

**TECHNOLOGY POLICY AND SUSTAINABLE START-UP ECOSYSTEMS: A
COMPARATIVE STUDY OF NIGERIA AND INDIA**

By

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Abstract

This study compares technology policies and sustainable start-up ecosystems in Nigeria and India. It examines legal frameworks, government initiatives, funding mechanisms, and implementation challenges in both countries. Nigeria relies mainly on the Nigeria Start-up Act 2022, the National Digital Economy Policy and Strategy, and the Companies and Allied Matters Act. India uses the Start-up India Action Plan 2016, the National Digital Communication Policy, and the Companies Act 2013, supported by a more mature and integrated system. The research uses a mixed-method approach: doctrinal legal analysis of 52 policy documents and a descriptive survey of 118 stakeholders from both countries. Findings show that India has a stronger, more sustainable ecosystem with better coordination, larger funding flows, and more supportive regulations. Nigeria faces major barriers including poor infrastructure, limited access to capital, bureaucratic delays, and low awareness of the Start-up Act. Stakeholders strongly support public-private partnerships, improved venture capital access, targeted policy reforms, and collaboration with research institutions to build a more sustainable ecosystem in Nigeria. Lessons from India highlight the value of long-term policy consistency, strong digital infrastructure, and effective funding structures. The study concludes that while Nigeria has

progressive laws, faster implementation, better coordination, and infrastructure improvements are essential for a thriving and sustainable start-up ecosystem. Recommendations focus on central coordination, state-level adoption of the Start-up Act, expanded funding vehicles, and stronger public-private collaboration.

Key words: *technology policy, start-up ecosystem, sustainable development, Nigeria Start-up Act, Start-up India*

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CHAPTER ONE

GENERAL INTRODUCTION

1.1 Background of the Study

A start-up refers to a company or legal entity in its early stages of operations, established by one or more persons with the aim of creating unique products or services (Adelodun and Daibu, 2023, p. 105). When a start-up is technology-focused, it is referred to as a Technology Start-up Company. The Nigeria Start-up Act, 2022 in its Section 13(2)(a) defines a start-up as a company in existence for not more than ten years, with its objectives being the creation, innovation, production, development, or adoption of a unique digital technology innovative product, service, or process. Furthermore, the Act stipulates in Sections 13(2)(b-e) that such a company must be registered as a limited liability company, have at least one-third local shareholding, possess a novel product or process, and not be a successor to an existing company in order to benefit from the incentives it provides.

The evolution of a sustainable and impactful ecosystem is closely linked to the development of technology start-up companies. In this context, incubators and accelerators are essential, providing critical early-stage funding, education, and mentorship, which facilitate the rapid growth of new firms. Without these support structures, growth can be significantly slower and may even discourage innovation. The Nigeria Start-up Act creates a crucial policy framework for this evolution.

Nigeria is one of the most established start-up ecosystems on the African continent. The country ranks 61st globally in ecosystem strength and notably holds the highest position in Africa (Start-upBlink, 2023). Fintech is the most populous sector, representing almost one-third of all tech firms in the nation. Agritech, edtech, e-commerce, healthtech, and logistics are other prominent industries (Start-upBlink, 2023). Nigerian start-ups are increasingly dominant across most economic sectors, partly due to their ambition in pursuing opportunities across borders. Recent cooperation between the technological industry and government entities has resulted in significant successes in raising the ecosystem's profile. Despite this progress, it is evident that to create a more sustainable and impactful ecosystem, it is important to compare and learn from other countries like India.

A tech ecosystem is defined as a network of varied and interdependent entities. These entities work together to promote sustainable innovation in products and services within the digital industry (Start-up Blink, 2023). A thriving and robust tech community is essential in any forward-thinking country, as technology continues to advance at an accelerated pace. A vibrant tech ecosystem encourages education and inspires individuals

to advance their skill sets. This guarantees that the ecosystem has access to skilled individuals who can address a range of issues resulting in the development of novel goods and services.

In Nigeria, the private sector powers and manages the entire ecosystem, which has expanded greatly over the past fifteen years. Nigeria has the strongest Start-up ecosystem in Africa, ranking 61st on a global scale (Disrupt Africa, 2023). Notwithstanding the progress, the Nigerian tech ecosystem encounters many of the same difficulties that other African ecosystems face, including inadequate power supplies that force companies to rely on generators and incur large operational costs in the process, restricted access to capital for new projects, insecurity in some areas of the nation, and a dearth of inexpensive broadband internet and basic amenities.

India has emerged as the world's second-largest start-up ecosystem, a status accelerated by proactive government initiatives like "Start-up India" and a vast, established IT talent base, next to the United States (Maradi, 2023, p. 181). India has a very sustainable and impactful ecosystem. As of December 2020, 470,000 jobs have been recorded by Start-up India, which has also identified 41,317 Start-ups (Start-up Blink, 2023). Furthermore, 590 districts had at least one Start-up, and 30 States and Union Territories had specific Start-up policies. The ecosystem of India has produced 54 unicorns thus far, which is the second-highest number in Asia behind China. India, sharing the distinction with China for having the second-highest number of cities in the global hierarchy, is ranked 19th in the Global Start-up Ecosystem Index 2022 (Start-up Blink, 2023), which starkly contrasts with Nigeria's leading African position at 61st globally.

India has been selected for comparison with Nigeria due to the significant similarities between the two systems, beyond their shared classification as Global South nations. This common developmental context is crucial for the study, as it frames the analysis within comparable socio-economic challenges and opportunities, making policy lessons more directly applicable. India's economy is significantly larger than Nigeria's. In 2022, India had a population of around 1.428 billion and a GDP of approximately \$3.417 trillion, compared to Nigeria's population of about 233 million and a GDP of \$472.6 billion (World Bank, 2024). Despite India's economy being about 7 to 8 times larger, both countries have relatively low GDP per capita, with India at roughly \$2,610 and Nigeria at \$2,140 (World Bank, 2024). India's more diversified economy, driven by IT, manufacturing, and agriculture, contrasts with Nigeria's oil-dependent economy, although both nations face challenges in improving their overall living standards.

Comparing start-ups in Nigeria and India offers a comprehensive view of their burgeoning ecosystems, significant market potentials, and distinct challenges. India, with a population exceeding 1.4 billion, stands as one of the world's largest markets for Start-ups (World Bank, 2024). The country's Start-up ecosystem, which is the third-largest globally, boasts around 70,000 registered Start-ups as of 2022 (Start-up Blink, 2023). The proactive measures taken by the Indian Government, such as the "Start-up India" initiative and the implementation of the Goods and Services Tax (GST), have created a favourable business environment (Start-up Blink, 2023). In 2021, Indian Start-ups secured over \$42 billion in funding, underscoring the strong investor confidence and the maturity of the investment landscape in India (The Economic Times, 2024).

In contrast with India, Nigeria, with its population of over 200 million, represents the largest market in Africa and is rapidly becoming a hub for Start-ups, especially in the Financial Technology sector (Adelodun and Daibu, 2023, p. 105). Despite being smaller than India's ecosystem, Nigeria's Start-up scene is vibrant and expanding. As of 2022, there were approximately 3,300 Start-ups in Nigeria (Punch, 2022). Lagos is a testament to the country's growing tech prowess, serving as the base for most Nigerian start-ups, including major success stories and unicorns like Flutterwave and Paystack. Nigerian start-ups attracted over \$2.9 billion in funding in 2023, demonstrating increasing investor interest (Templars, 2024).

Both countries have young, tech-savvy populations that fuel their start-up booms. However, this youth dividend manifests differently in terms of digital adoption. India's median age of 28.4 years supports a large, digitally literate workforce and a mature consumer base for tech products. In contrast, Nigeria's remarkably younger median age of 18.1 years (CNN, 2023; The Conversation, 2023) represents a massive, future-oriented market whose widespread digital adoption is still accelerating, driven by mobile-first internet access and presenting a unique long-term growth trajectory for tech companies. This youthful demographic is pivotal in driving digital adoption and creating demand for tech-based solutions. India's educational institutions produce a significant number of Science, Technology, Engineering, and Mathematics (STEM) graduates annually, contributing to a skilled workforce. Similarly, Nigeria is focusing on improving education and skill development through various government and private sector initiatives, which are crucial for sustaining the growth of its Start-up ecosystem (The Conversation, 2023).

Despite the promising growth, both countries face unique challenges. In India, start-ups often grapple with regulatory complexities, bureaucratic red tape, and infrastructure bottlenecks, which can hinder their growth (Babu and Sridevi, 2018). However, the government's efforts to improve the ease of doing business and provide tax incentives are gradually addressing these issues. In Nigeria, inconsistent power supply and higher internet costs are significant obstacles for start-ups (Disrupt Africa, 2023). Nonetheless, similar to India, the Nigerian government's efforts, such as the Start-up Act and ongoing improvements in technological infrastructure, are helping to mitigate these challenges, fostering a more conducive environment for start-ups (Disrupt Africa, 2023).

The entrepreneurial spirit in both Nigeria and India remains strong, driven by both necessity and opportunity. In India, the entrepreneurial culture is deeply rooted, with a history of family-run businesses and a growing acceptance of start-up culture (Babu and Sridevi, 2018). Nigerian entrepreneurs are equally motivated, partly driven by high unemployment rates and the need for innovative solutions to local problems (AU Start-Up, 2024). Both countries are seeing an increase in initiatives aimed at enhancing skill development, improving access to funding, and supporting early-stage start-ups. These efforts set the stage for continued growth and the potential for these emerging markets to become global start-up powerhouses.

Nigeria has a dedicated law for the effective running and advancement of start-ups: the Start-up Act, 2022. Its enactment triggered a significant shift in the business ecosystem and ignited widespread speculation about its potential to ensure growth within the start-up industry. However, policy experts posit that its true impact depends on adoption at the

state level and collaboration between federal and state stakeholders (NSA, 2023). Ultimately, the Act's core objective is to establish a framework that facilitates aspiring entrepreneurs' access to essential mentoring, financial support, and regulatory guidance (NSA, 2023).

In addition to the Start-up Act, Nigeria also has the Companies and Allied Matters Act, 2020, the National Digital Economy Policy and Strategy (2020-2030), the National Broadband Plan (2020-2025), Data Protection Regulations, and Tax Regulations. These instruments govern the start-up space jointly. For India, the governing framework includes the National Deep Tech Start-up Policy, 2023, the National Innovation and Start-up Policy, 2019, the National Digital Communication Policy (NDCP), 2018, the Start-up India Action Plan, 2016, the Companies Act, 2013, and the Micro, Small and Medium Enterprises Development Act, 2006. These frameworks shape the policy posture and overall ecosystem for start-ups in both countries.

By formulating the Start-up India Action Plan in 2016, the government established a policy framework for the development and expansion of the nation's start-ups, a move comparable in intent to Nigeria's Start-up Act. The 19-point agenda of the Start-up India Action Plan for the growth of IT start-ups has generated significant attention. The government introduced the "Made in India" program as a supplementary initiative to Start-up India to boost foreign investment and the local market (Start-up Blink, 2023). The expansion of domestic markets has created more opportunities for entrepreneurs.

Both Nigeria and India, as emerging economies, have expanding start-up ecosystems. A comparative analysis of the policies and activities established to support start-ups in both nations can yield important insights into best practices, lessons learned, and effective

policy approaches. Evaluating the efficacy of various policy initiatives, including financing schemes, regulatory changes, and skill development programs, can inform evidence-based policymaking. This comparison provides the foundation for this study, which seeks to analyze Nigerian tech policy and start-up ecosystems against India's to identify pathways toward a more sustainable and impactful ecosystem in Nigeria.

