

## ASSESSING THE ROLE OF DIGITAL FINANCE AS ENABLER OF DIGITAL ECONOMY IN NIGERIA: PROBLEMS AND PROSPECTS

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### Abstract

*The study explores the critical role of digital finance in enabling the development of the Nigerian digital economy. As is already known, a truly digital economy is one in which industries from farming to pharmaceuticals, have embedded digital technologies deep in their production processes to boost economic performance. Businesses from across the industrial spectrum are investing in digital and making the most productive use of it as the world is living through an era where digital technologies are faster, more powerful and cheaper especially in the area of their application in digital financial services delivery. It is estimated that digital economy will contribute up to 25% to the global GDP by 2025. Digital finance especially effective digital payment systems have played a very important role in all countries with a thriving digital economy. The research adopted a descriptive research methodology using secondary data obtained from the CBN publications and used multiple linear regression methodology for analysis. The result obtained shows that digital finance plays a significant role in the development of a digital economy. The research concludes with a call for the Nigerian government to invest in the development of digital infrastructure and the digital skills of its citizens to achieve a robust digital economy that can contribute towards its desire for a diversified economy and increased revenue generation.*

**Keywords:** *Digital economy, Digital finance, collaborative economy, emerging technologies, financial inclusion.*

**JEL Classification Code:** M10

### 1. Introduction

There is no doubt that Nigeria continues to face economic and security challenges which have resulted into multidimensional insecurity that have manifested in the form of banditry, cattle rustling, ritual killings and kidnapping for ransom in almost all regions of the country. However, a closer look reveals that the prevalence of all these challenges may not be unconnected with the fact that many young adults are either unemployed or underemployed. In recent time the security agencies have been having a running battle with the advanced fee fraud crime popularly called “yahoo-yahoo boys” which borders mainly on the wrongful application of technological innovations. The high level of unemployment has led many to resort to survival at all cost and by all means. The government on its part has talked so much about diversification of the economy in order to increase productivity, create job opportunities for the unemployed, increase revenue generation and end the over dependence on crude oil exportation.

One of the ways this can be done is to explore the opportunities that abound in the application of technological innovations especially in the area of digital finance and digital economy which can

create so many jobs for the youths, reduce crime and corruption and at the same time put Nigeria on the map of digitalized countries. This research work is borne out of the need to explore ways to overcome these economic challenges of the country by providing a viable alternative source of revenue via the digital economy and also as a way of diversifying the economy.

Nigeria needs to overcome its economic challenges in order to overcome its security challenges and for this to be achieved, it must develop its digital economy as a way of diversification and shoring up its revenue earnings. Digital transformation is a strategic transformation that requires not only the implementation of digital technologies, but also cross-cutting organizational changes, a shift in corporate culture and business models (Strenitzerova 2016; Strenitzerova, Garbarova 2016). There must be a radical transition from existing systems, enterprise infrastructure and the business models to more upgraded platforms and software, which can be delivered as cloud-based service instead of the traditional methods. Digital transformation involves changes in corporate culture by the adoption of digital technologies that make work more efficient and easier for employees, changing the business models and processes and also in a way that the customers respond.

The emergence of new digital technologies and their integration into all spheres of society creates a new kind of paradigm of the economy.

According to Chinoracky and Corejova (2021b) this new kind of paradigm of the economy is qualified as the digital economy. Lippoldt (2022) stated that the international digital economy has grown to a massive scale, operating in the context of an inconsistent and incomplete governance framework cobbled together at the multilateral, regional and bilateral levels. Chinoracky and Corejova (2021a) made it clear that Digital technologies are the driving force behind today's technological progress. Digital technology here refers to all types of electronic devices and applications that use information in the form of numerical codes. Microprocessor-based devices that process and use digital information include personal computers, cell phones, and communications satellites. Digital applications such as the Internet, operating systems, and enterprise resource management information systems are dependent on such devices (Urbinati et al. 2020; Khin, Ho 2019).

Nigeria can benefit a lot from the digital economy as the country with its over 197 million population has half of it made up of people under the age of 30 and accounts for up to 47% of West Africa's population. It also has the largest mobile market in Sub-Saharan Africa, supported by strong mobile broadband infrastructure and improved international connectivity according to the world bank. The World Bank (2019) A World Bank report, in 2016 stated that the global digital economy was worth about USD 11.5 trillion, equivalent to 15.5% of the world's overall GDP; and it is expected that it will reach 25% in less than a decade, quickly outpacing the growth of the overall economy. The World Bank (2019) Today Nigeria only captures a fraction of this growth and needs to make a conscious and consistent effort backed with strategic investment in the entire digital economy ecosystem to be able to keep pace.

