (SEZs) are to be used to attract FDI that can support the development of critical capabilities, then it's essential to have an investment attraction strategy

that ensures that FDI inflows into SEZs align with the government's priorities. This means offering incentives to attract the right kind of FDI, such as companies that are part of Global Production Networks (GPNs) and may consider including their Nigerian operations in their value chains. Attracting companies that prioritise worker development and training is also essential. This can be achieved by providing tax rebates for investing in rigorous worker training, building vocational training facilities, or investing in the education of the host community(s).

It's not enough to offer incentives to attract foreign direct investment (FDI) or develop special economic zones (SEZs). The government must prioritise investment in education, especially vocational education, to ensure the workforce has the necessary skills required in factories. Studies have shown that a country's stock of human capital, including education and skills levels, is essential in determining the type of FDI a country can attract. High-technology firms and companies deeply integrated into global production networks require complex and sophisticated skills and are, therefore, more likely to invest in countries where such skills are already available. Also, given that actors in the SEZ programme believe that Nigerians can occupy managerial and technical positions in Chinese firms, they need to be more proactive in ensuring a greater representation of local workers in these positions. Reconsidering the no expatriate quota or 100% foreign-owned incentive may be an essential starting point as these may force foreign firms to consider local hires in more technical and managerial roles.

Moreover, for SEZs to deliver dynamic benefits, they need deeper linkages with the domestic economy. Value chain development is crucial for SEZs to support the growth of manufacturing capabilities. This study discovered limited connections with local suppliers, which hindered knowledge sharing through the supply chain. To address this problem, NEPZA should take a more active approach to linking firms with domestic suppliers and subcontractors; this may involve providing them with a list of local suppliers who can supply the required raw materials

or inputs. These initiatives can significantly increase the volume and value of locally sourced inputs and deepen interactions between local suppliers and foreign firms. In cases where concerns arise about the quality of these inputs, fiscal incentives may be provided to companies that offer technical assistance to suppliers, such as finance, training, and raw materials, to help them improve their capabilities. Improving the transport facilities that link the zone to markets will also improve linkages significantly.

More so, investments in critical infrastructure, such as roads and port facilities, that undermine connectivity between the zone and the rest of the economy need to be prioritised. Poor quality infrastructure increases business costs in the country and reduces its appeal as a potential destination for FDI. Also, since providing one-stop services is one of the stated goals of the SEZ programme, more significant efforts should be made to improve the collaboration and cooperation between NEPZA and the Customs authority to reduce the bottlenecks firms face in clearing their goods at the ports.

The inability of FDI in SEZs to support the development of manufacturing capabilities and deliver other positive outcomes for the Nigerian economy are not entirely surprising. They are consistent with extant studies on the performance of FDI in Nigeria, some of which were discussed in section 4.2. These studies equally show how the performance of FDI in manufacturing has been constrained by limited investment in skills and infrastructure alongside other key factors. This underscores the need for a more holistic SEZ strategy that not only focuses on providing incentives to attract FDI but also makes critical investments that ensure that FDI can engender knowledge spillovers and develop critical linkages with the domestic economy.

To improve the public perceptions of Chinese SEZs and Chinese firms in the country in general. Zone authorities and Chinese SEZ firms must improve investments in worker health,

safety, and general welfare. This should involve better training of Chinese Managers and supervisors to improve their understanding of worker welfare and how to overcome potential cultural barriers that often cause disputes on the factory floor. Additionally, more robust, and fairer dispute resolution mechanisms should be considered while fines may be instituted for the failure of management to protect workers in the workplace.