1.2 Statement of Problem

Nigeria has the greatest percentage of start-up failure among the top three tech ecosystems and investment destinations in Africa, with 61.07 percent of start-ups failing within nine years, according to a joint analysis by Weetracker and Green Tea Capital Africa Foundation (Businessday, 2024). In sharp contrast, since launching the Start-up India Initiative in 2016, the success rate of start-ups in India is relatively high, with about 84,000 start-ups succeeding between 2016 and 2022 (The Economic Times, 2023). This stark disparity highlights a significant research gap and underscores the core problem this study addresses.

Studies attribute major reasons for start-up failure in Nigeria to government policies, a lack of requisite skills, insufficient access to funding, and the high cost of registering businesses, among others (Start-upBlink, 2023). These issues have made Nigeria less attractive to investors for both foreign direct and portfolio investments. In contrast, India has managed to overcome similar challenges through the implementation of friendly policies, a favourable regulatory framework, and improved access to funding. The persistence of these problems in Nigeria's technology ecosystem makes it essential to derive lessons from India's experience through a comparative analysis.

Laws abound in Nigeria. One of them pertaining to the start-up ecosystem is the comprehensive Start-up Act, enacted in 2022 to address contemporary issues. However, a few years after its signing, it raises the question of to what extent the law has been operationalized. Notably, apart from its inauguration, little has been heard from the National Council for Digital Innovation and Entrepreneurship, which is meant to create policies and guidelines to achieve the Act's goals. This lack of activity stalls the Act's potential impact. Therefore, this research seeks to chart a sustainable pathway for the enforcement of the Start-up Act to address the factors responsible for start-up failures in Nigeria.

Notwithstanding the minimally commendable tech ecosystem in Nigeria, it continues to face significant challenges due to the country's unstable infrastructure (Odeyemi, 2023, p.4). These challenges call for policymakers in Nigeria to adopt a more holistic approach to create a Pan-African policy framework that can sustain growth, address observed gaps, and ensure more equitable sectoral development. Using a comparative approach, this thesis proposes solutions to current challenges within the Nigerian tech ecosystem by drawing lessons from India, which underscores the necessity of this comparative study.

1.3 Aim and Objectives of the Research

The specific objectives of the research are:

- i. To examine the legal frameworks and technology policy frameworks for sustainable start-up ecosystems in Nigeria and India, using India's globally recognized ecosystem as a benchmark;
- ii. To conduct a comparative assessment of tech start-up policies between Nigeria and India;

- iii. To identify the factors responsible for the weaknesses or limitations of start-up policies in Nigeria in achieving their desired objectives;
- iv. To appraise the prospects for the operationalization of the Start-up Act in Nigeria, drawing on policy documents, case studies, and stakeholder analysis;
- v. To recommend policy propositions, informed by international best practices and the comparative analysis, that can support a sustainable start-up ecosystem in Nigeria.

1.4 Research Questions

The research questions the thesis seeks to answer are as follows:

- i. What legal and technology policy frameworks exist for sustainable start-up ecosystems in Nigeria and India?
- ii. How do tech start-up policies in Nigeria compare with those in India?
- iii. What are the factors responsible for the challenges or limitations of start-up policies in Nigeria?
- iv. What are the prospects for the operationalisation of the Start-up Act in Nigeria?
- v. What policy propositions can support a sustainable start-up ecosystem in Nigeria, drawing lessons from India's experience?

1.5 Significance of the Study

Realising the full potential of Nigeria's technology ecosystem will require learning from more mature ecosystems like India's. The quality of start-ups Nigeria has generated in recent years evidences its potential to compete favourably with global leaders. This comparative analysis will inform targeted reforms to streamline bureaucracy, reduce regulatory burdens, and enhance the ease of doing business. The research will contribute insights from India's ecosystem to help establish an effective policy framework and support the creation of a more sustainable and impactful ecosystem in Nigeria.

The comparative analysis will stimulate policy innovation through benchmarking against global standards. By evaluating the effectiveness of existing policies and initiatives in Nigeria and India, policymakers can identify gaps and explore innovative approaches. This cross-pollination of ideas can inspire novel policy interventions tailored to the unique challenges and opportunities in both countries. This exchange is particularly practicable given their common features, such as large, youthful, and heterogeneous populations.

Nigeria's Start-up Act makes extensive provisions for incubators and accelerators, which play a vital role in nurturing and scaling start-ups. In recent times, there has been a proliferation of such support structures across Nigeria, providing mentorship, networking, and access to resources. For comparison, India has about 794 accelerators and incubators with a combined portfolio of 5.58K companies (Tracxn, 2024). The scale of India's support network makes a comparative study important for Nigeria to glean best practices on how these mechanisms can ensure a sustainable ecosystem in line with the Start-up Act's provisions.

All the aforementioned reasons justify the study. Ultimately, this research will, to an extent, remedy the paucity of comparative research on technology policy and sustainable start-up ecosystems involving Nigeria. As a whole, this thesis will serve as an academic resource that contributes to the general body of knowledge, advances research, and charts a new course in the quest for a sustainable start-up ecosystem in Nigeria.

1.6 Definition of Terms

Policy: A law, regulation, procedure, administrative action, incentive, or voluntary practice of governments and other institutions (OECD, 2015).

Start-up: A company or project undertaken by an entrepreneur to seek, develop, and validate a scalable, innovation-driven business model.

Start-up Ecosystem: A network formed by people in start-ups at various stages and various types of organizations in a location, interacting as a system to create and scale new start-up companies.

Sustainability: The ability to maintain or support a process over time. (Note: Aligning this with the Brundtland Report's definition of "meeting the needs of the present without compromising the ability of future generations to meet their own needs" could add socio-economic depth if desired).

Technology: The application of conceptual knowledge to achieve practical goals, especially in a reproducible way (e.g., through digital platforms, artificial intelligence).

Technology Policy: The regulation and governance of current and emerging technologies through company, industry, or government policies, regulations, or legislation, often balancing innovation promotion with the mitigation of societal risks.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter begins by conceptually clarifying key terms used in this research. It proceeds to identify the relevant theoretical frameworks associated with the study. Subsequently, a review of studies similar to the current research is conducted to extensively identify gaps in the literature across policy, legal, and technological dimensions. The chapter concludes with a summary that consolidates the findings and highlights unresolved issues in the literature.

2.2 Conceptual Framework

This section examines the conceptual frameworks of start-ups, start-up ecosystems, and technology policy.

2.2.1 Start-up

Start-ups are entities in the early stages of setting up operations, working towards the innovation, development, deployment, and commercialization of new products, processes, or services driven by technology or intellectual property (Dwivedi, 2021). A start-up is a young company in its initial stages of operation, often founded by one or more entrepreneurs who seek to develop a unique product or service and bring it to market (Ani, 2023). This early phase is typically marked by intensive development, iteration, and a focus on refining the core goods and services they seek to offer. This phase involves significant learning, as founders test their assumptions about

product-market fit (Dwivedi, 2021), an iterative process that helps shape the final product or service based on real-world feedback, such as Nigerian fintechs testing new payment models.

A start-up represents a confluence of innovation, high growth potential, scalable models, and an entrepreneurial spirit (Afridigest, 2023). This combination sets start-ups apart from traditional businesses, positioning them as catalysts for change across various industries—a dynamic highly relevant to the comparative context of Nigeria and India. The development of a start-up is characterised by risks and uncertainties, but it also offers unparalleled opportunities for those willing to embrace challenges. Notably, innovation is the central element of a start-up. Unlike traditional businesses, start-ups are typically built around creative ideas or technologies that aim to disrupt existing markets or create entirely new ones (Dwivedi, 2021).

Features of a Start-up

The distinguishing features of a start-up are crucial for understanding their role in ecosystems:

1. **High Growth Potential:** Designed to scale rapidly and capture large market shares quickly, leveraging technology to expand reach without proportional cost increases.
2. **Scalability:** A crucial feature where operations and revenue can grow without a corresponding rise in expenses, often achieved through digital platforms and efficient processes (Odeyemi, 2023).
3. **Market Disruption:** The potential to challenge established players and change industry operations, as demonstrated by companies like Uber and Airbnb (Odeyemi, 2023).
4. **High Risk and Uncertainty:** Operating in environments with numerous challenges including securing funding, achieving product-market fit, and managing regulatory hurdles (Omer, 2023).

5. **External Funding Dependence:** Typically reliant on venture capital, angel investors, or crowdfunding to fuel growth, with investors seeking high-growth, scalable models (Omer, 2023). This feature is particularly pertinent in Nigeria, where access to venture capital remains constrained compared to India.
6. **Lean Operations:** Maximizing efficiency with limited resources through rapid prototyping and continuous customer feedback (Hugo, 2024).
7. **Entrepreneurial Spirit:** Driven by passionate founders willing to take significant risks, experiment, and commit to continuous learning (Disrupt Africa, 2023).
8. **Agility:** The ability to quickly adapt to new information, pivot strategies, and innovate rapidly (Hugo, 2024).

Core Processes in Start-up Development

1. **Vision and Mission Definition:** Establishing long-term goals and purpose to guide all subsequent efforts (Moobila, 2023). Clarity here is exemplified by successful Nigerian and Indian start-ups with well-articulated value propositions.
2. **Value Proposition Articulation:** Identifying customer pain points and explaining how the start-up's offerings provide unique solutions (Ragunathan, 2024).
3. **Market Analysis:** Identifying target segments, estimating market size, and analyzing competitors to carve out a niche (Disrupt Africa, 2023).
4. **Business Model Development:** Outlining revenue streams, cost structures, and key partnerships to ensure financial viability (Moobila, 2023).
5. **Product Development:** Creating a Minimum Viable Product (MVP) and developing a roadmap for feature rollouts based on user feedback (Ragunathan, 2024).

6. **Marketing and Sales Strategy:** Establishing brand identity, selecting appropriate channels, and defining sales approaches (Ogbu, 2022).
7. **Operational Planning:** Outlining key processes for day-to-day functions, including necessary technological infrastructure (Adelodun and Daibu, 2023).
8. **Financial Planning:** Detailing funding requirements, sources, and projections to maintain financial health (NESG, 2023).
9. **Team Building and Organizational Structure:** Defining roles, fostering culture, and bringing in advisors for guidance (Adelodun and Daibu, 2023).
10. **Risk Management:** Conducting SWOT analysis and developing mitigation strategies for market, operational, and financial risks (Bozic, 2023; Rael, 2017). This process is especially critical in Nigeria's volatile policy and economic environment.

2.2.2 Start-up Ecosystems

A start-up ecosystem comprises various interconnected entities that collectively support and nurture start-ups (Kaplan and Mikes, 2012). These ecosystems create an environment conducive to innovation and growth by providing resources, mentorship, networking opportunities, and financial backing. Understanding and leveraging an ecosystem significantly increases a start-up's chances of success. An ecosystem is formed by people, start-ups at various stages, and various types of organizations in a location, interacting as a system to create new start-up companies (Startup Commons, 2024).

Components of Start-up Ecosystems

A start-up ecosystem is a complex, dynamic network that supports and accelerates growth. By fostering innovation, collaboration, and support, these ecosystems create fertile ground for new ventures (Ziakis et al., 2022). Their success depends on the active participation and synergy of various components:

1. **Entrepreneurs:** The core visionaries who initiate ideas and drive the ecosystem through passion and risk-taking (Ani, 2023). Their success inspires others, creating cycles of innovation, as seen with pioneering founders in Nigeria's Lagos tech scene and India's Bengaluru hub.

2. **Investors:** Provide necessary capital through venture capitalists, angel investors, and institutional funding. Beyond finance, they offer expertise and connections to guide sustainable growth (Hugo, 2024). The vibrancy of India's VC environment compared to Nigeria's emerging scene is a key point of comparison.

