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SME-LED GROWTH: HARNESSING INNOVATION AND FRONTIER TECHNOLOGIES FOR NIGERIA'S 2025 DEVELOPMENT

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Abstract:

The convergence of frontier technologies and innovative business models is crucial for advancing development agendas. In response to the need to rejuvenate a challenged economy and sustain economic diversification, the Nigerian government introduced the National Development Plan (NDP), 2021-2025. This medium-term blueprint seeks comprehensive, sustainable, and all-encompassing national development, with a focal point on Small and Medium-sized Enterprises (SMEs). This paper explores the pivotal role of innovation and frontier technologies in achieving diversification goals, emphasizing the contributions and challenges faced by SMEs. It employed qualitative research approach in its analysis. The paper evaluates the outcomes of the Economic Recovery and Growth Plan (ERGP), 2017-2020, building upon achievements and insights gained during its implementation. It scrutinizes NDP objectives and targets, revealing progress in meeting Vision 2020 goals. Despite GDP ranking improvements, the target to be among the world's top 20 economies was not achieved. The paper underscores the necessity of aggressive integration of innovation and frontier technologies for NDP's aims, including generating 21 million jobs and lifting 35 million people out of poverty by 2025. SMEs play a central role in this process. The study recommends a well-conceived plan, learning from ERGP shortcomings, and advocates for holistic adoption of innovation and technology. Recognizing SMEs as key drivers of economic transformation, the study contributes valuable insights to the discourse on sustainable economic development, providing a roadmap for stakeholders in Nigeria's journey towards prosperity, with a focus on SME-led growth.

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Introduction

Since achieving independence in 1960, Nigeria's economy has primarily depended on oil, subsequent to its discovery. Nigeria commenced oil production in 1958 and rose to the 7th position worldwide by 1972. The National Development Plan (NDP) was implemented from 1962 to 1968 with the aim of modernising and diversifying the economy, which heavily relied on oil. The plan specifically emphasised Import-Substituting Industrialisation (ISI). The objective of this programme was to efficiently allocate economic resources and determine project priorities through the use of cost-benefit analysis (Buys, 2020).

Several developmental programmes were implemented, demonstrating a rational pursuit of industrial growth. In line with diversifying the economy also, the Director General (DG) of the World Trade Organisation (WTO) highlights the immediate necessity for Nigeria to swiftly shift from an economy reliant on fossil fuels to one that relies on other sources, with a special focus on small and medium-sized enterprises (SMEs). This is because SMEs are vital for generating money, creating jobs, and contributing to the country's gross domestic product (GDP) (OECD, 2019). Perceiving that made successive governments introduced multiple National Development Plans (NDPs) with the prime objective of expanding and enhancing the economy through substantial investments in the SME sector.

To revamp the previous NDPs, the new government that emerged after returning of Nigeria to democratic dispensation in the Fourth Republic (1999–2003), the National Economic Empowerment and Development Strategy (NEEDS) was implemented, which prioritised the generation of wealth through SMEs. Although it was comprehensive, NEEDS did not achieve its inherent policy objectives (Ejumudo, 2013). The unsuccessful might be ascribed to the excessively ambitious character of the goals, which encompassed the creation of wealth and jobs, empowerment of the youth, and stimulation of economic growth all at once (Uche, 2019). And when the new government came, led by the then President Umaru Musa Yar'adua, it implemented Vision 20: 2020 initiative in 2007as a new national economic policy, which was passed down from the previous administration. This vision has 7-point agenda, which aimed to tackle SME challenges for rapid economic development, ultimately failed due to unattainable objectives and inadequate coordination (Iheanacho, 2012).

Given the obvious shortcomings in the vision 20: 2020 strategies, the subsequent government came-up with the Transformation Agenda (TA) during 2011–2015 with the objective of revitalising the industrial sector and encouraging the growth of local SMEs. Nevertheless, it was unsuccessful as a result of insufficient emphasis on the individuals involved (Awojobi, 2015). Then the Economic Recovery and Growth Plan (ERGP) were implemented in 2017 to enhance and broaden the economy, with SMEs playing a significant role. The government's foremost focus is on the current National Development Plan (NDP) 2021–2025, which draws upon insights gained from past plans. It conforms to worldwide economic patterns and highlights the significance of small and medium-sized enterprises in promoting sustainable development. The efficacy of Nigeria's growth strategy, as indicated by the World Bank Nigerian update (2022), hinges on a strong execution system.