Regarding technology clusters, different types of state interventions in the ecosystem were analysed. The results showed that the least effective approach was the state-led approach, where the government attempted to implement a set of programs, including a hub and venture capital fund, with minimal engagement and collaboration with entrepreneurs. In contrast, the helping-hand and ecosystem-led approaches, which involved robust collaborations between ecosystem actors and the state, had more successful outcomes. The analysis of the Lagos Innovates and PEBEC programs showed that government interventions were most effective where entrepreneurs and policymakers played distinct yet complementary roles. With the Lagos Innovates program, the state facilitated access to co-working spaces and skills development programs instead of attempting to provide these services directly, as the Idea Hub program did. The PEBEC program, on the other hand, collected relevant information on business bottlenecks from entrepreneurs and worked with relevant state agencies to address them.

The results are unsurprising as entrepreneurs who are part of local clusters have better access to information and are more capable of addressing market problems than policymakers. Hence, the government should avoid undertaking tasks that are better left to entrepreneurs or other private actors. Instead, they should focus on increasing access to private-sector initiatives. For example, the government can provide vouchers to residents to access co-working spaces or student loans to residents who want to upgrade their skills at training institutes. This approach ensures that the services are provided by those better equipped to handle them and avoids

political uncertainties associated with government changes that may undermine the implementation of government-led initiatives. These suggestions are essential, considering Nigeria's current industrial hubs strategy which includes the development of incubator hubs to support start-up entrepreneurship. Exploring partnerships with the private sector to develop these hubs might be a more prudent approach.

Direct interventions by the government in tech clusters can be more effective for providing public goods such as education. The government should urgently address the inability of universities to equip graduates with relevant, in-demand skills, considering the high levels of unemployment in the country. Efforts should be made to revise university curricula and encourage university-industry linkages to ensure graduates have the necessary skills. Investments in digital infrastructure is also crucial since there are many ways to acquire tech skills outside of universities. Platforms such as YouTube, Udemy, Coursera, and many of the institutes discussed in Chapter 6 offer virtual courses. Therefore, initiatives, including partnerships with big tech companies, to reduce the cost of smartphones and data plans, especially in areas outside of tier-1 cities in the country, will significantly increase access to online learning platforms.

Additionally, the implementation of the Nigerian Start-up Act needs to be prioritised by the current policymakers. As discussed in section 4.3, a significant constraint to entrepreneurship development in Nigeria is that the government has historically treated all small business owners as entrepreneurs. The implication of this failure to distinguish entrepreneurial from nonentrepreneurial firms is that the latter group does not have any specific strategies and policies tailored to their needs. The Nigerian Start-up Act, developed by entrepreneurs and actors in the tech start-up ecosystem, focuses strictly on entrepreneurial firms and its provisions

are tailored to the needs of this group. By focusing on entrepreneurial firms, Nigeria's production of knowledge-based and tradeable high-value services can be increased, allowing the country to play an increased role in the global services value chain. This will be especially important for value chain upgrading in Nigeria as many service sector activities are typically in personal and retail services, which are non-tradeable, technologically stagnant and dominated by small informal enterprises.

Furthermore, given the role played by big tech companies in building communities of practice and supporting the development of entrepreneurial capabilities, targeted efforts should be made to attract these companies into Nigeria and make it easy to establish their operations. These companies' impact is driven by their direct investments in the ecosystem and the opportunity for Nigerians to gain valuable work experience and build skills that can be transmitted through labour mobility. Also, given the increasingly important focus placed by development finance institutions and international aid agencies such as UNDP, GIZ, etc. on entrepreneurship in Nigeria. It may be helpful to have a strategy to coordinate their activities to avoid duplication of efforts and ensure alignment between their programmes and the government's priorities.

Finally, regardless of the type of hub being developed, they must be embedded into national or state development plans to ensure they are a strategic government priority. This can be achieved through a rigorous assessment exercise that allows the government to identify the priority sectors it wants to develop using hubs and the implications of the current state of infrastructure, labour supply, supply chain and business environment in the country for such a strategy. Strong coordination between Ministries at the central government, state government and relevant implementation agencies will ensure the successful implementation of such strategies.