3. **Incubators and Accelerators:** Specialized programs offering resources, mentorship, and funding. Incubators help develop business ideas, while accelerators provide intensive, time-bound support in exchange for equity (Adelodun and Daibu, 2023). In Nigeria, these are often sponsored by various entities, with the proliferation of Tech Hubs like Co-Creation Hub (CcHub) and Roar Nigeria serving as testament to growing support structures.

4. **Educational Institutions:** Foster innovation through research, talent development, and dedicated entrepreneurship programs (Ziakis et al., 2022). India's National Innovation and Start-up Policy (2019) for schools exemplifies institutional support, while Nigeria's Tertiary Education Trust Fund (TETFund) increasingly drives innovation in academia.

5. **Government Agencies:** Shape supportive environments through policies, grants, tax incentives, and infrastructure development (NESG, 2023). Nigeria's Start-up Act (2022) represents a significant policy intervention directly relevant to this study.

6. **Mentors and Advisors:** Provide invaluable guidance to founders based on experience, helping navigate challenges and avoid pitfalls (Babu and Sridevi, 2018).

7. **Professional Service Providers:** Essential lawyers, accountants, and consultants who address legal, financial, and operational challenges (Rael, 2017). Weak legal and regulatory service infrastructure remains a notable challenge in Nigeria's ecosystem.

8. **Corporate Partners:** Offer resources, market access, and validation through partnerships or acquisitions (Ragunathan, 2024). Examples include African collaborations like Flutterwave's partnerships with global payment processors.

9. **Community:** Networking events foster connections, encouraging knowledge sharing and collective problem-solving through hackathons, pitch competitions, and conferences (Ragunathan, 2024). Nigeria's active developer communities, such as Google Developer Groups, exemplify this component.

2.2.3 Technology Policy

Technology policy refers to a set of guidelines, regulations, and initiatives developed by governments or organizations to shape the development, adoption, and use of technology within a society or industry (Nicaud, 2021). As technology plays an increasingly central role in all aspects of life, effective policy becomes essential for maximizing benefits while mitigating risks

(Ani, 2023). This is particularly critical for start-up ecosystems, which both influence and are shaped by such policies.

Technology policy deals broadly with the regulation and governance of current and emerging technologies (ATIH, 2024). It operates through company and industry policies as well as government regulations and legislation. Technology policy is increasingly intertwined with technology's impact on start-ups, individuals, society, and public interest (ATIH, 2024). It represents the mechanism through which the technology ecosystem is governed, balancing the promotion of innovation with the management of societal risks such as data misuse, while enabling benefits like digital trade growth. Governance challenges in this domain are pronounced in both Nigeria and India, making their comparative study valuable.

COMPONENTS OF TECHNOLOGY POLICY
VISION AND MISSION
MONITORING AND EVALUATION
DIGITAL INCLUSION
INNOVATION AND RESEARCH
REGULATORY FRAMEWORKS
CYBERSECURITY MECHANISM

EDUCATION AND WORKFORCE DEVELOPMENT
EMERGING TECHNOLOGIES
INTERNATIONAL COOPERATION
DATA PRIVACY AND GOVERNANCE
ECONOMIC AND TRADE POLICIES
PRINCIPLES AND VALUES

Components of Technology Policy

Figure 1: The Components of Technology Policy

Source: Self-elaboration (based on the synthesis of recurring components identified across literature on technology governance, particularly Nicaud, 2021).

Technology is indispensable for the development of start-ups, so is also technology policy. Technology policy plays a critical role in shaping the development, adoption, and use of technology in society. By establishing clear goals, principles, and strategies, technology policy can help harness the transformative potential of technology while mitigating its risks and ensuring that its benefits are equitably distributed. Nicaud (2021) made an extensive contribution on the key components of a sustainable policy. The major components and considerations in technology policy as shown in the above table are broached as follows:

1. **Vision and Mission:** At the core of any technology policy is a clear vision and mission statement that outlines the overarching goals and aspirations (Trucano, 2016). This often includes fostering innovation, promoting digital inclusion, ensuring cyber-security, and leveraging technology for sustainable development among others
2. **Monitoring and Evaluation:** Finally, technology policy should include mechanisms for monitoring and evaluating its effectiveness. This might involve collecting and analysing data on key performance indicators, conducting impact assessments, and soliciting feedback from stakeholders to inform policy adjustments and improvements over time (Trucano, 2016).
3. **Digital Inclusion:** Ensuring equitable access to technology resources and opportunities is a key aspect of technology policy. Policies and programs should be developed to bridge the digital divide, providing affordable internet access, digital literacy training, and access to technology for underserved communities (Nicaud, 2021).
4. **Innovation and Research:** Also, technology policy should support and incentivize innovation and research efforts that drive technological advancement and economic growth. This include funding for research and development, incentives for entrepreneurship and start-ups, and initiatives to foster collaboration between academia, industry, and government (Trucano, 2016).
5. **Regulatory Framework:** A robust regulatory framework is necessary to provide clarity, consistency, and predictability in the technology sector. This framework

should balance the need for innovation with the imperative to protect consumers, safeguard privacy, and ensure fair competition (Ani, 2023).

6. **Cybersecurity Mechanism:** Given the increasing prevalence of cyber threats, technology policy must prioritize cybersecurity. This includes establishing standards and best practices for cybersecurity, investing in cybersecurity infrastructure and talent, and fostering collaboration between public and private sectors to address emerging threats (Nicaud, 2021).
7. **Education and Workforce Development:** Technology policy should invest in education and workforce development initiatives to ensure that individuals have the skills and knowledge needed to thrive in the digital economy. This entails curriculum development, vocational training programs, and initiatives to retrain and reskill workers in response to technological change (Trucano, 2016).
8. **Emerging Technologies:** Technology policy should anticipate and address the opportunities and challenges posed by emerging technologies such as artificial intelligence, block-chain, and the Internet of Things (Ani, 2023). This do involve developing frameworks for ethical Artificial Intelligence development, addressing regulatory gaps, and promoting responsible innovation.
9. **International Cooperation:** Given the global nature of technology, international cooperation is essential in addressing common challenges and ensuring alignment with international norms and standards. Technology policy should engage in multilateral forums and partnerships to address issues such as cybersecurity, data governance, and intellectual property rights (Nicaud, 2021).

10. Data Privacy and Governance: As data becomes a critical asset in the digital economy, technology policy should address issues related to data privacy, protection, and governance. This may have to do with regulations on data collection, use, and sharing, as well as mechanisms for ensuring transparency and accountability in data practices (Nicaud, 2021).
11. Economic and Trade Policies: Technology policy should be closely integrated with broader economic and trade policies to promote innovation, competitiveness, and economic growth (Nicaud, 2021). This involves policies to support technology-based industries, facilitate technology transfer, and remove barriers to international trade and investment.
12. Principles and Values: Technology policy should be guided by principles and values that reflect the broader societal goals and ethical considerations (Nicaud, 2021). These may include principles like transparency, accountability, equity, privacy, and security, ensuring that technology is used responsibly and ethically.

2.3 Theoretical Framework

The two theoretical frameworks relatable to the study and which forms this study are the Anglophone Theoretical Approach and the Francophone Theoretical Approach. In broaching these theoretical framework, the elements of each of the frameworks will be linked to the technology start-up policy and technology ecosystem in the study areas.

2.3.1 Anglophone Theoretical Approach

The Theory of the Anglophone Literature on the concept of a start-up is both ambiguous and dynamic. It is ambiguous due to its representation through three approaches: the temporary organizational approach, procedural approach, and cyclical approach (Ries, 2011). It is dynamic because it has been defined as a process involving the research and validation of a Minimum Viable Product (MVP). This process of search and validation has subsequently expanded to include the search and validation of an innovative business model (Blank, 2015).

The Anglophone perspective portrays a start-up as a sequence of early-stage developments in a project. It necessitates a degree of flexibility in both human organization and task execution methods. This embryonic development stage involves assembling a human or organizational team that operates with Lean Start-up Approaches (LSA) or agility to discover and validate an innovative Business Model (BMI) (Ziakis, et al., 2022).

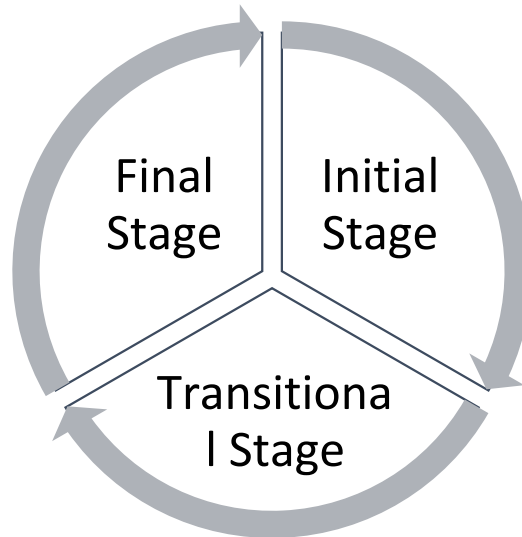
The Anglophone approach defines the start-up as a dynamic and reactive mode of organisation and obeys the theory of organisational adaptation in order to adapt to the needs of the customer (Crowne, 2002). The semantic names of the start-up based on the approach are assigned according to two criteria, including the destination which include entrepreneurial and non-entrepreneur, and the characteristics which include use of research and technology, growth and scalability (Ries, 2011).

To provide conceptual clarity to the Anglophone theoretical approach to start-up, the definitions, based on the theory, will be categorized into three main approaches, to wit: the cyclical approach, the procedural approach and temporary organizational approach.

1. Cyclical Approach

The cyclical approach primarily focuses on two ways of conceptualising the start-up concept (Crowne, 2002). The first one is as a single phase within the life cycle of an organization or product. The second is as a comprehensive life cycle consisting of multiple phases. In the first case, a start-up is viewed as a temporary organisation or team situated in the initial start-up phase, with the intention of progressing to subsequent phases such as stabilization, growth, and evolution, or directly to the growth phase (Meyer and Roberts, 1988). In the second case, the start-up concept is defined as a process divided into several phases spanning from the ideation phase to the maturity phase. This cyclical approach delineates how a project, idea, or product

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d, tested, and validated in the market (Mueller et al., 2012).

Figure 2: Life Cycle of a Start-up based on the Cyclical Anglophone Approach

Source: Self-elaboration

The theory posits that there are three stages of a healthy start-up life cycle. These stages include Initial, Transitional, and Final stages. This analysis aims to delineate the life cycle characteristic of start-ups. These stages unveil several models depicting the life cycle of start-ups, detailing the processes of conception, research, and validation of ideas, products, or projects. Also, these life cycle models generally converge on similar observations regarding the initial and final phases (Ziakis, et al., 2022).

The start-up journey typically commences with the exploration of an idea or concept, encompassing phases such as seed, research, problem identification, research and development, discovery, traction, concept formulation, start-up preparation, incubation, emergence, start-up establishment, and launch. Subsequently, the start-up endeavours to attain a certain level of product, idea, or project maturity or stability. This phase is characterized by terms like company creation, growth, maturity, prosperity, efficiency, growth, detachment from the incubator, and expansion (Ziakis, et al., 2022).

However, a challenge of this cyclical approach lies in demarcating the boundaries between the different phases. The phases of a start-up's life cycle exhibit heterogeneity in the literature, often comprising two or more distinct phases. This implies that the three stages of start-up ecosystem and technology policy as espoused by the Cyclical Anglophone approach are not exhaustive as far as stages in the lifespan of a start-up is concerned.