Despite the implementation of these numerous strategies and economic policy changes, the economy continues to exhibit subpar performance and lacks competitiveness, notably in the realm of technology. According to the Global Adaptation Index (GAI) 2023, Global Economic Diversification Index (GEDI) 2023, Ease of Doing Business Index (EoDB) 2023, and Global Competitive Index (GCI) 2019 reports, there is evidence of an increasing gap in digital access and capabilities across emerging economies of Sub-Saharan Africa (SSA). The Nigerian government introduced the National Development Plan (NDP) 2021–2025 blueprint as a response, which is in accordance with the National Digital Economy Policy and Strategy (NDEPS) 2021–2030. This study examines the crucial role of innovation and cutting-edge technology in attaining diversification objectives, highlighting the contributions and obstacles encountered by SMEs.

Research Objective and Scope

The remarkable advancements in national development programmes (NDP) and national digital economic strategies, along with the quick economic growth observed in developing nations, have generated significant study interest in understanding the factors that have contributed to their consequential progress (Buys, 2020). The literature has been particularly categorised into primary approaches of highlighting the significance of both government and markets in stimulating growth (OECD, 2019). In addition, researchers have examined a perspective that focuses on technology, aiming to clarify the strategic methods used by emerging economies to catch up technologically (Buys, 2020).

In this paper the initial inquiry is to comprehend the complex characteristics of the digital economy and strategy policy in the context of a developing economy of Sub-Saharan Africa (SSA). Subsequently, the objective of the study is to reveal the fundamental concepts, dynamics, and consequences related to the implementation of digital strategies. The investigation focuses on examining the influence of a national development policy blueprint on the innovative capacities of companies operating in an emerging economy of SSA. In this study, the objective is to reveal the interdependent connections between national development policies and the inventive capabilities of local firms.

This article aims to analyse the patterns of variation and factors that influence the growth and evolution of SMEs in developing economies of SSA. Afterwards, it provides a thorough evaluation of the approach of implementing digitalisation by utilising advancements in cutting-edge technology, examining its effect as a catalyst for promoting economic growth in developing nations and its impact on economic and social frameworks. The paper also examines the intricacy of digitalisation blueprints, specifically emphasising their significance in promoting equitable economic growth within the unique dynamics of developing economies of SSA.

Conceptual and Literature Background

SMEs Development

On a global scale, a considerable number of businesses are classified as SMEs, which are acknowledged as vital drivers of innovation, employment generation, and substantial contributors to total economic expansion (Ouma-Mugabe et al., 2021). As per the World Bank (2020) study, SMEs make up around 90% of all businesses and more than 50 percent of productive economic activity. They contribute 40% of the Gross Domestic Product (GDP) in emerging economies and when taking into account informal enterprises, this number is further *Copyright* © *GLOBAL ACADEMIC EXCELLENCE (M) SDN BHD - All rights reserved*



elevated. According to the report, it is projected that SMEs will create around 600 million employment opportunities by the year 2030. As a result, fostering the growth of SMEs is of great importance for economies worldwide. The World Bank (2020) report also added that SMEs are responsible for creating 70% of the new formal employment opportunities in developing countries.

In Nigeria specifically as one of the emerging economies within SSA, SMEs has for long been playing a crucial role in job creation, revenue generation, and make a major contribution to the country's GDP. Based on the National Bureau of Statistics (NBS, 2022) report, local SMEs make up 48 percent of Nigeria's Gross Domestic Product (GDP), operating across diverse industries such as manufacturing, agriculture, services, and retail, among others. The report emphasises that small and medium-sized enterprises (SMEs) constitute 96 percent of the country's businesses and contribute to 84 percent of the total employment. In Europe also SMEs make up 99.8% of all businesses in the region and are responsible for 56.4% of the value-added and 66.6% of the employment in the non-financial business sector. As Europe is a home to over 25 million SMEs throughout its 28 EU-member states. While in the United States (US), the U.S Chamber of Commerce (USCC) reported that SMEs accounted for 99.9% of all the U.S firms, making 33.2 million SMEs in America.