This research will therefore explore the strategic position of digital finance as one of the foundational pillars of a digital economy and the critical role it plays in enabling the development of a functional and inclusive digital economy. It will also explore the problems hindering the role and the prospects derivable from a successful digital economy realization.

It has been observed that digital financial services in the form of financial products and services that uses the internet technology to make it easier for people to directly access various kinds of payments, shopping, savings, investments, including loan and credit facilities have exploded across the world creating opportunities for both self-empowerment and national economic development at a scale not imagined few decades ago. Even in Nigeria, some Fintech startups with business models built around the digital payment systems have attracted foreign investment to help scale their operations, which have led to the exponential growth in digital payment systems, the major components of digital finance. However, the integration of the entire digital economy ecosystem that will help Nigeria close the gap as it reaps the benefits of a full digital economy is still lacking.

Digital economy as the extensive applications of digital technologies in economic activities including the production of those digital technologies needs the effective integration of the fundamental building blocks for successful actualization according to the World Banks' "Nigeria Digital Economy Diagnostic report 2019" (The World Bank, 2019). There must be investment in areas such as:

- Digital Infrastructure such as good and affordable internet connectivity that provides the way for people, businesses, and governments to get online and link with local and global digital services, thus connecting them to the global digital economy;
- Digital Platforms that offer products and services, accessible through digital channels, such as mobile devices, computers, and Internet, for all aspects of life. Digital platforms enable producers and users to create value by interacting with each other. Both Governments and businesses operate digital platforms to offer a growing array of products and services;
- Digital Financial services that enable individuals and businesses to conduct transactions electronically or online. In fact, access to affordable and appropriate digital financial services is critical for the participation of individuals and businesses in the digital economy;
- Digital Entrepreneurship and innovation create an ecosystem to bring the digital economy to life with new, growth-oriented ventures and the transformation of existing businesses, which contribute to net employment growth and help enhance competitiveness and productivity of the economy; and
- Digital Skills that ensure a pool of digitally savvy workforce that can help build robust digital economies and competitive markets. Digital skills constitute both technology skills and business skills for building or running a start-up or enterprise. Greater digital

literacy further enhances adoption and use of digital products and services among the larger population.

This research will dwell extensively on digital finance and the role it plays in the development of an effective digital economy. A closer examination of digital finance may bring about the question of purpose. Every economic activity is designed to create solutions and it is the solution created that brings about the exchange of values. To this end we must understand how the players both the providers of the services and the users of same communicate. The need for effective rewards and settlement of transactions requires a common channel and digital finance steps in to satisfy this need. Digital finance is therefore what powers the seamless settlement system of the digital economy and by extension plays a very prominent role in its survival.

## 1.2 Problem Statement

As stated in the introduction, there is no gain saying the fact that Nigeria as a country has continued to face some economic and developmental challenges which have not allowed the country to realize its full potentials especially in the area of technological innovations.

Over the years the nation has depended mainly on crude oil as its main source of revenue and foreign exchange; the consequence has been that any volatility in the international oil market just like the one currently triggered by the on-going Russian-Ukrainian war impacts negatively on its overall economy. Successive leadership and government have talked so much about the need for diversification of the Nigerian Economy, yet not much in terms of practical result have been achieved even till recently.

According to the Organisation of the Petroleum Exporting Countries (OPEC) report, Nigeria's oil and gas sector contributes almost 10% of the country's GDP and 86% of its foreign exchange earnings. Little wonder the National Bureau of Statistics (NBS) report that ICT contributed about 15.21% to the GDP in the 4<sup>th</sup> quarter of 2021 was such exciting news to the Government. The good news is that Digital economy offers Nigeria one of the clearest and fastest opportunities towards the achievement and actualization of this much talked about economic diversification and sustainable economic development. Though there has been some research work on Nigeria digital economy, none have fully addressed the important role that digital finance can play as an enabler for the actualization of the digital economy; the problems hindering it and the prospects.

This study is an attempt at closing the identified gaps by examining the role that digital finance can play in the quest for the development and actualization of the digital economy in Nigeria. The article provides a discussion on digital economy, digital finance and explores the roles that digital finance plays as an enabler of digital economy in Nigeria - an area that has not been fully addressed in the literature.

## 2. Literature Review:

### 2.1 Conceptual Framework

At a conceptual level, the discussions address the relationship that exist between digital economy, digital finance and emerging technologies within the Nigerian contest, highlighting the problems and prospects associated with digital finance in the development of digital economy in Nigeria. It tries to answer the questions of whether digital finance plays any significant role and enables the development of digital economy; what barriers hinder this role and identify the prospects associated with a digital economy to the overall economic development of Nigeria.