2. Procedural Approach

Some authors characterise a start-up as a sequence of stages from conceptualisation to the confirmation of a business model (Alexander et al., 2002; Johannisson et al., 1994). According to this perspective, the start-up emerges through the execution of several non-linear tasks aimed at achieving one or more objectives (Grinyer et al., 1986; Shuman and Seeger, 1986). These tasks typically include development, pivoting, market and customer development, as well as data collection, analysis, and learning. All activities undertaken by start-up founders are geared towards validating an innovative business model. The view emphasises the significance of this pursuit for adequacy, which involves rapid iteration through building, testing, and refining ideas (Ries, 2011). It is an iterative process wherein failure to validate prompts a strategic shift known as pivoting (Grinyer et al., 1986).

3. Temporary Organisational Approach

Anglophone literature gathers researchers whose understanding of the start-up concept is heavily influenced by the ecosystem of start-ups, as per the American success story model. According to scholars under the temporary organisational approach, a start-up is a provisional or temporary organisation aiming to explore an unproven business model (Eunju, et. al., 2020). The organisational approach distinguishes between commercially and non-commercially oriented start-ups, implying that they can be initiated by individuals or an informally assembled team agile in developing solutions to problems (Bach, 1998).

One of the scholars who shared the temporary organisational approach view, Steve Blank (2019) defined a start-up as a temporary organisation striving to discover a replicable and scalable innovative business model (Blank, 2019). While Blank's definition is prevalent in literature, it lacks theoretical and methodological clarification regarding the duration and boundaries of this temporary phase (Ziakis, et al, 2022).

Comment [1]: You cite Steve Blank twice (2019). Please verify if one of these should be 2015 instead, and ensure consistency across references.

Some authors propose theoretical foundations that complement Blank's definition, suggesting that a start-up ceases to exist once its business model is validated (Burgelman, 1983; Johannisson et al., 1994). Validation occurs when there is a confirmed alignment between the problem and solution or between the product and market (Eunju, et al., 2020). This is marked by the founders finding a diverse customer base willing to pay for the service provided which is known as the value proposition.

Similarly, Ries and Andreessen noted that a start-up concludes upon validation of the Minimum Viable Product (Blank, 2019). This product entails designing a basic product with minimal functionality to assess its potential before final acceptance and market launch. These temporary organisations are characterized by a high level of risk and agile development of products or solutions. Consequently, start-ups are human institutions designed to innovate and create new products and services under conditions of extreme uncertainty (Ries, 2011). Moreover, innovation is a defining characteristic of these temporary organizations. Essentially, the entrepreneurial endeavour aims to introduce disruptive or breakthrough technology that has not been previously utilised by customers, thereby altering the dynamics of the market.

It is important to note that a start-up does not necessarily have to be initiated by an entrepreneur. Some authors argue that it can be an internal project initiated by another established institution to leverage research and development results. In this context, this process leads to the creation of a project often referred to as an internal start-up (Burgelman, 1983). A notable example is the military defence administration mobilizing its research laboratories to establish a start-up focused on military weapons technologies or a university creating a business for revenue purpose.

2.3.2 Francophone Theoretical Approach

The conceptual framework of the start-up concept, as depicted in Francophone journals, functions on two interconnected levels. Firstly, it revolves around the organisational structure, wherein the start-up is perceived as a youthful enterprise (Ziakis et al., 2022). This term is often used interchangeably with small businesses and micro-businesses. Secondly, it involves examining the distinguishing features that set these start-ups apart from more conventional business models, constituting a descriptive approach (Meyer & Roberts, 1988).

1. Permanent Organisational Approach

Contrary to the temporary organizational approach proposed by Anglophone authors, based on the Francophone authors, the concept of a start-up represents a permanent organizational form with unique characteristics that distinguish it from traditional enterprises (Ziakis, et al. 2022). The lack of a stable organizational form in Anglophone theoretical foundations makes the Francophone definition more practical for empirical studies, as it aids in the identification of samples. Francophone authors

define a start-up as an innovative young company, characterized by three criteria: size, age, and budget allocation for research and development. In France, a young innovative company is classified as a small to medium-sized enterprise (SME) that is less than eight years old and allocates at least 15% of its budget to research and development (Ziakis, et al. 2022).

The definition of a start-up which are similarly identified as Small and Medium-sized Enterprises (SME) varies across countries, making a universal definition challenging. According to the OECD (2023), SMEs are independent enterprises identified by two main features:

- i. a limited number of employees, which varies by country, and
- ii. a financial balance sheet and turnover that do not exceed country-specific thresholds.

For instance, in France, an SME is an enterprise less than eight years old, with fewer than 250 employees and a turnover not exceeding 50 million euros (Ziakis, et al. 2022). The European Commission defines an SME as an enterprise with fewer than 50 employees, a turnover of less than 10 million euros, and a balance sheet total under 10 million euros (European Commission, 2023). In Canada, an SME is a business with 1 to 99 employees, while the United States includes all pre-established companies with up to 500 employees (Ziakis, et al. 2022). The European Observatory of SMEs classified SMEs as those with an annual turnover not exceeding 40 million euros or a balance sheet value not exceeding 27 million euros (European, 2023).

2. Descriptive Approach

This Francophone Approach posits that the concept of a start-up is linked to small or young companies, typically characterized by several criteria that are not always tautological. The most frequently cited characteristics include innovation, technology, size, research and development, and growth in terms of turnover or number of employees (Ziakis, et al. 2022).

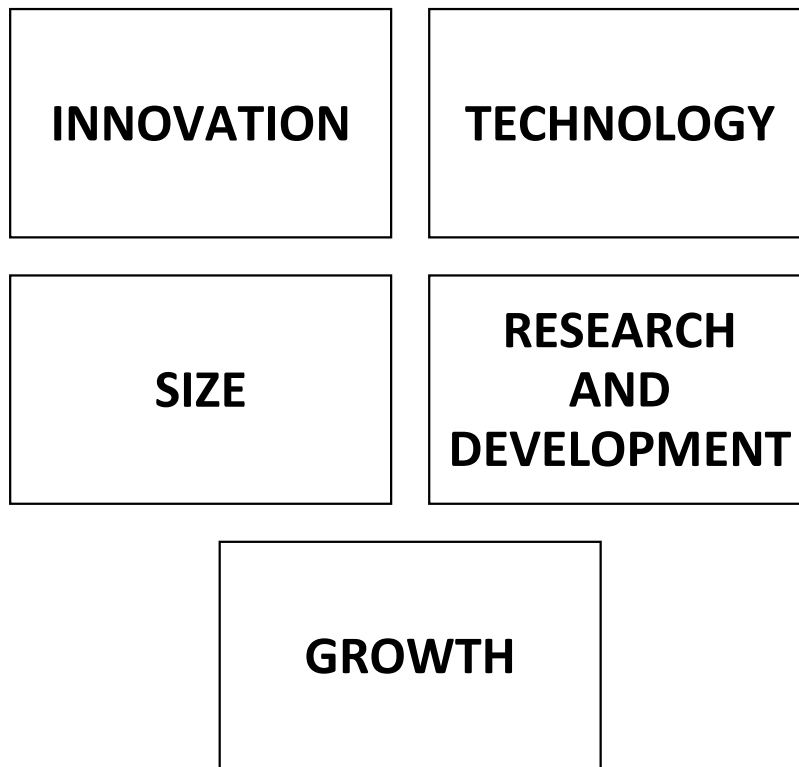


Figure 3: Characteristics of a Start-up based on the descriptive of the Francophone Approach

Source: Self-elaboration

- i. Innovation: Start-ups are rooted in innovation aimed at introducing new products and creating a distinctive core or breakthrough technology (Meyer & Roberts, 1988). This innovation can stem from a new scientific discovery or the repurposing of existing technology (Ziakis, et al., 2022).
- ii. Technology: This involves leveraging scientific skills and the technical potential of materials or software to develop a start-up's solution. The scientific and technical expertise of individuals encompasses know-how, talents, and engineering knowledge (Meyer & Roberts, 1988). The technical potential includes creating a distinctive technological core, such as products, ideas, and prototypes developed in R&D labs (Ries, 2011).
- iii. Size: Start-ups are generally small. Founders aim to test functional and business hypotheses with minimal initial investment. There is a risk of entrepreneurial failure if excessive time and money are invested in building a solution that does not guarantee a return on investment (Ziakis, et al., 2022).
- iv. Research and Development (R&D): The start-up definition is closely tied to the R&D function, enabling the development of inventions or innovations within research laboratories that can lead to the creation of a commercial enterprise (Ziakis, et al., 2022).
- v. Growth: This is the most crucial characteristic of a start-up's life. Growth can be measured by various criteria such as the increase in the number of employees, popularity, revenue, customer base, and company value (Blank, 2015).

Notably, the Francophone approach understands a start-up as a young, pre-established company characterized by innovation, use of technology, size, research and development, and growth. The conceptual definition and characteristics of start-ups are highly diverse in the literature.

In this comparative study between Nigeria and India regarding start-up ecosystems, the Anglophone approach is generally more favourable for both countries due to several factors. The Anglophone approach is flexible in both human organisation and task execution method. India and Nigeria have a very robust Anglophonic background and benefit from the global reach of English in its burgeoning start-up scene, particularly in financial technology. Thus, the Francophone approach is less relevant for Nigeria and India primarily due to its rigidity in its manner of approach.

Preferred Theoretical Framework for the Study

The Anglophone Theoretical Approach is preferred for this comparative study of technology policy and sustainable start-up ecosystems in Nigeria and India. This preference stems from its emphasis on flexibility in human organization, task execution, iterative validation of business models (e.g., Lean Startup and MVP processes), and adaptability under uncertainty, qualities that align closely with the dynamic, English-language-dominated, fintech-heavy, and globally oriented ecosystems in both Nigeria and India, where rapid pivoting, scalability, and opportunity-driven entrepreneurship are central drivers of growth.

2.4 Literature Review of Related Literature

Maradi (2023) stated that the number of Start-ups in India is growing exponentially, with Bengaluru, Mumbai, and Delhi being ranked among the top 40 Start-up hubs worldwide in the Global Start-up Ecosystem Report 2022. In 2021 alone, Indian Start-ups raised over \$23 billion, spread over 1000+ deals, and 33 of them joined the coveted unicorn club; in 2022, 13 more Start-ups joined the unicorn club. The growing investor confidence in Indian Start-ups is overwhelming and is seen gaining momentum across varied phases of growth in a Start-up journey. Against this background, this current research seeks to glean lessons for Nigeria from the Indian technology ecosystem.

Subrahmanya (2015) identified that major Indian cities are experiencing a sort of euphoria due to the growing number of new generation start-ups in knowledge and technology intensive businesses. The main characteristics of the start-up ecosystem that has developed in India was covered in the article, along with its suitability for start-up promotion and the steps that need to be taken to make it stronger. The study started by outlining the history, stages of expansion, and employment contribution of start-ups in India in comparison to the organised industry. The necessity of a continuous rise in new generation start-ups as a strategy for creating good jobs, transforming the economy, and fostering growth is emphasised in the conclusion of the paper. The study will be taken further by applying Indian's technological ecosystem principles to Nigeria.

Ajah and Ononimu (2021) examined the mechanisms fostering tech Start-up emergence in the Nigerian Digital Ecosystem. They posited that it is important that there continues

to be studies towards the development of a viable tech Start-up in the Nigerian market. They identified that such studies provide adequate background knowledge to Nigerian government officials in making right policies to encourage nascent entrepreneurs. The current research work will take the study further by exploring the mechanisms towards building a sustainable and impactful ecosystem in Nigeria which is currently inexistent, using India as a case study.

Egbedokun (2023) reviewed research on business incubators in Africa, as a policy tool for supporting entrepreneurial businesses. He noted that there is need for collective research and policy efforts to strengthen contribution of Start-up. He highlighted the gaps for future research which includes the limited evidence on how to improve incubator support, absence of studies on adaptive, responsive and inclusive incubators and the scarcity of rigorous impact evaluators. These concerns form the area of consideration of the proposed study. India will be used as model for this purpose.