The Digital Economy as an Emerging Foundation of Nigeria's Development Strategy

Digital economy is progressing speedily and is becoming more prevalent in both developed and emerging economies as nations are embracing emerging technologies to enhance connectivity, create unique value offerings, advance data analysis and enable automation. This is imperative as the quest for greater productivity is the key focus of sensible industrial strategies and reforms (Kinda, 2021). These policies aim to direct factors of production towards SMEs that are excluded and have lower technological advancement, while also promoting competition in both domestic and foreign markets (Page and Okeke, 2019). Nigeria's productivity, namely in the non-oil sector, has seen a persistent decline throughout the last decade (Cherif and Hasanov, 2019).

The declined according to Federal Ministry of Communications (FMC) may be attributed to the insignificant investment in innovation and digitalisation to harness the power as well as the huge potential of Information and Communication Technology (ICT) in job creation and economic transformation (NDEPS, 2021-2030) report. Recognising this fact and prospect of digital economy the FMC was re-designate to Ministry of Communications, Innovation and Digital Economy (FMoCIDE) with a mandate to develop and implement a harmonized and well-coordinated digital economy policy and strategy for Nigeria. This giant strategy has made the country in the second quarter (2Q) of 2019 report by the National Bureau of Statistics (NBS) to record an impressive contribution of 13.85% to the Nigerian GDP. The initiative according the FMCIDE has also made government to save above16.8 billion Naira. This has vividly indicated the imperative and prospect of the emerging technologies in our job creation and economic diversification strategy. And according to the United Nations Conference on Trade and Development (UNCTAD), Nigeria's e-commerce spending is projected to appreciate to \$75 billion in 2025.

Analysis of the Innovation Landscape and Emerging Technologies

Before the global financial crisis, several emerging economies experienced a significant rise in productivity growth, surpassing that of industrialised economies. This resulted in catch-up effects in these economies (Kinda, 2021). The area benefits from digital technologies and *Copyright* © *GLOBAL ACADEMIC EXCELLENCE (M) SDN BHD - All rights reserved*



innovation, giving advanced economies an advantage. Firms can leverage digital and developing technology to enhance their capabilities in designing, producing, and selling goods and services. Advancements in artificial intelligence, robots, computational capabilities, and the utilisation of large-scale data have instigated a fresh surge of innovation and swift digital transformation in diverse industries in recent times. This encompasses areas such as e-commerce, financial technology (fintech) in the digital realm, ridesharing, and services facilitated by mobile applications.

Leveraging on these emerging technologies, India has emerged as a dominant force in the global information technology services industry and has taken the lead in developing "digital stacks" that seamlessly combine digital payment and identification services, among other things. This establishes a fundamental basis on which innovators might construct supplementary services and apps (World Bank, 2021). Enhancing human capital is of utmost importance in all economies, particularly in India, Malaysia, and Vietnam, where there has been a growth of over 10 percentage points in tertiary education enrolment rates over the past two decades. This upgrade facilitates the adoption and advancement of technology by firms, specifically in the realm of product innovation.

Artificial intelligence
Internet of things
Blockchain
Big data
Robotics
Drone technology
5G
3D printing

Figure1: Industry 4.0 Frontier Technologies

Source: UNCTAD, 2023

The figure above, denoted as Figure 1, illustrates the categorization of frontier technologies by UNCTAD into three main groups: Industry 4.0 frontier technologies, green and renewable energy technologies, and other frontier technologies. These new and rapidly emerging technologies leverage digitalization and connectivity, showcasing their potential economic benefits. This study adapted industry 4.0 frontier technologies as indicated in Figure 1, because the combination of technological maturity, demonstrated business value, interconnectivity, government support, and scalability has propelled the adoption of Industry 4.0 frontier technologies, making them more prevalent and impactful compared to other emerging technologies.

Intersection of Cutting-edge Technology and Expansion of Economic Activities into New Areas

The global digital revolution, which has occurred in four distinct stages from the late 1980s, has gradually and fundamentally altered economies and civilizations worldwide. At first, there was a rise of an interconnected economy due to the widespread adoption of the internet and the implementation of broadband networks (Kinda, 2019). The growing utilisation of digital



platforms as business models for delivering goods and services indicated the emergence of a digital economy (Kinda, 2019). Currently, there is a trend towards an economy that is digitalised; meaning that the way goods and services are produced and consumed is centred on the incorporation of digital technologies in economic, social, and environmental aspects. The digital economy enables customers to access a wide range of information, expertise, commodities, and services, making remote consumption more efficient and convenient. Ideally, this transformation should lead to the fulfilment of consumers' requirements using intelligent products, which are frequently linked to sophisticated and personalised services.