### **2.1.1 Objective: To examine the role of digital finance as an enabler of Nigeria Digital Economy**

Other objectives include highlighting the benefit associated with a digital economy; to assess the current position of the digital economy in Nigeria and to explore the problems and prospects associated with the digital economy.

### **2.1.2 Research Questions**

What is the role of digital finance in enabling the development of a digital economy?

What is the problem hindering the development of the digital economy in Nigeria?

What is the prospect that accompanies the development of a digital economy?

### **2.1.3 Research Hypothesis**

H0: Digital finance is a significant enabler of digital economy in Nigeria.

### **2.1.4 Digital Finance**

While there is no standard definition of Digital Finance, there is some consensus that it encompasses all products, services, technology and/or infrastructure that enable individuals and companies to have access to payments, savings, and credit facilities via the internet (online) thereby lowering the cost of such service and at the same time encouraging financial inclusion? In other to develop a conceptual framework for this research work, I will consider some of the different definitions of digital finance in the literature. Shen & Huang (2016) In their article titled “Introduction to the special issue: Internet finance in China” stated that Internet finance, which is often referred to as “digital finance” and “Fintech” refers to the new business model of utilizing the Internet and information communication technologies to accomplish a wide range of financial activities, such as third-party payment, online lending, direct sales of funds, crowd funding, online insurance, and banking. The Internet can significantly lower transaction costs and reduce information asymmetry, enhance the efficiency of risk-based pricing and risk management, and expand sets of feasible transactions. Ozili (2018) opined that digital finance includes all products, services, technology and / or infrastructure that enable individuals and companies to have access to payments, savings, and credit facilities via the internet (online) without the need to visit bank branches or without dealing directly with financial service providers. Based on the latest technological developments, digital finance also includes financial technology (fintech) which offers various investment products in the form of gold which is then referred to as digital gold, stocks, financial derivative products and commodities.



Haider (2018) referred to it as Innovative financial technologies to support livelihoods and economic outcomes, the research examined the innovative financial technologies to support livelihoods of people. Access to digital technologies, in particular mobile phones, internet connectivity and biometric authentication, allows for a wider range of financial services, such as online banking, mobile phone banking, and digital credit for the unbanked. Digital financial services can be more convenient and affordable than traditional banking services, enabling low-income and poor people in developing countries to save and borrow in the formal financial system, earn a financial return and smooth their consumption.

Durai and Stella (2019) in their paper Digital Finance and Its Impact on Financial Inclusion defined digital finance is financial service delivered through mobile phones, personal computers, the internet or cards linked to a reliable digital payment system. They stated that digital finance has the potential to provide affordable, convenient and secure banking service; as well as provides greater control over customer personal finance, quick financial decision making, and the ability to make and receive payments. It includes Internet banking, Mobile banking, Mobile Wallets (apps), Credit card and debit card. Manyika et al. (2016) McKinsey Report defined Digital Finance as Financial services delivered via mobile phones, the internet or cards. As an umbrella word, it encompasses a magnitude of new financial products, financial businesses, finance-related software, and novel forms of customer communication and interaction delivered by Fintech companies and innovative financial service providers.

### 2.1.5 Digital Economy:

As a new economic form formed by the transformation of information and communication technology, the term Digital Economy was first proposed by Tapscott (1996) in his book “The Digital Economy: Promise and Peril in the Age of Networked Intelligence” and called it ‘the era of networked intelligence.’ The author points out that the digital economy can combine intelligence and knowledge with creativity to realize the breakthrough of technology as well as intelligent networks to create wealth and promote social development. With the rapid development of the information and communication technology (ICT) sector, the digital economy’s connotation is constantly enriched and improved with basic technology development.

According to Miao (2021) he reflected the opinion of the OECD in 2020 that a digital economy is an economic form with data as the production factor. Some economic sectors or all are business models formed by some economies (such as digital technology, digital network, digital services, or digital models) according to (OECD, 2020). He went further to reference other authors such as (Kim, 2006; Lane, 1999; D’Ippolito, Messeni Petruzzelli, and Panniello, 2019; Ceipek et al. 2020) who have all made contribution to the definition of the digital economy. Bukht & Heeks (2017) did a comprehensive literature review of the various definitions and doubts on the concept of digital economy that have arisen over time since the typically-cited origin of the term: Don Tapscott’s the Digital Economy: Promise and Peril in the Age of Networked Intelligence. Tapscott (1996), argued the digital economy to encompass two

generations of economic activity. The first was informational and comprised of basic tasks such as putting up static information on websites, but the second related to communication, reflecting the more interactional activities enabled by the Internet.