Brownson (2020) appraised the internal factors that stimulates Business Start-ups in Southern Nigeria. She posited that despite the unpredictability of the business environment, the epileptic power supply, the unstable policies of the government, the inadequate capital, the poor market network, the poor infrastructure, and other factors that negatively impact the Nigerian business environment, which severely limits the development and functionality of entrepreneurship and undermines motivation, new businesses are still being established. She opined that the main things that drive the entrepreneurs in this situation, according to her findings, are enthusiasm, the want to achieve something novel and inventive, and a sense of accomplishment. Hence, it was

recommended that government agencies and other empowerment institutions should take note of the aforementioned factors if entrepreneurship is to be fostered in any country.

Around the world, technology is viewed by entrepreneurs as a secret weapon that fosters innovation and creativity (Ajah and Ononiwu, 2021). Consequently, start-ups serve as a catalyst for economic expansion, the creation of jobs, and national advancement. However, based on the research by Ajah and Ononiwu (2021), it may be difficult and cumbersome to see a successful technology start-up develop, particularly in areas with few resources, such as Sub-Saharan Africa, where a variety of environmental complexity and uncertainties are present. The research observed that technology policies within the Sub-Saharan Africa may not be sustainable enough, thus, making it difficult for start-ups to survive.

Study by Ajah and Ononiwu (2021) helped explain the rise and sustainability of technology-based start-ups. Unlike the majority of previous studies that did not take into account multifaceted approaches to emergent events that characterise the growth of tech start-ups, such as opportunity identification and selection, team building and domain consensus and bootstrapping, amongst others, as well as the underlying processes that cause these events, the research by Ajah and Ononiwu (2021) saw to that. They conducted a critical realist case study to investigate the multi-dimensional events describing tech start-up emergence and further explicate the generative mechanisms that must exist for sustainability to occur in the Nigerian digital and entrepreneurial ecosystem.

Matyek (2017) evaluated the contribution of technology start-ups to Nigeria's overall growth. Nigeria has a thriving digital culture, which serves as a catalyst for the emergence of several technological start-ups, innovation centres, and incubators inside the Nigerian economy. Nigeria's heavy reliance on foreign technology, particularly information technology, as opposed to domestic technology forms the crux of the study by Matyek (2017). Using an online survey research design and quantitative method, Matyek (2017) in its main conclusion demonstrated how technological start-ups aid in Nigeria's growth in terms of employment generation.

Also, based on Matyek's study, increased involvement and assistance from the public and private sectors are required for the sustainability of the start-up ecosystem. This has to do particularly in the form of seed money for technology start-ups in order to best support Nigeria's development in other areas, such as the creation of software and applications, in order to address the numerous issues that are impeding the country's growth and development. The gaps in the study are however that it did not place attention to the technology policy and legal frameworks in operation within the technology ecosystem in Nigeria or any other jurisdiction.

Ziakis and others (2022) posited that start-up development, success, and sustainability are affected by contextual factors that constitute a regional entrepreneurship ecosystem. Based on previous literature, they proposed the conceptual framework Start-Up Ecosystem that highlights the contextual drivers of a start-up business affected by the entrepreneurial ecosystem entities involved within the quadruple helix model. Furthermore, their proposed framework is tested according to the perceptions of Greek

start-uppers through an empirical survey. The target of Ziakis and others is to give conceptual clarity to the concept of start-up within the context of any country.

According to findings by Ziakis and others (2022), the start-uppers' motivation is explained mainly through opportunity rather than necessity. The study identified government issues, such as tax incentives and acceleration of starting procedures, availability of funding opportunities, connectivity of stakeholders, entrepreneurship education, previous start-up experience, incubator support, as well as mentoring, as the most significant issues affecting the successful development of start-ups. Their research posited that if all these factors can work together, there will be created a sustainable start-up ecosystem.

PWC (2022), as the foundation their study reported that the World Bank's ease of doing business (EoDB) rankings evaluate and rank countries based on how easy it is to conduct business there. A higher rank, that is, a lower numerical value, indicates a more conducive regulatory environment for starting and operating a local business. In the latest EoDB rankings, India is positioned at 63, while Nigeria is at 131 (PWC, 2022). This indicates that India's regulatory environment is more supportive of local businesses compared to Nigeria's. A supportive business environment fosters faster economic growth and helps combat socio-economic exclusion and poverty. India's success in improving its ease of doing business ranking is contributing to its rapid growth and poverty reduction and it stands as a lesson that Nigeria can adopt to achieve inclusive, sustainable, and robust growth (PWC, 2022).

Both India and Nigeria have promising start-up ecosystems (PWC, 2022). India boasts the world's third-largest tech start-up hub, while Nigeria has the largest start-up hub in

Africa. Both ecosystems have experienced significant growth over the past five years. Nigeria's growth, in particular, is attributed to support from international initiatives and the strong understanding of the ecosystem by local incubators. Lagos's start-up ecosystem is considered the most valuable in Africa, with lots of start-ups attracting substantial investment and preparing for further expansion. Meanwhile, India's well-established start-up environment continues to grow steadily, now home to over 50,000 start-ups and more than 22 unicorns (PWC, 2022). Though the report by did a fair attempt at comparing Nigeria with India, it however did not do a comparison of their policies.

Umeh (2020) in an article on what Nigeria's tech sector can learn from India stated that India has long been a leading outsourcing destination for global companies, particularly in the technology sector. He posited that three key policies put the Indian tech sector on this positive trajectory. These factors include lowering the cost of mobile data, implementing a national identification programmes with an open-source Application Programme Interface (API), and embracing digital payments. Umeh (2020) recommended that to secure India-style tech growth, Nigeria should pursue a similar approach.

Umeh (2020) further noted that Nigeria aims to emulate India's shift to a cashless economy, but its strategy of imposing taxes on cash transactions could backfire. Instead, Nigeria should focus on encouraging the use of mobile money. Currently, mobile money transactions constitute only 1.4% of Nigeria's GDP, compared to 44% in Kenya (Umeh, 2020). This low percentage is partly due to the Central Bank's previous restrictions on mobile operators, which limited their banking services and favoured a bank-based regulatory framework for mobile money. However, the Central Bank has already lifted

these restrictions, allowing financial technology companies to offer mobile-money services. Umeh (2020) deemed this to be a step in the right direction.

In another light, India's experience demonstrates that structural reforms are crucial for tech companies to innovate and thrive (Umeh, 2020). Affordable data is necessary for users to access new e-commerce sites. An open-API identification system and efficient mobile-money platforms are essential for transitioning to a cashless economy. Nigeria is well-positioned to learn from these lessons. With the pandemic's consequences increasing the demand for technologies that support social distancing, now is the opportune time for Nigeria to start implementing these changes especially in relation to commercial activities. The gap in the study, however is the fact that the author did not relate it fully to the operation of start-ups.

In a policy paper commissioned by Google as published by OC and C Consultants and Strategists highlighted that while numerous participants contribute to the ecosystem, the government's role is particularly noteworthy. Government policies influence all entrepreneurial actors and components within the ecosystem including resource providers, connectors within the entrepreneurial network, and the overall entrepreneurial environment (OC and C, 2018). The government's involvement is crucial because it directly shapes the ecosystem by creating favourable conditions and offering incentives for high-growth start-ups.

In furtherance, the government affects all ecosystem components to foster a supportive environment and enhance connectivity among these elements (OC and C, 2018). In leading countries, the transition to knowledge-based industries has been driven by favourable policies supporting the ecosystem's development and increased government

funding for high-growth companies. Despite this, ecosystem participants view tech entrepreneurship in Africa as a long-term endeavour. They estimate that it will take another decade for Nigeria's tech entrepreneurship ecosystem to become fully operational and capable of producing significant, high-impact tech companies. Overall, the key to maximizing public initiatives and developing Nigeria's ecosystem into a Pan-African hub for tech entrepreneurship lies in interaction and collaboration with various stakeholders while addressing the numerous challenges of the emerging tech entrepreneurship culture (OC and C, 2018).

Onugu (2005) identified several challenges facing entrepreneurship in Nigeria, including insufficient capital, lack of focus, inadequate market research, over-reliance on one or two markets for finished products, lack of a succession plan, inexperience, improper bookkeeping, lack of proper records, inability to separate business and personal finances, lack of a business strategy, confusion between revenue and profit, inability to procure suitable plant and machinery, failure to hire the right staff, lack of planning, intense competition, lack of official support for locally produced goods and services, the dumping of foreign goods, and over-centralization of decision-making typically by the owner. These challenges are equally applicable to start-ups owing to the fact that it is a process of entrepreneurship itself.

According to Oluronshola (2003), challenges include restricted access to financial and capital markets, a shortage of skills, financial indiscipline, inadequate infrastructure, poor policy implementation, poor management practices, low entrepreneurial skills, limited market access, and an overbearing regulatory and operational environment. Rae (2006) emphasized that learning is a crucial part of the entrepreneurial process, where human

and social factors are as important as economic factors. He defined entrepreneurial learning as a dynamic process of awareness, reflection, association, and application, transforming experience and knowledge into functional learning outcomes.

On the Nigerian Start-up Act, Balogun (2023) opined that the Nigeria Start-up Act is expected to establish the Nigerian start-up ecosystem as the premier digital centre in Africa, which is good news for the country's technology sector. But it remains concerning that no deadline has been set for the adoption of important sections of the Act (Balogun, 2023). In order for the Start-up Act to serve as a significant pillar in Nigeria's technological advancement, it must be promptly implemented in conjunction with its domestication throughout the country's thirty-six states. In essence, for swift realisation of the goal of enacting the law, it is high time the states took the Act as a domestic law in their states.

The Nigeria Start-up Act aims to create a supportive environment for the growth and operation of start-ups in Nigeria, leading to the emergence of more start-ups offering innovative solutions to socio-economic issues (Balogun, 2023). The Nigerian government can harness the problem-solving potential of the start-up ecosystem by turning to it first for bold and innovative solutions to complex national challenges. To achieve this, the government needs to simplify its public procurement processes for technology start-ups. This will drive demand for local tech solutions and position the government as a top priority customer for start-ups (Balogun, 2023). The article however did not examine other policies for start-up ecosystems in Nigeria.

The issue of entrepreneurial development in Nigeria is not new and has become a frequent topic in contemporary discussions (Ojonugwa and Alewo, 2016). While many

view the entrepreneurial system as a cornerstone for economic development, others recognize the numerous factors hindering its growth. Ojonugwa and Alewo (2016) examined the prominent obstacles affecting entrepreneurial development in Nigeria. It relied on comprehensive primary and secondary research, data analysis, and interpretation using chi-square statistical techniques. Their study revealed that significant efforts are still needed to enhance entrepreneurial development in Nigeria.

Results of the research by Ojonugwa and Alewo (2016) indicated that issues such as inadequate power supply, infrastructural decay, and corruption, lack of skills, insufficient credit facilities, government policy, and security must be urgently addressed to create a supportive environment for SMEs and other businesses. The paper demonstrated that these factors significantly and severely impact entrepreneurial development in Nigeria, with dire implications for employment, investment, development, poverty reduction, revenue generation, and growth. The success of government agencies' efforts to manage and mitigate these impacts depends on their commitment to implementing and sustaining policies that promote entrepreneurial development (Ojonugwa and Alewo, 2016). Ultimately, their investigation argued that it is crucial now, more than ever, to reassess the Nigerian government's approach to entrepreneurial development.