Policy consistency is essential for the success of any type of industrial hub. As shown in the Nigerian case, the SEZ's success was undermined by successive governments' failure to

provide the necessary public infrastructure connecting the zone to the local economy. Similarly, initiatives to support the development of entrepreneurial ecosystems have also been undermined by the inability of successive administrations to fulfil commitments made by predecessors. The lesson here is that new governments may not always recognise these hubs' potential for economic development and may, therefore, be unwilling to fully acknowledge commitments made by previous governments. Therefore, it's imperative for current policymakers championing the development of these hubs to think of ways to institutionalise them and ensure consistent long-term commitments.

8.3 Future research agenda

The study has conducted a comprehensive analysis of the significance of industrial hubs in Nigeria for accelerating the development of critical manufacturing and entrepreneurial capabilities. It has identified specific areas that require further investigation and research to enhance our comprehension of these issues. First, the role of donors and non-governmental organisations in supporting entrepreneurs through funding, training, and other services is crucial, especially in developing countries. These institutions significantly impact entrepreneurial ecosystems, highlighting the resource gaps that entrepreneurs face.

However, their role has not been adequately discussed in the literature on entrepreneurial ecosystems, limiting our understanding of how their resources can be effectively utilised. There is a need for further study on how developing countries can coordinate with donor agencies to ensure that entrepreneurship-focused aid and initiatives align with the government's existing efforts in the same area. This would prevent duplication of efforts and the wastage of resources.

The second issue is the role of government policy in developing hubs. Many developing countries offer generous fiscal incentives that have created a 'race to the bottom' situation favouring multinational corporations. There is a need for more practical evidence-based

research to guide incentive regimes that attract Foreign Direct Investment (FDI) without undermining the countries' industrial ambitions. More so, different policy approaches have been proposed in this study to guide government intervention in the entrepreneurial ecosystem, but additional research will be required to analyse their relevance based on the cluster's stage of development. This analysis could provide policymakers with practical tools to support clusters more effectively.

Furthermore, the study emphasised the importance of analysing the role of institutions in industrial hubs. Future research should focus on analysing the process of building institutions in different types of hubs and their impact on learning. It is important to explore ways to facilitate institutional learning at the level of SEZ regulatory authorities for instance, given the challenges faced by NEPZA, Nigeria's SEZ authority. Future scholarship should assess what institutional learning in different types of hubs may look like and the arrangements needed to facilitate it.

Finally, although the study of industrial hubs acknowledges the significance of external knowledge sources in learning and capability development, there has been limited discussion regarding the barriers in accessing these sources. For instance, while scholars of China-Africa relations have examined the impact of Chinese Special Economic Zones (SEZs) on learning across different dimensions, there is a need for more qualitative research on how language and cultural barriers have affected the development of interpersonal relationships required for learning to occur. This is crucial as it will direct attention to the issues that may undermine the replication of the Chinese SEZ model in Africa.

Primary Sources: Interviews

Affiliation/Institution	Interview	Place	Date
Ingressive Capital	Investor 1	Online	16 th June 2021
Endeavour	Investor 2	Online	25 th June 2021
Ventures Platform	Investor 3	Online	2 nd September 2022
Private	Investor 4	Online	10 th November 2022
LSETF	LASG 1	Online	18 th June 2021
LSETF	LASG 3	Online	25 th June 2021
Drugstore NG	Founder 1	Online	6 th July 2021
Davton Learn	Founder 2	Online	6 th July 2021
Easy Papers	Founder 3	Online	7 th July 2021; 23 rd August 2022
Serial entrepreneur	Founder 4	Online	30 th July 2021; 17 th May 2022
Eko Laundry	Founder 5	Online	28 th July 2021; 16 th March 2022
Riby	Founder 6	Online	20 th July 2021
Electronic Settlement	Founder 7	Online	16 th September 2021
Utiva	Founder 8	Online	11 th August 2022; 25 th August 2022
NITDA (National Information Technology Development Agency)	FG 1	Online	06 th July 2021
The NEST	Hub 1	Online	29 th June 2021; 11 th December 2022
Google Nigeria	Google 1	Online	7 th July 2021
Andela	Programmer 1	Online	25 th June 2021
Freelance	Programmer 2	Online	3 rd August 2022
Freelance	Programmer 3	Online	17 th September 2021
Freelance	Programmer 4	Online	17 th September 2021
Andela	Programmer 5	Online	30 th June 2021
Freelance	Programmer 6	Online	7 th March 2022