The term “digital economy” refers specifically to the recent and still largely unrealized transformation of all sectors of the economy by the computer-enabled digitization of information. Some sources refused to give a specific definition of digital economy, like the European Parliament which called it a complex structure in 2015 and Elmasry et al. (2016) that saw it more as a way of doing things and less as a concept.” These authors were therefore seeking to demonstrate that something beyond earlier informational ideas was underway. According to Margherio et al. (1999) in their paper The Emerging Digital Economy IT-enabled business activities was included into the definition of digital economy.

Brynjolfsson and Kahin, (2000) contributed by making this more explicit in the edited volume, Understanding the Digital Economy where both editors and contributors included e-commerce into the scope of the digital economy.

Kling & Lamb (ibid.) identified four parts to the digital economy:

- Highly digital goods and services: These are goods that are delivered digitally and services of which substantial portions are delivered digitally e.g. online information services, software sales and online education.
- Mixed digital goods and services: the retail sale of tangible goods e.g. books, flowers, hotel rooms plus associated sales and marketing
- IT-intensive services or goods production: services that depend critically on IT for their provision e.g. accounting services or complex engineering design, manufacture of tangible goods in whose production IT is critical such as precision machining that uses computerized numerical control or chemical process plants that are controlled by computer.
- The segments of the IT industry that support these three segments of the digital economy: The goods and services of the IT industry that most directly support the foregoing three segments of the digital economy include a large fraction of the computer networking sub industry, PC manufacturing, and some IT consulting firms. Some analysts characterize the IT industries in more expansive terms and add communications equipment including broadcast and communications services.

None of the definitions restricts itself solely to the digital sector but always adds some component of the “ICT consumption/application” so digital economy is broader than digital sector, in fact it dovetails to cover all digitally-enabled economic activity

According to the EU Parliament, “The digital economy is increasingly interwoven with the physical or offline economy making it more and more difficult to clearly delineate the digital economy” (European Parliament 2015). Not only is there a problem of clarity, there is also a problem of scope: as more and more services, manufacturing and even primary production activities rely on ICTs, the digital economy under these definitions increasingly becomes just

“the economy”. To partly skirt this problem, Bukht et al opined that instead of referring to the broad scope covering all economic activity based on digital technologies as the digital economy it will be better to use an umbrella term the “digitalised economy” to properly describe it. This last point brings up the need to differentiate between two important terms, i.e. digitisation and digitalisation. While digitisation is the conversion of data from analogue to digital form, digitalisation on the other hand connotes the full application of digitisation or the process of utilizing digitized data in organisational, social processes and economic activities. All the definitions above even though not agreeing to a common definition of digital economy have acknowledged that digital technologies of some kind are the foundation for the digital economy.

However, for the purpose of this research work, the definition given by Bukht et al has been adopted as the working definition of the Digital economy. Bukht & Heeks (2017) defined the digital economy as “that part of economic output derived solely or primarily from digital technologies with a business model based on digital goods or services”. This definition may have a blurred boundary but it is also flexible enough to incorporate digital and digital business model innovation over time.

As can be seen from Figure 1, it encompasses both the core digital sector and also the broader range of extensive digital activity, without claiming that all digitised activity is part of the digital economy.

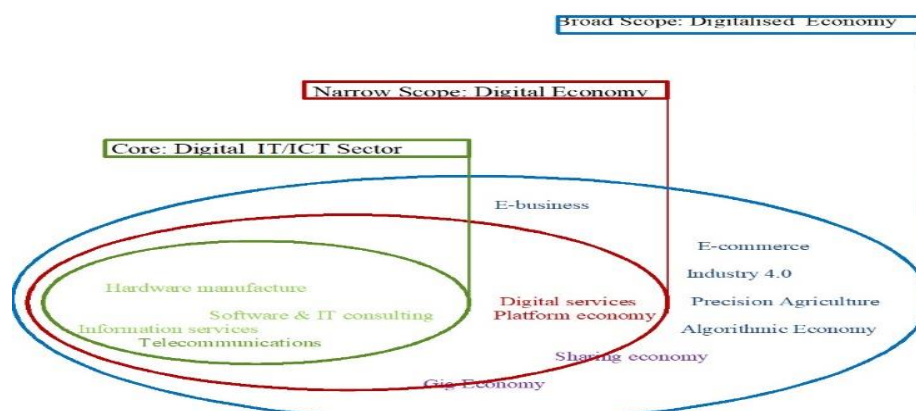


Fig 1. Digital Economy Scope, Source (Bukht & Heeks, 2017)