Government policies significantly influence the start-up ecosystem in any country, and India is no exception. Shah and Jokhi (2023) noted that the Indian government has introduced various policies and initiatives to promote entrepreneurship and innovation, such as Startup India, the Fund of Funds for Startups, and the Atal Innovation Mission. These measures have simplified doing business in India, streamlined regulatory processes, and provided tax incentives and funding access for start-ups. Despite these

advancements, challenges remain, including high levels of bureaucracy, limited access to capital, and inadequate infrastructure in certain regions. Furthermore, recent changes in e-commerce and data localization policies have disrupted the industry, impacting start-ups dependent on online marketplaces (Shah and Jokhi, 2023).

Essentially, the paper by Shah and Jokhi (2023) examines government policies for start-ups and their effect on start-up performance. Some government policies have had mixed effects on start-ups. For instance, the Digital India initiative has enhanced access to digital infrastructure and technology, facilitating the development and deployment of innovative digital solutions by start-ups. However, recent data localization policies have raised compliance costs for start-ups handling sensitive data. While some policies have been beneficial, further efforts are needed to address the challenges faced by start-ups in India, such as access to capital, regulatory compliance, and infrastructure development (Shah and Jokhi, 2023). Unlike the study by Shah and Jokhi (2023) that limited policy evaluation to India, the current research seeks to compare potency of technology and start-up policies in India and Nigeria.

2.5 Gap from the Review of relevant Literature

The review of related literature on technology policy and sustainable start-up ecosystems in Nigeria and India reveals a number of gaps in the existing literature that require further research to better understand the unique challenges and opportunities within these ecosystems. This research seeks to cover the gaps to a reasonable extent. While there is substantial literature on start-ups and technology policy in both Nigeria and India, there seems to be an insufficiency of comparative studies that directly contrast the two

countries. Most research tends to focus on one country at a time. Comparative studies could provide valuable insights into how each country addresses similar issues in different ways. This approach is the crux of this research.

Notably, the reviewed literatures often generalize the challenges and opportunities faced by start-ups in developing countries without adequately addressing the specific contexts of Nigeria and India. Both countries have unique socio-economic, cultural, and regulatory environments that influence their start-up ecosystems. There is a need for more focused research that considers these contextual differences and disparity in the policy frameworks in order to provide tailored insights. Also, regarding the policies implemented by the government in both countries, more empirical research is needed to assess how well these policies are working and what changes might enhance their effectiveness.

From the reviewed literature, it is trite that existing studies often take a broad approach to technology policy without focusing on sector-specific impacts. Different sectors, such as healthcare, agriculture, and fintech, have unique regulatory needs and challenges. There is a gap in the literature regarding how sector-specific policies influence start-up success and innovation within these industries in Nigeria and India. Doing this will lead to the creation of probable solutions to challenges being faced by diverse sectors when it has to do with technology policy in relation to start-ups and technology ecosystems in Nigeria and India.

Start-up ecosystems are greatly influenced by government policies, yet, current research does not adequately compare the policy frameworks of Nigeria and India. There is a

knowledge vacuum on the ways in which various policy interventions affect the expansion and viability of start-ups in these nations. Analyses that compare the efficacy of certain policies may yield insightful information. Also, entrepreneurial behaviour, which is the powerhouse of start-ups, is greatly influenced by cultural influences, although the literature frequently ignores the unique cultural dynamics in Nigeria and India. It is crucial to comprehend the ways in which start-up operations in these nations are impacted by cultural perspectives on failure, creativity, and taking risks. To learn more about how cultural norms and values influence the entrepreneurial environment, more study is required and this will be done in the context of the policy and legal frameworks in both countries.

While both Nigeria and India are experiencing rapid technological advancement, the literature does not sufficiently address the differences in technology adoption and digital infrastructure. Comparative studies that examine the state of digital infrastructure, internet penetration, and technology usage among start-ups in both countries could shed light on how these factors impact start-up operations and sustainability. There is a lack of comprehensive case studies that document the success and failure of start-ups in Nigeria and India. In-depth case studies could provide valuable lessons and best practices for aspiring entrepreneurs. They could also highlight the critical factors that contribute to start-up success or failure in different contexts.

Ultimately, despite the fact that the amount of research on start-ups in India and Nigeria is expanding, there are still a lot of gaps. By addressing these gaps with focused study, there may gain a deeper comprehension of the distinct possibilities and difficulties in the start-up ecosystems of both nations within the context of the subsisting technology policy

framework. This in turn can help develop more useful support systems and policies that encourage sustainability of start-ups which is the aim of this research.

2.6 Summary of Literature Review

This chapter clarified the concepts used in the research and examined the theoretical framework via the Anglophone and Francophone approach. In this research, Anglophone theoretical approach is more favourable for both countries due to its flexibility in organisation and execution. The literature review on technology policy and sustainable start-up ecosystems in Nigeria and India identifies several research gaps. One of the gaps is that no research has done an extensive comparison between the two distinct start-up ecosystems. This research seeks to fill the gap by emphasising the need for comparative studies between these countries. It will demystify how their unique socio-economic and regulatory environments influence policies in the start-up ecosystem. Addressing the identified gaps in the literature review is crucial for developing sustainable policies that support sustainable growth and innovation in both countries' start-up ecosystems.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research methodology adopted in the study. It explains the research design, systematic review procedure, inclusion and exclusion criteria, data collection methods, data extraction procedure, data analysis techniques, population and sample size, and the

measures taken to ensure validity and reliability. The chapter is structured to ensure that the research process is transparent, systematic, and replicable.

3.2 Research Design

The study adopts a mixed-method research design, combining doctrinal legal analysis and descriptive quantitative survey analysis. The doctrinal approach is employed to examine technology and start-up policy frameworks, legal instruments, and scholarly literature in Nigeria and India. The quantitative component involves the administration of structured questionnaires to relevant stakeholders within the start-up ecosystem.

The study is comparative in nature and focuses exclusively on Nigeria and India. This design allows for a structured comparison of policy objectives, institutional arrangements, funding mechanisms, and implementation challenges across both countries.

3.3 Systematic Review Procedure

A systematic review procedure was adopted to ensure methodological rigor and reproducibility. The procedure followed five sequential steps:

Step 1: Identification of Sources

Relevant documents were identified from academic databases such as Google Scholar, JSTOR, and SSRN; official government portals of Nigeria and India; reports from international organizations including the World Bank and OECD; and legal and institutional repositories.

Step 2: Search Strategy

Search terms included combinations of "technology policy", "start-up ecosystem", "start-up regulation", "Nigeria Start-up Act", "Start-up India", and "digital economy policy".

Step 3: Initial Screening

Identified documents were screened based on their relevance to technology policy, innovation systems, and start-up regulation.

Step 4: Eligibility Assessment

Documents that passed the screening stage were assessed using predefined inclusion and exclusion criteria outlined in Section 3.4.

Step 5: Final Selection

Only documents that satisfied all inclusion criteria were retained for detailed analysis and data extraction.

3.4 Inclusion and Exclusion Criteria

Inclusion Criteria

- i. Documents published between 2000 and 2024
- ii. Documents focusing on Nigeria and India only
- iii. Legal instruments, policies, and regulations
- iv. Government strategy documents and institutional reports
- v. Peer-reviewed journal articles related to technology and start-ups

Exclusion Criteria

- i. Documents published before 2000
- ii. Studies focusing on countries outside Nigeria and India
- iii. Opinion articles without legal or empirical grounding
- iv. Non-verifiable internet sources

Final Document Sample

A total of 86 documents were initially identified. After screening and eligibility assessment, 34 documents were excluded. The final analysis was conducted using 52 documents.

3.5 Data Collection Methods

Primary Data

Primary data were collected through a structured questionnaire administered to stakeholders within the technology start-up ecosystem, including start-up founders, policy analysts, incubator managers, and innovation ecosystem facilitators in Nigeria and India.

Secondary Data

Secondary data consisted of statutes, policy documents, government reports, scholarly journal articles, and institutional publications. These sources were selected due to their relevance and authority in technology policy formulation and implementation.

3.6 Data Extraction Procedure

A structured data extraction procedure was adopted. From each selected document, information relating to policy objectives, regulatory instruments, funding mechanisms, institutional frameworks, implementation challenges, and reported outcomes was extracted.

Table 3.1 Data Extraction Framework

Document	Country	Policy Objective	Funding Mechanism	Implementation Challenges
Nigeria Start-up Act (2022)	Nigeria	Promote innovation	Seed Fund	Institutional coordination
Start-up India Action Plan (2016)	India	Support entrepreneurship	Fund of Funds	Administrative complexity

All comparative tables presented in Chapter Four are derived from this extraction framework.

3.7 Data Analysis Methods

Document Analysis

Content analysis was applied exclusively to policy and legal documents. Documents were coded thematically based on policy objectives, funding structures, institutional arrangements, and implementation challenges.

Survey Data Analysis

Survey data were analysed using descriptive statistics, specifically frequencies and percentages. Content analysis was not applied to quantitative questionnaire data.

3.8 Population and Sample Size

The population of the study comprises stakeholders within the technology start-up ecosystem in Nigeria and India. A total of 150 questionnaires were distributed (80 in Nigeria and 70 in India). Of these, 124 questionnaires were returned. After data cleaning, 118 valid responses were used for analysis. Purposive sampling was employed to ensure respondents possessed relevant expertise.

All percentages reported in Chapter Four are based on the total number of valid responses per question.

3.9 Validity and Reliability

Validity was ensured by aligning questionnaire items directly with the research objectives and themes identified during the systematic review. Reliability was addressed through consistent questionnaire administration and uniform data coding. Given the descriptive nature of the study, formal reliability testing was not conducted.

CHAPTER FOUR: ANALYSIS OF FINDINGS

4.1 Introduction

This chapter presents and analyzes the findings from the research, structured to systematically address each of the study's objectives and research questions. It combines qualitative analysis of

legal and policy frameworks (derived from content analysis of the 52 selected documents as per Sections 3.3–3.6 in Chapter 3) with quantitative insights from survey data (analyzed using descriptive statistics, specifically frequencies and percentages, as outlined in Section 3.7). The analysis is structured into five main sections: 1) Legal and Policy Frameworks, 2) Comparative Analysis, 3) Challenges, 4) Responses to Research Questions, and 5) Funding and Statistical Analysis. The chapter concludes with a summary table and the author’s analytical synthesis. All comparative tables are derived from the data extraction framework presented in Table 3.1 (Chapter 3), which extracted information on policy objectives, funding mechanisms, institutional frameworks, implementation challenges, and outcomes from the selected documents.

4.2 Legal and Technology Policy Framework for Sustainable Start-up Ecosystems

4.2.1 Nigerian Legal and Technology Policy Framework for Sustainable Start-up Ecosystems

The Nigerian legal framework is anchored by the Nigeria Start-up Act (2022), which provides a formal definition for start-ups and outlines specific eligibility criteria for incentives. This Act is supported by the Companies and Allied Matters Act (CAMA, 2020), which streamlines business registration. The policy direction is guided by the National Digital Economy Policy and Strategy (NDEPS, 2020-2030) and the National Broadband Plan (2020-2025). Data Protection Regulations and various Tax Regulations complement this structure. However, survey data (from the 118 valid responses as per Section 3.8) indicates significant challenges in the awareness and implementation of these frameworks, with 72% of Nigerian respondents stating that bureaucratic hurdles negatively impact policy execution (Question 12).

4.2.2 Indian Legal and Technology Policy Framework for Sustainable Start-up Ecosystems

India's framework is more mature and integrated, spearheaded by the Start-up India Initiative (2016) and supported by the Companies Act (2013). Broader national strategies like "Digital India" and the National Digital Communication Policy (NDCP, 2018) provide cohesive direction. Deep-tech and innovation are specifically addressed by policies like the National Deep Tech Start-up Policy (2023). The survey corroborates this, with 85% of respondents agreeing that India's regulatory environment is more conducive to start-up growth than Nigeria's (Question 4).

