AN EXPLORATORY STUDY OF THE RELATIONSHIP BETWEEN FINANCIAL TECHNOLOGY (FinTech) AND ASSOCIATED RISKS IN NIGERIA

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Abstract

Financial Technology (FinTech) has significantly transformed the financial landscape in Nigeria, enhancing access to financial services and fostering economic growth. However, its rapid evolution has introduced a range of associated risks, including cybersecurity threats, regulatory challenges, and consumer protection concerns. This study explores the dynamic relationship between FinTech development and the associated risks in Nigeria. By analyzing industry trends, regulatory frameworks, and empirical evidence, this paper aims to provide a comprehensive understanding of how FinTech influences economic progress while posing risks to financial stability.

Keywords: FinTech, Cybersecurity, Regulatory Challenges, Financial Stability.

1. INTRODUCTION

The financial services sector in Nigeria has experienced rapid transformation driven by advancements in FinTech. Innovations such as mobile payments, blockchain technologies, and digital lending have enhanced financial inclusion, enabling underserved populations to access financial services. Despite its benefits, the growth of FinTech introduces risks that could undermine the stability of the financial system. This study aims to explore the interplay between FinTech development and associated risks in Nigeria.

Statement of the Problem

The rise of Financial Technology (FinTech) which makes E-commerce an important global commercial transactions measures, this helps in giving the customers appropriate and less cost-effective. This helps in the growth of FinTech companies and makes them have the ability to address and reduce transaction cost and information asymmetry, with this it helps in the reduction of financial and technological innovations. Meanwhile even with the importance and potential of FinTech, customers in Nigeria still prefers to use their traditional financials methods for conducting financial transactions. They see these banks has been safer, albeit slower when been compared to other FinTech platforms.

Objectives of the Study

In light of the core problem necessitating this research, this research aims to achieve the following objectives:

i. To examine the concept of Financial Technology and identify the potentials and risks which are associated with the trend.

ii. To justify the regulation of FinTech by financial regulators in Nigeria in light of the potentials and risks posed by the trend.

Research Questions

Essentially, from the above objectives highlighted, the key research questions posed to the researcher include:

i. What are the risks posed by FinTech which are distinct from those posed by traditional financial service operations?

ii. Do the risks posed by FinTech and its enormous potential justify its regulation in Nigeria?

2. LITERATURE REVIEW

Conceptual Clarification of Financial Technology

Introduction

FinTech is growing, and the scope is becoming undeterminable, especially because various business models applying technology to solving problems in the financial sector are evolving, and traditional participants in the financial sector are adopting such models. This chapter attempts to clarify the concept of FinTech by sampling the opinions of various writers on the topic. The chapter further looks at the historical perspective of the growth of FinTech and how the trend has been adopted globally. Additionally, the justifications for regulating FinTech and regulatory approaches proposed for this trend will be examined.

Explaining the Concept of Financial Technology

The concept of FinTech can be simplistically utilized to cover every activity which involves applying a technology-based business model to solving issues in the financial sector. However, this would be too broad a definition, as the determination of what qualifies as FinTech should not be based on a superficial comprehension of these activities.

The first set of scholars to attempt a conceptual clarification of FinTech, especially to capture its evolutionary trends, are Arner, Barberis, and Buckley. These scholars contend that using a broad definition of FinTech, the activities of all existing and new financial companies and industry participants could be covered, irrespective of their size, business model, or product portfolio (Arner et al., 2015). In light of this, these authors proposed a definition of FinTech as "the use of technology to deliver financial solutions" (Arner et al., 2015).

Writers such as Leo and Teo opine that FinTech refers to "innovative financial services or products delivered via technology" (Leo & Teo, 2016). Similarly, Shim and Shin define FinTech as "a portmanteau that combines the words 'financial' and 'technology'" (Shim & Shin, 2016). In this writer's opinion, these definitions are simplistic and overly expansive.

The expansiveness has led some writers to describe Uber, a ride-hailing company, as a FinTech company because its business model involves the provision of non-traditional and innovative ideas to transportation services by using technology to improve ride hailing, especially the financial services component, as it provides a payment gateway for users (Zhang, 2017). The

danger of this analogy and the expansive definition offered previously is that companies whose business models are centered around other areas of technology such as AgriTech, HealthTech, EdTech, etc., but incorporate payment and other financial options in their operations, would be regarded as FinTech companies.

There is a need to have definitions that do not necessarily limit the scope of the concept but do not make the term a blanket concept to capture every instance where financial services meet technology, no matter how minute. The definition proposed by Lee and Kim is important in this regard. These writers define the concept as "a new type of financial service based on IT companies' broad types of users, which is combined with IT technology and other financial services like remittance, payment, asset management and so on" (Lee & Kim, 2015).

The writers further described the concept, drawing from the writing of Park, as including all the technical processes from upgrading financial software to programming a new type of financial software which can affect a whole process of financial service (Park, 2016). The rationale for considering this definition is because it is descriptive of the services that FinTech institutions render, and these activities are factors that determine whether the FinTech institution is to be regulated and which regulator is responsible.