The incorporation and assimilation of cutting-edge digital technologies, such as fifth generation (5G) mobile networks, the Internet of Things (IoT), cloud computing, artificial intelligence, big data analysis, and robots, indicate a transition from a highly interconnected world to digitalized economies and societies. This convergence results in the creation of a system that is digitally interconnected, with traditional and digital economies blending together. This leads to the emergence of increasingly intricate ecosystems that experience changes in their organisation, institutions, and regulations (ECLAC, 2018).

The Digital Economy as a Key Component of the Development Strategy

The promotion of the SME sector as a catalyst for economic growth and development has gained significant attention worldwide, even in advanced economies (Crouzet and Eberly, 2018). Additionally, digital platforms are projected to generate around 70% of new economic worth in the next ten years. The worldwide trend has spurred numerous governments, particularly in Asia, to expedite their innovation and digitisation programmes. The focus of these policies is to improve the digital skills and creativity of SMEs, expand digital infrastructure, and encourage the use of digital payments (Mohnen, Polder, and van Leeuwen, 2018). Based on the findings of Oxford Economics (OE) in 2016, the worldwide digital economy has a value of \$11.5 trillion, representing approximately 15.5% of the global economy.

The digital economy, as defined by the European Commission (UC), refers to firms that offer products and services online, including digital platforms that connect available resources with consumer demand (Uche, 2019). The World Economic Forum (WEF) and the Group of Twenty (G20) defined the digital economy as comprising various economic activities, which include both jobs in the digital sector and digital vocations in non-digital sectors. While this paper defines digital economy as a sector of the economy that depends on or is exclusively driven by technology to generate value.

Given these definitions and acknowledging the substantial value that leveraging on emerging technologies can yield; multiple nations are utilizing digital initiatives to bolster their digital economy. Malaysia for example, implemented the Malaysia Digital Economic Blueprint (MyDIGITAL) with the aim of fostering digital inclusivity and facilitating the expansion of the digital economy. Vietnam and Singapore also made huge investments in innovation and digitization in order to align it with modern economy. The Singapore's SMEs are benefiting immensely from the Go Digital programme introduced by the government specifically to assists SMEs in adopting digital technology in their operations. China again is actively promoting the participation of SMEs in international e-commerce platforms, enabling them to reduce costs and expand their overseas sales using digital methods. In New Zealand Digital Boost Programme was initiated to enhance the digital skills of SMEs, while in South Korea it



aggressively promoted the establishment of an online presence for conventional retailers by implementing dedicated digital support programmes.

All these numerous initiatives by the respective countries are geared towards encouraging adaption of digital economy as SMEs due to their distinct attributes requires novel technical approaches to foster expansion. ICT enhances industrial processes, reduces production costs, increases operational capacities, and impacts inter-organizational market collaboration. The Africa MSMEs Pulse Survey (AMSMEsPS) report for 2023 reveals that SMEs in Africa are progressively depending on technology. Approximately 62% of SME owners have reported a rise in the use of technology and online tools in recent years. This figure has reached 75% in Kenya, Nigeria, and South Africa.

The National Digital Economic Policy and Strategy (NDEPS) were launched in 2021 by the Federal Ministry of Communications, Innovation, and Digital Economy (FMCIDE) in Nigeria. The objective of this policy is to utilise digital technology in order to expedite national economic growth and enhance competitiveness. The policy is centred on two main components: Digital Services Development and Promotion (DSDP) and Digital Society and Emerging Technologies (DSET). The primary objective of DSDP is to cultivate a dynamic digital environment that fosters innovation-driven enterprises (IDE) and micro, small, and medium enterprises (MSMEs) in order to stimulate innovation. DSET focuses on enhancing the influence of the digital economy on the welfare of individuals and providing guidance to entrepreneurs in the field of new technologies. UNCTAD forecasts a substantial surge in Nigeria's e-commerce expenditure, reaching \$75 billion by 2025.