4.3 Comparative Analysis of Legal and Technology Policy Frameworks

A side-by-side comparison reveals critical differences in maturity, integration, and effectiveness. India's policies benefit from longer gestation, stronger integration with national economic goals, and more developed implementation structures. Nigeria's framework, while progressive on paper, suffers from fragmentation and a significant implementation gap, particularly at the sub-national level. This comparison is based on thematic coding from content analysis (Section 3.7) of extracted data from the 52 documents.

Table 1: Comparative Analysis of Policy Frameworks

Policy Aspect	India	Nigeria
Lead Policy/Act	Start-up India Action Plan (2016)	Nigeria Start-up Act (2022)
Business Registration	Streamlined via the Companies Act (2013) & online portals.	Simplified by CAMA (2020).
Digital Infrastructure Policy	National Digital Communication Policy (NDCP, 2018) focusing on universal broadband.	National Broadband Plan (2020-2025).

Funding Mechanism	Fund of Funds for Start-ups (FFS) with ~\$1.2B corpus, managed by SIDBI.	Provision for a Start-up Investment Seed Fund in the Act; operationalization is slow.
Implementation & Governance	Strong central coordination aligned with "Make in India" and "Digital India."	Federal-led with challenges in state-level adoption and inter-agency collaboration (NSA, 2023).

Author’s Analytical Synthesis on Table 1:

- Lead Policy/Act: India’s policy has a 6-year head start, allowing for iterative refinement and wider institutional embedding, as evidenced in the literature (e.g., Shah & Jokhi, 2023; Maradi, 2023).
- Business Registration: Both have modernized corporate law. However, India's integrated digital platforms reduce time and cost more effectively (PWC, 2022).
- Digital Infrastructure Policy: India has achieved significant reductions in data cost and increased penetration, a foundational advantage for digital start-ups (Umeh, 2020).
- Funding Mechanism: India’s established fund-of-funds model has successfully catalyzed private VC investment, a gap noted in Nigeria (Ajah & Ononiwu, 2021).
- Implementation & Governance: Nigeria’s federal structure and nascent policy create a significant "adoption gap" that undermines potential impact (Balogun, 2023).

4.4 Challenges of Technology and Start-up Policies and Ecosystems: A Comparative Summary

The analysis identifies common and unique challenges. While both face issues like bureaucracy, their severity and nature differ. This is drawn from extracted implementation challenges in the data framework (Table 3.1, Chapter 3).

Table 2: Comparative Analysis of Ecosystem Challenges

Challenge Area	India	Nigeria
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Infrastructure	Improved grid stability and urban infrastructure; rural gaps persist.	Unstable power supply and high internet costs are primary constraints (Disrupt Africa, 2023).
Regulatory Environment	Ranked 63rd in Ease of Doing Business; GST and online processes have reduced red tape (PWC, 2022).	Ranked 131st in Ease of Doing Business; opaque processes and inconsistent enforcement deter investment.
Access to Capital	Robust VC/PE ecosystem; FFS mobilizes early-stage capital. Over \$42B raised in 2021 (ET, 2024).	Nascent VC scene; heavy reliance on angel investors and foreign capital. ~\$2.9B raised in 2023 (Templars).
Cultural Attitude to Failure	Growing acceptance as part of the entrepreneurial journey.	Stigma associated with business failure can discourage risk-taking (Brownson, 2020).
Skill Gaps	Large STEM graduate pipeline supported by policies like NISP (2019).	Education-output mismatch; start-ups bear high cost of training (Ajah & Ononiwu, 2021).

Author's Analytical Synthesis on Table 2:

- **Infrastructure:** Infrastructure deficit in Nigeria imposes a direct "tax" on start-up operations, hindering scalability (Onugu, 2005; Oluronshola, 2003).
- **Regulatory Environment:** Regulatory predictability is a key driver of investor confidence, where India holds a distinct advantage (Ziakis et al., 2022).
- **Access to Capital:** The scale of funding is not just about quantity but about the maturity of the investment pipeline, which is less developed in Nigeria (Matyek, 2017).
- **Cultural Attitude to Failure:** Ecosystem maturity includes cultural shifts; normalizing failure is critical for fostering innovation (Rae, 2006).
- **Skill Gaps:** India's focus on aligning education with industry needs through policy provides a sustainable talent advantage (Subrahmanya, 2015).

4.5 Presentation of Findings: Responses to Research Questions

This section presents the aggregated survey findings, structured by the five research questions. The 5-point Likert scale results (Strongly Disagree to Strongly Agree) are summarized below, using frequencies and percentages based on the total number of valid responses per question (as explained in Section 3.8 of Chapter 3). Percentages were calculated by dividing the number of responses in each category by the total valid responses for that question and multiplying by 100.

Table 3: Summary of Survey Responses by Research Question

Research Question & Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Net Agreement (Agree+Strongly Agree)
RQ1: Legal & Policy Frameworks						
1. India has more sustainable legal frameworks for start-ups.	5%	10%	10%	45%	30%	75%
2. Technology policies in India are more supportive of growth.	3%	7%	15%	50%	25%	75%
3. The Nigerian government provides more support than India.	40%	35%	15%	8%	2%	10%
4. India's regulatory environment is more conducive.	2%	8%	5%	50%	35%	85%
RQ2: Comparative Policy Features						

5. More formal structures for incubators/accelerators in India.	2%	5%	8%	55%	30%	85%
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6. Nigeria actively promotes entrepreneurship more than India.	38%	40%	12%	8%	2%	10%
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7. Nigeria offers more incentives for tech start-ups.	30%	40%	20%	9%	1%	10%
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8. Nigeria's policies provide more opportunities for youth.	25%	35%	25%	13%	2%	15%
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RQ3: Factors for Start-up Failure in Nigeria

9. Inadequate infrastructure significantly hinders growth.	1%	3%	5%	45%	46%	91%
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10. Access to funding is a major challenge.	2%	5%	8%	50%	35%	85%
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11. Lack of coordination among stakeholders.	3%	10%	17%	48%	22%	70%
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12. Bureaucratic hurdles negatively impact policy implementation.	2%	6%	20%	50%	22%	72%
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RQ4:
Operationalisation of Nigeria's Start-up Act

13. There is widespread awareness of the Start-up Act.	15%	30%	30%	20%	5%	25%
14. Stakeholders believe the Act will have a positive impact.	5%	15%	35%	35%	10%	45%
15. Existing mechanisms are in place to facilitate implementation.	20%	40%	25%	13%	2%	15%
16. Public-private partnerships can enhance the Act's effectiveness.	1%	4%	10%	55%	30%	85%
RQ5: Policy Propositions for Nigeria						
17. Targeted policy changes would improve the ecosystem.	1%	3%	7%	52%	37%	89%
18. Public-private partnerships could enhance start-up support.	1%	2%	8%	58%	31%	89%
19. Improving access to venture capital is essential.	1%	1%	5%	45%	48%	93%
20. Collaboration with research institutions would strengthen the ecosystem.	2%	5%	13%	55%	25%	80%

4.6 Funding and Statistical Analysis: Facts and Figures (2000–2024)

A longitudinal view of funding reveals the stark disparity in the scale and maturity of the two ecosystems. This is based on extracted funding mechanisms and outcomes from the 52 documents (per Table 3.1, Chapter 3).

Table 4: Comparative Start-up Funding Analysis (Selected Years)

Year	India (Total Funding)	Key Deals/Notes (India)	Nigeria (Total Funding)	Key Deals/Notes (Nigeria)	Ratio (India: Nigeria)
~2005	Early-stage; estimated <\$500M	Emergence of first VCs like Sequoia Capital India.	Negligible (<\$50M)	Pre-ecosystem; informal funding dominant.	>10:1
2010	~\$1.1 Billion	Flipkart raises \$150M+; ecosystem gains global attention.	<\$100 Million	Early investments in IROKOtv, Jumia (Africa-wide).	~11:1
2015	~\$4.9 Billion	Snapdeal, Ola, Paytm raising large rounds; "unicorn" concept takes hold.	~\$200 Million	Rise of Andela, Paystack; Lagos ecosystem gains recognition.	~24:1
2018	~\$10.5 Billion	Policy momentum from Start-up India shows results.	~\$400 Million	Flutterwave's \$20M Series B; Nigerian fintech boom begins.	~26:1
2021	~\$42 Billion (Peak)	Record year with 44+ new unicorns.	~\$2+ Billion	Flutterwave's \$170M Series C; Opay's \$400M round; fintech dominance.	~21:1
2023	~\$25 Billion (Cooling from peak)	Funding normalizes post-global boom; deep-tech gains share.	~\$2.9 Billion (Record)	Despite global downturn, Nigeria sets a new record, showing resilience and investor	~8.6:1

confidence.

2024*	~\$8-10 Billion (H1 Estimate)	Continued focus on profitability and sustainable growth.	~\$1.2 Billion (H1 Estimate)	Growth continues but at a moderated pace.	~7-8:1
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Note: 2024 data is partial/year-to-date estimate based on available reports.

Author's Analytical Synthesis on Table 4:

- ~2005 (Foundation Phase): India's ecosystem began formalizing with international VC entry, while Nigeria's was largely informal (Egbedokun, 2023).
- 2010 (Take-off): India enters a high-growth phase with landmark deals. Nigeria's funding is nascent and often part of pan-African rounds (Matyek, 2017).
- 2015 (Divergence): The funding gap widens significantly as India's market scales and attracts massive late-stage capital, while Nigeria remains in early-stage (Subrahmanya, 2015).
- 2018 (Policy Impact & Sectoral Strength): India's consistent growth contrasts with Nigeria's sector-specific (fintech) surge, demonstrating different evolutionary paths (Ziakis et al., 2022).
- 2021 (Peak & Concentration): Both markets hit funding peaks. India's is broad-based across sectors. Nigeria's is heavily concentrated in fintech, indicating ecosystem depth vs. sectoral strength (PWC, 2022).
- 2023 (Resilience & Maturity): The ratio narrows slightly not due to Indian decline, but due to Nigeria's continued growth from a smaller base. India's market shows cyclical maturity, while Nigeria's shows promising, concentrated momentum (Maradi, 2023). The gap remains vast in absolute terms.

- 2024 (Consolidation): Both markets adjust to a "new normal" of higher interest rates and investor scrutiny. The sustained gap reflects fundamental differences in market size, exit potential, and investor ecosystem maturity (Umeh, 2020).

4.7 Scholarly Feedback and Analysis

The findings are contextualized within the body of existing scholarly work to validate and deepen the analysis. This integration is based on the literature reviewed in Chapter 2 and extracted themes from Chapter 3's content analysis.

Table 5: Integration of Findings with Scholarly Literature

Key Finding from Analysis	Supporting/Contrasting Scholarly Literature
Nigeria's policy implementation gap is a critical weakness.	Balogun (2023) notes concern over the lack of deadlines and state-level adoption of the Start-up Act. Ojonugwa & Alewo (2016) highlight poor policy implementation as a historic barrier to entrepreneurship in Nigeria.
India's integrated policy approach is a key strength.	Shah & Jokhi (2023) describe how Start-up India is part of a coherent strategy with "Make in India" and "Digital India." PWC (2022) attributes India's improved Ease of Doing Business ranking to concerted, aligned reforms.
Infrastructure deficit is the most acute binding constraint in Nigeria.	Disrupt Africa (2023) consistently cites power and internet costs as primary obstacles. Odeyemi (2023) argues unstable infrastructure forces Nigerian start-ups into inefficient operational models.
The funding gap is not just about volume but ecosystem maturity.	Ajah & Ononiwu (2021) identify insufficient access to funding as a core challenge in Nigeria, reliant on informal sources. The Economic Times (2024) data shows India's \$42B year was powered by a mature VC/PE ecosystem with multiple funding stages.
Cultural attitudes and skill development are under-appreciated but critical differentiators.	Brownson (2020) notes the stigma of failure in Nigeria discourages risk-taking. Babu & Sridevi (2018) point to India's educational institutions and cultural history as reinforcing entrepreneurship.