### 2.1.6 The State of the Nigeria Digital Economy

Nigeria still remains at the lower ebb of digitalised economies, government has made some effort to see the development of a digital economy. In 2019 the government announced a name change for the Ministry of Communications to Ministry of Communications and Digital Economy with the aim of driving the quest for a full digital economy through Ministerial coordination. The Ministry made a bold statement with the design of a “Digital Nigeria” roadmap anchored on eight pillars as follows:



- Developmental Regulation (effective regulation of the ICT and digital sector in a way that enables development)
- Digital Literacy and Skills (providing policy backing for massive training of Nigerians from all works of life in order to enable them obtain digital literacy and other digital skills.
- Solid Infrastructure (deployment of fixed and mobile infrastructure to deepen the broadband penetration in the country)
- Service Infrastructure (support for Government Digital Services and the provision of robust digital platforms to drive the digital economy)
- Soft Infrastructure (strengthening public confidence in the use of digital technologies and participation in the digital economy)
- Digital Services Development and Promotion (development of a vibrant digital ecosystem that supports Innovation Driven Enterprises (IDE) and Micro Small and Medium Enterprises (MSMEs) in a way that engenders innovation)
- Digital Society and Emerging Technologies (focus on tying the development of the digital economy to indices of well-being in the lives of the ordinary citizens; mentoring startups on emerging technologies and deploying their solutions)
- Indigenous Content Development and Adoption (provision of a policy framework that gives preference to digitally skilled Nigerians for government funded projects (Nigeria, 2019).

Also, the National Digital Economy Policy and Strategy document was launched in 2019 with the following objectives:

- Target 70% broadband penetration in 4 years
- To accelerate the digitalization of government processes and improve service delivery, transparency and accountability
- To improve trust, confidence and security around digital processes and activities
- To attract and grow digital jobs across all sectors of the economy
- To develop the technology start-up ecosystem by actively promoting innovation and entrepreneurship
- To support the digital literacy of Nigerian Citizens, Business and Government workers and enable them to acquire cutting edge digital skills
- To achieve a 95% Digital Literacy Level in Nigeria within the next 10 years
- To develop digital education curriculum to meet the current and future needs of the Digital Economy;
- To ensure that indigenous technology companies are able to participate actively in the government funded technology programmes; and
- To ensure that the policy and regulatory instruments are fit-for-purpose and actually support the digital business environment (Nigeria, 2019).

Some other policy documents and existing regulatory instruments for the development of a Digital Economy in Nigeria include:

- Guidelines for Nigerian Content Development in Information and Communication Technology (ICT)
- Cybercrime Act 2015
- Nigeria e-Government Interoperability Framework (Ne-GIF)
- Nigeria Cloud Computing Policy
- Nigeria ICT Innovation and Entrepreneurship Vision (NIIEV)
- Framework and Guidelines for Public Internet Access (PIA) 2019
- Guidelines for Clearance of Information Technology (IT) Project by Public Institutions
- Nigeria Data Protection Regulation 2019
- Standards for Data Interoperability
- Telecommunications Networks Interconnection Regulations

Nigerian government must put action to words, the political will and sense of urgency required must be demonstrated if meaningful achievement is to be made.

## 2.2 Theoretical Framework

Several theories and models have been developed which can be used to investigate and understand the role that digital finance play as an enabler of the digital economy. However, this study will utilize two theories to put the study into the right theoretical perspective. The theories are the innovation diffusion theory and the endogenous growth theory.

### 2.2.1 Innovation Diffusion Theory (IDT)

The Innovation Diffusion Theory was developed by E.M. Rogers in 1962, though it was further fine-tuned in 1995. Innovation diffusion theory focuses on understanding how, why and at what rate innovative ideas and technologies in this case Digital finance spread in the society. The overall result of diffusion is that people adopt the new technology for economic purpose. Adoption here means that a person does something differently than what they had previously and the key to adoption is that the person must perceive the idea, behavior, or product as new or innovative.

According to Les Robinson, in diffusion of innovations, it is not people who change, but the innovations themselves by impacting on the ways that things are done within the social system. (Les Robinson, 2009). For Nigeria to develop its digital economy, the technological innovations that drive the process must diffuse well and be fully adopted by the citizens to bring about the desired social impact and economic benefits.

### Limitations of Innovation Diffusion Theory

There are some criticisms of Diffusion of Innovation Theory, which include the following:

That Innovation diffusion theory did not originate by studying any high-end technological product rather its origin can be traced from agricultural fields. Also, Lyytinen and Damsgaard (2001) found that an innovation needs not necessarily pass-through various stages of adoption for an individual to adapt to it. Sometimes adoptions may take place in dyadic relationships, and it became difficult to identify the stages of adoption as stated in the theory.