Freelance	Programmer 7	Online	3 rd March 2022
Freelance	Programmer 8	Online	03 March 2022
Freelance	Programmer 9	Online	3 rd July 2021
Freelance	Programmer 10	Online	5 th October 2021
Freelance	Programmer 11	Online	5 th October 2021
Freelance	Programmer 12	Online	5 th October 2021
Freelance	Programmer 13	Online	16 th March 2022
Office of the President	FG 2	Online	30 th August 2022
Office of the President	FG 3	Online	11 th November 2022
PEBEC	FG 4	Online	16/06/2021
LFTZ	Govt officer 1	Lagos	13 th August 2019
Nil	Govt officer 2	Abuja	14 th September 2019
OGFTZ	Govt officer 3	Ogun	15 th August 2019
Ministry of Industry, Trade and Investment	Govt Officer 4	Lagos	4 th September 2019
Office of the Vice President	Govt Officer 5	Abuja	11 th September 2019
Passion Incubator	Hub 2	Online	25 th August 2022
The NEST	Hub 3	Online	1 st March 2022
The Village Hub	Hub 4	Online	16 th March 2022
Fate Foundation	NGO 1	Online	2 nd September 2022
LFTZ	Zone Officer 1	Lagos	15 th July 2019
LFTZ	Zone officer 2	Lagos	15 th July 2019
LFTZ	Zone officer 3	Lagos	18 th July 2019
LFTZ	Zone officer 4	Lagos	18 th July 2019
LFTZ	Zone officer 5	Lagos	18 th July 2019
OGFTZ	Zone officer 6	Ogun	15 th August 2019
OGFTZ	Zone officer 7	Ogun	22 nd July 2019
Abuja Centenary City	Zone Officer 8	Abuja	12 th September 2019

Company 6	Worker 1	LFTZ, Lagos	13 th August 2019
Company 6	Worker 2	LFTZ, Lagos	13 th August 2019
Company 1	Worker 3	LFTZ, Lagos	24 th July 2019
Company 1	Worker 4	LFTZ, Lagos	24 th July 2019
Company 1	Worker 5	LFTZ, Lagos	31 st July 2019
Company 1	Worker 6	LFTZ, Lagos	16 th August 2919
Company 1	Worker 7	LFTZ, Lagos	16 th August 2019
Company 3	Worker 8	LFTZ, Lagos	20 th August 2019
Company 3	Worker 9	LFTZ, Lagos	20 th August 2019
Company 1	Worker 10	LFTZ, Lagos	23 rd August 2019
Company 6	Worker 11	LFTZ, Lagos	13 th August 2019
Company 3	Worker 12	LFTZ, Lagos	20 th August 2019
Company 7	Manager 1	LFTZ, Lagos	18 July 2019
Company 1	Manager 2	LFTZ, Lagos	23 rd August 2019
Company 4	Manager 3	LFTZ, Lagos	31 st July 2019
Company 4	Manager 4	LFTZ, Lagos	28 th August 2019
Company 2	Manager 5	LFTZ, Lagos	28 th August 2019
Company 6	Manager 6	LFTZ, Lagos	07 August 2019
Company 3	Manager 7	LFTZ, Lagos	20 th August 2019
Company 3	Manager 8	LFTZ, Lagos	20 August 2019
Company 5	Manager 9	LFTZ, Lagos	28 th August 2019
Company 6	Manager 10	LFTZ, Lagos	07 August 2019

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