Public-Private Partnerships (PPPs) are seen as a viable pathway for Nigeria.

OC&C (2018) emphasizes that maximizing public initiatives in Nigeria requires collaboration with various stakeholders. Umeh (2020) suggests Nigeria can learn from India's models of public-digital infrastructure rollout.

Author's Analytical Synthesis on Table 5:

- **Nigeria's Implementation Gap:** The survey's low scores on implementation mechanisms (Q15) and high scores on bureaucratic impact (Q12) empirically validate concerns from the literature. The Act risks being another "paper law" without a drastic shift in governance and execution capacity (Onugu, 2005).
- **India's Integrated Approach:** The high perception of India's conducive environment (Q4) and sustainable frameworks (Q1) reflects the success of this aligned, multi-ministry approach. It creates a reinforcing loop of policy signals, infrastructure build-out, and private sector response (Subrahmanya, 2015).
- **Infrastructure as Constraint:** The near-universal agreement (91% on Q9) from practitioners confirms this as the most urgent, non-policy specific challenge. It underscores that even perfect policies will have limited impact without addressing these foundational issues, a point of stark contrast with India's progress (Oluronshola, 2003).
- **Funding Ecosystem Maturity:** The funding table shows Nigeria's growth is impressive but from a tiny base and concentrated. The ~85% agreement on funding as a challenge (Q10) and ~93% on improving VC access (Q19) highlight that Nigeria needs to build the entire capital stack, from angel networks to growth equity, not just attract single large rounds (Matyek, 2017).
- **Cultural & Skill Differentiators:** While not the top-rated challenge in the survey, the literature suggests these "soft" factors are crucial for long-term sustainability. India's policy focus on STEM education (NISP, 2019) and its emerging "failure-friendly" culture

provide a more fertile human capital base, which compounds over time. Nigeria's focus must expand beyond hardware and finance to include human capital and cultural development (Rae, 2006).

- PPPs as a Pathway: The strong belief in PPPs (85% on Q16, 89% on Q18) aligns with literature recommendations. It indicates stakeholder recognition that the government cannot build the ecosystem alone and that leveraging private sector efficiency, capital, and innovation is essential for implementation, particularly in infrastructure and funding (Ziakis et al., 2022).

4.8 Answers to Research Questions

This subsection directly responds to the five research questions using the combined findings from doctrinal document analysis (52 sources), content/thematic coding, and the descriptive survey of 118 valid stakeholder responses.

RQ1: What legal and technology policy frameworks exist for sustainable start-up ecosystems in Nigeria and India?

Nigeria's framework centers on the Nigeria Start-up Act (2022), supported by CAMA (2020), NDEPS (2020-2030), National Broadband Plan (2020-2025), and related data/tax regulations. India's more mature and integrated ecosystem is led by the Start-up India Action Plan (2016), Companies Act (2013), NDCP (2018), Digital India, and the National Deep Tech Start-up Policy (2023). Survey data shows strong stakeholder perception of India's superiority: 75% net agreement that India has more sustainable legal frameworks (Q1) and more supportive technology policies (Q2), while only 10% believe Nigeria provides more government support (Q3).

RQ2: How do tech start-up policies in Nigeria compare with those in India?

India's policies exhibit greater maturity, central coordination, longer implementation history, stronger integration with national digital/economic strategies, more formal incubator/accelerator structures (85% net agreement, Q5), and better regulatory conduciveness (85% net agreement, Q4). Nigeria's policies, while progressive, suffer from fragmentation, slower operationalization, and weaker incentives/structures (only 10% net agreement that Nigeria promotes entrepreneurship more actively (Q6) or offers more incentives (Q7) or youth opportunities (Q8)). Funding mechanisms in India (e.g., established Fund of Funds) have catalyzed significantly larger capital flows compared to Nigeria's nascent seed fund provisions.

RQ3: What are the factors responsible for the challenges or limitations of start-up policies in Nigeria?

From the research findings, inadequate infrastructure is the most cited factor (91% net agreement, Q9), followed by access to funding (85%, Q10), lack of stakeholder coordination (70%, Q11), and bureaucratic hurdles negatively impacting policy implementation (72%, Q12). These align with doctrinal analysis showing implementation gaps, federal-state disconnects, power/internet deficits, and nascent VC ecosystems as persistent structural limitations.

RQ4: What are the prospects for the operationalisation of the Start-up Act in Nigeria?

Awareness remains low (only 25% net agreement on widespread awareness, Q13), and existing implementation mechanisms are perceived as inadequate (only 15% net agreement, Q15). However, stakeholders are moderately optimistic about positive impact (45% net agreement, Q14) and see strong potential in public-private partnerships to enhance effectiveness (85% net agreement, Q16), indicating viable prospects if execution improves through coordination, awareness campaigns, and collaborative models.

RQ5: What policy propositions can support a sustainable start-up ecosystem in Nigeria, drawing lessons from India's experience?

Stakeholders strongly support targeted policy changes (89% net agreement, Q17), public-private partnerships (89%, Q18), improved access to venture capital (93%, Q19), and collaboration with research institutions (80%, Q20). These propositions draw directly from India's successes in centralized coordination, mature funding vehicles, digital infrastructure investment, and ecosystem alignment, offering actionable pathways for Nigeria to bridge implementation gaps and foster sustainability.

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary of the Study

This comparative study examined technology and start-up policy frameworks in Nigeria and India using a mixed-method design: doctrinal legal analysis of 52 documents (selected via systematic review) and a descriptive survey of 118 valid responses from ecosystem stakeholders (80 in Nigeria, 70 in India).

Key findings:

- India's ecosystem is more mature and integrated (Startup India 2016, Fund of Funds, Digital India, NDCP 2018), with strong coordination, proven funding outcomes, and conducive regulation (85% survey agreement on India's superior environment, Q4).
- Nigeria's framework (Nigeria Start-up Act 2022, NDEPS 2020-2030, CAMA 2020) is progressive but fragmented, with low awareness (25%, Q13), slow implementation, and federal-state gaps (only 15% see mechanisms in place, Q15).
- Major Nigerian constraints: infrastructure (91% agreement, Q9), bureaucracy (72%, Q12), funding access (85%, Q10), and coordination failures.
- Funding disparity remains large (India ~\$10–11B in 2025 vs. Nigeria's smaller scale), though Nigeria shows fintech resilience.
- Strong stakeholder support for reforms: public-private partnerships (85–89%, Q16/Q18), VC improvement (93%, Q19), and targeted policy changes (89%, Q17).

5.2 Conclusion

India's sustainable start-up ecosystem results from long-term, cohesive policies, robust funding mechanisms, digital infrastructure gains, and institutional alignment, yielding over 125 unicorns and consistent high funding. Nigeria's ecosystem has potential but is hampered by implementation delays, foundational deficits (power, broadband), low policy awareness, and limited coordination. The Nigeria Start-up Act provides a solid base, but without swift execution and structural reforms, it risks remaining ineffective. India's model, centralized coordination, affordable digital access, investor incentives, and iterative refinement, offers clear, transferable

lessons. Nigeria can accelerate progress toward a leading African digital hub by addressing execution gaps and leveraging public-private collaboration.

5.3 Recommendations

For the Nigerian Government

1. Set strict timelines for full operationalization of the Nigeria Start-up Act (seed fund, certification, incentives) and domesticate it at state level.
2. Establish a central Start-up Coordination Council (NITDA, CAC, CBN, states) modeled on India's Startup India Hub.
3. Prioritize power and broadband improvements (expand National Broadband Plan; incentivize renewables and competition to lower data costs).
4. Scale the Start-up Investment Seed Fund via public-private matching and create a government-backed Fund of Funds to attract diverse VC.
5. Simplify public procurement for local tech solutions and mandate PPPs for incubators, mentorship, and infrastructure projects.
6. Launch awareness campaigns on the Act and integrate entrepreneurship education/training to normalize risk and failure.

For Ecosystem Stakeholders

7. Build bilateral partnerships with Indian incubators/accelerators for knowledge transfer and mentorship.
8. Diversify beyond fintech through targeted incentives for agritech, healthtech, and other sectors.

For Future Research

9. Conduct post-2025 impact evaluations of the Nigeria Start-up Act (unicorn creation, jobs, sectoral growth).
 10. Compare sector-specific policy effects (fintech vs. deep-tech) between Nigeria and India.
 11. Investigate cultural factors (failure stigma, entrepreneurial learning) via in-depth case studies.
- Implementing these targeted measures can significantly strengthen Nigeria's start-up ecosystem and foster sustainable innovation-driven growth.

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APPENDIX

COPY OF THE QUESTIONNAIRE:

TECHNOLOGY POLICY AND SUSTAINABLE START-UP ECOSYSTEMS: A
COMPARATIVE STUDY OF NIGERIA AND INDIA

A. Demographic Information

- **Country of Residence:**
- **Gender:**
- **Age:** (18-24) (25-34) (35-44) (45-54) (55 and above)
- **Level of Education:**
- **Occupation:** How long have you been involved in the start-up ecosystem? (Less than 1 year) (1-3 years) (4-6 years) (More than 6 years)
- **Industry Sector:** (Information Technology) (Financial Technology) (E-commerce) (Healthcare) (EdTech) Others (Please Specify) _____

B. Research Question 1: What are the Legal and Technology Policy Frameworks for Sustainable Start-up Ecosystems in Nigeria and India?

		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
1.	India has more sustainable legal frameworks for start-ups compared to Nigeria.					
2.	Technology policies in India are more supportive of tech start-up growth than in Nigeria.					
3.	The Nigerian government provides more support for technology-related start-ups than India.					
4.	India's regulatory environment is more conducive to start-up					

growth than Nigeria's.					
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C. Research Question 2: What is the comparative features of tech start-up policies between Nigeria and India?

		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
5.	There are more formal structures for incubators and accelerators in India than in Nigeria.					
6.	Nigeria actively promotes entrepreneurship through policy initiatives more than India.					
7.	Nigeria offers more incentives for tech start-ups compared to India.					
8.	Nigeria's tech start-up policies provide more opportunities for young entrepreneurs than India's.					

D. Research Question 3: What are the factors responsible for the failure of start-up in Nigeria?

		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
9.	Inadequate infrastructure and services significantly hinder start-up growth in Nigeria.					
10.	Access to funding is a major challenge for Nigerian start-ups.					
11.	There is a lack of coordination among stakeholders in Nigeria's start-up ecosystem.					
12.	Bureaucratic hurdles negatively impact the implementation of start-up policies in Nigeria.					

E. What is the prospect of the operationalisation of the Start-up Act in Nigeria?

		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
13.	There is widespread awareness of the Start-up Act among					

	Nigerian entrepreneurs.					
14.	Stakeholders believe that the Start-up Act will have a positive impact on the Nigerian start-up ecosystem.					
15.	Existing mechanisms are in place to facilitate the implementation of the Start-up Act in Nigeria.					
16.	Public-private partnerships have the potential to enhance the effectiveness of the Start-up Act.					

F. Research Question 5: What are the policy propositions that can support a sustainable start-up ecosystem in Nigeria?

		Strongly Agree	Disagree	Neutral	Agree	Strongly Agree
17.	Targeted policy changes would improve the start-up ecosystem					

	in Nigeria.					
18.	Public-private partnerships could enhance start-up support in Nigeria.					
19.	Improving access to venture capital is essential for the success of start-ups in Nigeria.					
20.	Collaboration between start-ups and research institutions would strengthen the ecosystem in Nigeria.					