Again, some hold the view that it does not foster a participatory approach to adoption of a new innovation. Finally, it is said that it doesn't consider an individual's resources or social support to adapt to new innovation in a social system. However, one must admit the fact that amidst all the criticism and literal battles against the theory, the innovation diffusion theory has been a great success story in itself; the theory has provided the needed theoretical foundation for thousands of papers and projects that have been carried out over the years.

### 2.2.2 The Endogenous Growth Theory

Arrow in 1962 introduced the concept of learning by doing which he regarded as endogenous in the growth process. Romer modified it with his Technological change Model in 1990 and this was the beginning of the endogenous growth theory. The theory is a financial theory that argues that financial or economic growth is generated internally rather than through external procedures. It focuses on how innovations and technology can lead to economic growth on the long run. It was developed as reactions to the omissions and deficiencies in the Solow-Swan neo-classical growth model. It explains the long run growth rate of an economy on the basis of endogenous factors as against exogenous factors of the neo-classical growth theory. According to Romer, ideas are more important than natural resources.

#### Assumptions of the endogenous growth theory are:

- a. Economic growth comes from technological change;
- b. Technological change is endogenous;
- c. Market incentives play an important role in making technological changes;
- d. Innovation of a new design requires a specified amount of human capital;
- e. Aggregate supply of human capital is fixed; and
- f. Technology is a non-rival input as such its use by one firm does not prevent its use by another.

#### Criticisms of the Theory

According to Scout and Auerbach, that the main idea of the new growth theory can be traced to Adam Smith and increasing returns to Marx analysis. Srinivasan does not find anything new in the new growth theory. Fisher criticizes the new growth theory for depending only on the production function and the steady state. Olson observed that the theory lays too much emphasis on the role of human capital and neglects the role of institutions. In the various models the difference between physical capital and human capital is not clear.

### Implications of the Theory

The major implication is that any economy that invests in technological innovation, knowledge and human capital development will experience more growth rate per capita. The rate of return to investment will not fall in developed economies relative to developing economies. Investment in education and in this case digital infrastructure and skills in any economy will have a positive effect that will lead to the diversification of that economy with spillover effects on other aspect of the economy. Countries with greater investment in human capital development and investing more on research and development will enjoy a faster rate of economic growth and can be seen as a likely reason why the digital economy of developing countries are having slow growth when compared with that of developed economies that invest more in research and have better digital infrastructures and skills.

### 3. Methodology

In any research work the methodology employed is the bedrock that validates the findings and gives credence to the work done. A qualitative descriptive approach and literature study was used for this research work. The literature study method seeks information from various scientific journals, articles, books, and even expert opinions on the relevant topic. It explored existing studies (secondary data) about the digital finance and digital economy.

This study employs published secondary data sourced from both the world bank database and Central Bank of Nigeria publications and reports covering a period of seven years from 2012-2018 on the volume and value of e-payment transactions. A filtration process was employed to extract the needed data from the publications, in the case of CBN, the value and volume of transactions via six e-payment channels that mirror digital financial services were selected out of twelve channels recorded. Also, the data on the real GDP (RGDP) was obtained covering the period from 2012-2018. The real GDP (RGDP) figures were filtered and only the information and communication figures were used to represent the digital financial services contribution to the RGDP. The research decided to use the RGDP because it is an inflation-adjusted measure that shows the actual value of all goods and services produced by an economy in a given year according to (Kenton, 2018). The period of seven years also reflects the time period data are readily available from the selected sources and publications for this research.

#### 3.1 Model Specification

The multiple linear regression analysis was used to analyze the data, this was because we have more than one independent variable (VOL of DFS; VAL of DFS) being studied against a single dependent variable (RGDP).

The model in its structural form is stated as follows:

$$Y = a + bX_1 + cX_2 + \epsilon$$

$$RGDP = a + bVOL_{DFS} + cVAL_{DFS} + \epsilon \dots\dots\dots 1$$

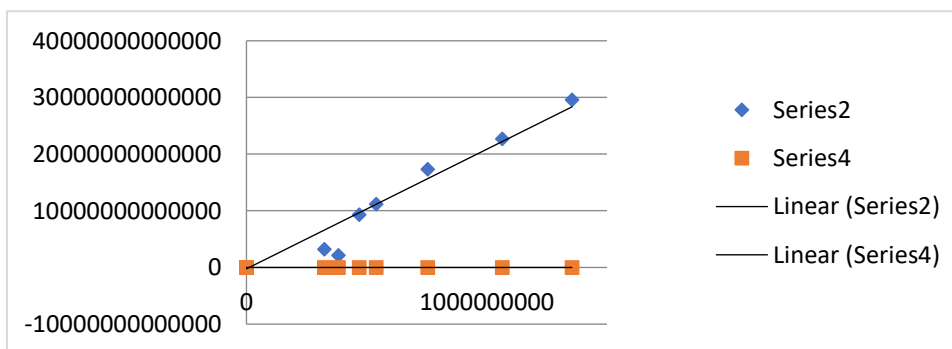
Where:  $RGDP_{DFS}$  = Percentage of Digital financial services in the Real Gross Domestic Product  
 $VOL_{DFS}$  = Volume of digital financial services;  $VAL_{DFS}$  = Value of digital financial services  
 $a$  = the Intercept;  $b, c$  = the slopes;  $\epsilon$  = the Residual (error)