Research Approach

This study adopts a qualitative research approach, leveraging documentary analysis to scrutinise secondary data extracted from existing studies. First, it employs documentary analysis for exploring historical records, reports, and other documents to glean insights into specific phenomena or topics. By employing this approach, the study aims to deepen understanding and contribute novel insights to the field of SME-led growth and technological innovation within the context of Nigeria's development aspirations for 2025. Furthermore, a bibliometric analysis is conducted to augment the study's findings and enrich its theoretical framework. Through this analysis, the study seeks to identify key themes, emerging trends, and gaps in existing research related to SME-led growth and the utilisation of frontier technologies. By combining documentary analysis with bibliometric techniques, this research endeavours to provide a comprehensive and nuanced exploration of the interplay between innovation, technological advancement, and economic development in Nigeria.

Conclusion

With the increasing emphasis on economic growth in many countries, the adoption of cuttingedge technology and innovations is seen as a vital catalyst. Empirical data indicates that nations that actively implement policies to improve digital skills among SMEs and strengthen digital infrastructure observe significant advancements in economic diversification. This paper examines the crucial role of innovation and cutting-edge technology in achieving diversification objectives, providing insights into both the contributions and obstacles faced by SMEs. The Economic Recovery and Growth Plan (ERGP), 2017–2020, is assessed to establish a basis for building upon accomplished goals and utilising knowledge gained from its execution.



The evaluation encompasses the objectives and targets established by the National Development Plan (NDP), uncovering progress made towards the aims of Vision 2020. Although there have been notable gains in the country's GDP ranking, the lofty goal of placing the country among the top 20 economies in the world has not been achieved. The document highlights the urgent requirement to actively incorporate innovation and cutting-edge technology in order to coincide with the NDP's primary goals, which include creating 21 million jobs and raising 35 million individuals out of poverty by 2025. SMEs play a crucial role in this transforming process, serving as key contributors.

A meticulously devised strategy is advised based on the study's results, using the insights gained from the shortcomings of ERGP. The document promotes a comprehensive embrace of innovation and technology, acknowledging the essential contribution of SMEs in driving economic transformation. This report offers useful insights into sustainable economic development, serving as a roadmap for parties engaged in Nigeria's pursuit of prosperity, particularly focusing on growth driven by SMEs. The conclusion highlights the crucial role of proactive actions, highlighting the relevance of innovation and technology as drivers of Nigeria's economic prosperity.

Contribution

This study has made a significant contribution by emphasizing the importance of leveraging emerging technologies to enhance the competitiveness of Small and Medium Enterprises (SMEs) within the emerging economies of Sub-Saharan Africa (SSA), particularly Nigeria. Through its investigation, the study has unveiled how the adoption and utilisation of these new and rapidly emerging technologies impact digitalisation and connectivity, thus highlighting their considerable economic potential and benefits. The study's exploration of the adoption of Industry 4.0 frontier technologies also underscores the profound impact of several key factors. These include technological maturity, demonstrated business value, interconnectivity, government support, and scalability. It highlights how the convergence of these elements has driven the widespread adoption and profound impact of Industry 4.0 frontier technologies, positioning them as more prevalent and influential compared to other emerging technologies.

Limitations and Directions for Future Research

Notwithstanding the fundamental contributions offered by this paper, yet there are some caveats as the scope is only confined to Nigeria, an emerging economy within Sub-Saharan Africa (SSA), thus limiting its applicability solely to Nigeria. Additionally, the study fails to encompass other countries within the broader emerging economy of SSA, restricting its generalisability beyond Nigeria. Furthermore, the study's reliance solely on qualitative methods poses a limitation, as it does not incorporate quantitative or mixed methods approaches, which could provide a more comprehensive and nuanced understanding of the subject matter. This study was conducted within the specific context of emerging economies in Sub-Saharan Africa (SSA), with a focus on Nigeria. Therefore, future research endeavours could replicate similar studies in other regions of emerging economies to achieve a more comprehensive understanding of the effectiveness of leveraging emerging technologies in enhancing firms' competitiveness and facilitating technological catch-up. Additionally, future studies could consider adopting quantitative or mixed methods research approaches, integrating both qualitative and quantitative methodologies to provide a more nuanced and holistic analysis of the subject matter.



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