#### 4. Results and Discussion

Summary Output			
<i>Regression Statistics</i>			
Multiple R	0.97783599		
R Square	0.956163223		
Adjusted R Square	0.934244835		
Standard Error	192453.7477		
Observations	7		

ANOVA					
	<i>Df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Signif. F</i>
Regression	2	3.2315	1.62E+12	43.6237	0.0019
Residual	4	1.4815	3.7E+10		
Total	6	3.3796			

	<i>Coefficients</i>	<i>Stand. Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 5.0%</i>	<i>Upper 95.0%</i>
Intercept	70997	2388	29.720	7.6318	64365.3	7762	64365.3	7762
X Variable 1	-0.0030	0.0010	-2.891	0.0444	-0.0059	-0.0001	-0.0059	-0.0001
X Variable 2	1.8147	3.9717	4.5690	0.0102	7.1198	2.9174	7.1198	2.9174



#### 4.1 Interpretation and Discussion

**R Square:** 0.956163223. This is known as the coefficient of determination.



It is the proportion of the variance in the response variable that can be explained by the explanatory variables. In this research it clearly shows that 95.6% of the variation in the Digital financial portion of the  $RGDP_{DFS}$  is as a result of the Value and Volume of the digital financial services within the period under review. In a simpler term, it is a confirmation of the usefulness of the variables used in the study.

**The R-Square Adjusted:** 0.934244835. This is a further confirmation of the significance of Digital finance in development of a digital economy. Having adjusted R square of 93.4% explains the extent to which the independent variables affect or influenced the dependent variable. The range is usually between 0-1 where figures close to 1 or 1 is always the desired result.

**Significance F:** 0.001921663 is the p-value associated with the overall F statistic. It confirms whether the regression model is statistically significant. In this case because the value is less than 0.05, it tells us that the two independent or explanatory variables i.e the value and volume of digital finance have a statistically significant association with the size of the digital economy.

**P-value:** The individual p-values of the different variables are also less than 0.05, which also confirm that each variable has a statistically significant association with the dependent variable.

## 4.2 Test of Hypothesis

H0: Digital finance plays a significant role as an enabler of digital economy in Nigeria.

With the significance F of 0.001921663, for the value and volume of digital financial services which is less than the normal range of 0.05, it shows that digital finance plays a significant role as an enabler of the digital economy in Nigeria. The hypothesis is therefore tested and proven.

## 5. Summary and Conclusion

The aim of this study is to assess the role of the digital finance as enabler of digital economy in Nigeria. In line with the assertion of Rumana Bukht & Richard Heeks, the digital economy has enabled fast revenue growth for many firms; encouraged the shift from tangible flows of physical goods to intangible flows of data and information; enabled firms in developing economies to connect across borders; and has thus facilitated a surge in cross-border data flows. Digital economy firms have disrupted incumbents across a wide range of sectors, with platform-centered business models that have proven highly successful (Rumana & Heeks, 2018).

Based on the work done and analysis of the result obtained, it can be safe to conclude that Nigeria stands to benefit immensely from digital innovations as it can help to diversify the economy, create more jobs and improve the standard of living of its citizen. E-Government will create new businesses; effective taxation of digital platforms will provide more revenue to the Government; increased usage of existing internet capacity especially in the rural areas; effective national broadband policy will help to harmonize the broadband connectivity of the country and enhance the country's potential of becoming an ICT Hub in Africa. In fact developing the digital

economy will leap frog Nigeria into the elite club of economies with highly digitally skilled work force and even become a regional ICT hub.

For Nigeria to achieve the noble objective of a robust digital economy, it must invest in the development of its digital infrastructure which will form the backbone on which the entire digital ecosystem of the digital economy can stand. Even though Nigeria's international connectivity is well developed as it is connected to high-speed Internet via five undersea international links: Main One; Glo; West African Cable System (WACS); SAT-3/WASC; and ACE submarine cable system (The World Bank, 2019); Nigeria must develop a national fixed broadband infrastructure, which will help to distribute the connectivity to all parts of the country.

From the review of literature, it was observed that though the country has a large mobile internet broadband, yet greater percentage of the regions in the country is still operating either the 2G or 3G networks which are very limited in terms of data capacity and also slow in data transmission. According to the world bank report, (The World Bank, 2019) fixed broadband penetration in Nigeria is very low, with a household penetration rate of 0.04% at the end of 2018, below the African regional average (0.6%) and well below the world average (13.6%) therefore the need for a national fixed broadband infrastructure cannot be overemphasized.

Nigeria must invest in the development of digital skills among its citizens. The innovation diffusion theory reviewed in the literature states that for people to accept and adopt an innovation, they must understand the usage and importance of such innovation. Finally, there is need for Nigeria to develop its digital entrepreneurial ecosystem in order to develop business models and platforms that will help the country overcome unemployment and underemployment among the teeming youths that are digitally savvy.

## References

- Margherio, M. et al. (1999). The Emerging Digital Economy: Conclusions. *Advances in Spatial Science*, 9783540344872, 331–339. [https://doi.org/10.1007/3-540-34488-8\\_15](https://doi.org/10.1007/3-540-34488-8_15)
- Bukht, R., & Heeks, R. (2017). *Defining, Conceptualising and Measuring the Digital Economy*.
- Chinoracky, R., & Corejova, T. (2021). How to Evaluate the Digital Economy Scale and Potential? *Entrepreneurship and Sustainability Issues*, 8(4), 536–552.
- Durai, T., & Stella, G. (2019). Digital Finance and its Impact on. *Researchgate. Net*, 6(1), 122–127. [https://www.researchgate.net/profile/Tabitha-Durai-2/publication/330933079\\_digital\\_finance\\_and\\_its\\_impact\\_on\\_financial\\_inclusion/links/5c5c28c1a6fdccb608af1cf1/digital-finance-and-its-impact-on-financial-inclusion.pdf](https://www.researchgate.net/profile/Tabitha-Durai-2/publication/330933079_digital_finance_and_its_impact_on_financial_inclusion/links/5c5c28c1a6fdccb608af1cf1/digital-finance-and-its-impact-on-financial-inclusion.pdf)
- Elmasry, T., Barnickel, N., Dib, H., & Bansal, A. (2016). Digital Middle East: Transforming the Region into a Leading Digital Economy. *Digital McKinsey*, 10(October), 1– 66. [www.mckinsey.com/business-functions/digital-mckinsey/how-we-help-clients](http://www.mckinsey.com/business-functions/digital-mckinsey/how-we-help-clients)
- Haider, H. (2018). *Innovative Financial Technologies to Support Livelihoods and Economic*

Outcomes. <https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/13942>

Kahin, E. B. B. (2000). Understanding the Digital Economy. In *Understanding the Digital Economy*. <https://doi.org/10.7551/mitpress/6986.001.0001>

Lippoldt, D. (2022). *Regulating the Digital Economy: Reflections on the Trade and Innovation Nexus*. 2017(Figure 1), 1–10.

Manyika, J., Lund, S., Singer, M., White, O., & Berry, C. (2016). Digital Finance for All: Powering Inclusive Growth in Emerging Economies. *McKinsey Global Institute, September*, 1–15. [https://www.mckinsey.com/~media/McKinsey/Featured Insights/Employment and Growth/How digital finance could boost growth in emerging economies/MGI-Digital-Finance-For-All-Executive-summary-September-2016.ashx](https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Employment%20and%20Growth/How%20digital%20finance%20could%20boost%20growth%20in%20emerging%20economies/MGI-Digital-Finance-For-All-Executive-summary-September-2016.ashx)

Miao, Z. (2021). Digital Economy Value Chain: Concept, Model Structure, and Mechanism. *Applied Economics*, 53(37), 4342–4357. <https://doi.org/10.1080/00036846.2021.1899121>

Nigeria, F. M. O. C. A. D. E. (2019). *National Digital Economy Policy and Strategy (2020-2030)*.

Ozili, P. K. (2018). Impact of Digital Finance on Financial Inclusion and Stability. *Borsa Istanbul Review*, 18(4), 329–340. <https://doi.org/10.1016/j.bir.2017.12.003>

Rumana, B., & Heeks, R. (2018). *Digital Economy Policy in Developing Countries*. 2, 31. <https://www.mendeley.com/catalogue/7dc37232-f2f7-37de-841f-5a8b4e318e1d/>

Shen, Y., & Huang, Y. (2016). Introduction to the Special Issue: Internet Finance in China. In *China Economic Journal* 9(3)221–224.

Tapscott, D. (1996). *The Digital Economy Promise and Peril*.

The World Bank. (2019). NIGERIA Digital Economy Diagnostic Report. *Documents1.Worldbank.Org*, 96.