Flowing from the opinion of Lee and Kim, the definition of FinTech should be based on nature and purpose. This means that the classification of institutions and products as FinTech depends on their nature, whether such institutions and products take the disruptive form which FinTech is known for, and the purpose of such institutions and products, that is whether their core objective is to apply technology to solving problems in the financial sector. For instance, Süddeutsche Zeitung reports that start-ups entered the business of financial services 2 to 3 years ago and intend to compete with traditional banks (Süddeutsche Zeitung, 2018). As regards its disruptive nature, Der Spiegel describes FinTech as "branch offices of the future and boogaboo for traditional banks" (Der Spiegel, 2018). These descriptions are apt as FinTech is disruptive to traditional financial services and naturally differs from these incumbent financial service institutions and products.

The question then is, does the difference between start-ups and traditional financial service institutions, in form and operations, give impetus to classifying the former as FinTech? In this writer's opinion, the nature does not guarantee a positive response to this question, unless the purpose of the start-up aligns with those of the FinTech industry.

The purpose of an institution or a product should also determine whether it should be classified under the FinTech industry. FinTech currently serves several purposes and will serve more purposes in the long run. However, a 2018 Report by the European Banking Authority (EBA) identified the current purposes which FinTech firms serve and since these uses are also identifiable within the Nigerian clime, this research will adopt those uses. The purposes highlighted by the Report include:

a. **Biometric Services**: such as fingerprint and retinal identification, are utilized in mobile banking applications for customer authentication. These services are used to guarantee good customer experience and security, alongside existing methods such as passwords and security questions. For instance, 'My Identity Pay', a Nigerian start-up, has launched a biometric product to provide businesses and individuals an easier and safer way to transact (EBA, 2018). The product eliminates common challenges, such as unavailability of tokens, One-Time Password (OTP), or hardware failure, in the digital banking sphere, which witnesses $2 billion in daily transactions (EBA, 2018).

b. **Machine-learning and Big Data Techniques**: these products improve risk management and customer understanding in financial institutions. A prominent service under this heading is credit scoring. Migo, a FinTech start-up in Nigeria, offers credit scoring services to various large corporations, such as banks and telecoms operators, to aid them in offering loans to their end-users (EBA, 2018).

c. **Automated Investment Advice**: institutions falling under this heading provide investment advice to users through online advice websites and robo-advisors. Institutions providing such services are of importance to the capital market. Their business model is structured around money management as they offer investment advice to investors, having gathered relevant data on the said subject of investment and weighed the risks involved. The importance of such services has led the Securities and Exchange Commission (SEC) of Nigeria to publish its Proposed New Rules on Robo-Advisory Services (SEC, 2019), which will be examined in detail in the next chapter.

d. **Distributed Ledger Technology (DLT) and Smart Contracts**: this is relevant to trade finance as it aids in the simplification of processes and reduces paperwork. A major use is to improve the identification and verification of customers of financial institutions in a bid to comply with anti-money laundering provisions.

e. **Mobile Wallets**: institutions and products providing this service serve as payment gateways that link credit/debit cards to mobile devices and are used for e-commerce and point-of-sale (POS) payments. Notably, Interswitch pioneered this service in Nigeria and other players such as Palmpay, oPay, Paystack, and Paga, amongst others, have joined the market (EBA, 2018).

Whilst the purposes reported by the EBA are commendable and comprehensive, what qualifies as FinTech will remain a non-ending debate. What is relevant is that FinTech is a revolutionary trend and "the biggest disruptor of our time for financial institutions" (EBA, 2018). However, the definitional challenges expose the necessity of examining the historical growth of this industry and its global explosion, to understand the nature of participants and products which were identified with the tag 'FinTech Institutions/Products' and to inform the decision on which participants and products should subsequently be identified by this tag. The next sub-heading addresses this.

Historical Exposition and Global Explosion of Financial Technology

The FinTech industry has gained popularity and increased presence over the last couple of years, and the impact of this industry around the world is remarkable. Essentially, the history and global explosion of FinTech must not be discussed in abstraction as there are innovative drivers which capture this historical growth. The study of Arner, Barberis, and Buckley is also important in this regard, as these writers discuss the history of FinTech utilizing an evolutionary approach that focuses on the source of financial innovation in the last two centuries (Arner et al., 2016). These writers distinguished between three phases of development which reveal dynamic changes that have occurred in FinTech infrastructure and sources of innovation over the years (Arner et al., 2016). Although these authors use FinTech expansively to describe an ever-evolving and innovatory financial sector with its dynamics and various actors, their research provides insight into the forms that FinTech has taken in the development process over the last couple of years. These three stages will be examined.

The first stage, referred to as 'FinTech 1.0,' occurred between 1866 and 1987. This stage witnessed the global laying down of the foundations of telecommunications infrastructure, especially the achievement of several milestones such as the installation of transatlantic transmission cables (Arner et al., 2016). In this stage, correspondent banking was established, and the financial institutions globally became interconnected, and the infrastructures guaranteeing this interconnectedness are still in use today by banks in the provision of reliable

services to their customers (Arner et al., 2016). The impact of this phase was the investment in infrastructures which made it possible to have the other phases of development (Arner et al., 2016). Other writers do not provide data to capture activities in this era

The Rise of FinTech in Nigeria

FinTech in Nigeria has been fueled by a young, tech-savvy population, increasing smartphone penetration, and a supportive regulatory environment. According to the Enhancing Financial Innovation & Access (EFInA) report, financial inclusion in Nigeria rose from 45% in 2010 to 64.1% in 2020, partly due to FinTech solutions.

The Evolutionary Phases of Financial Technology

Arner, Barberis, and Buckley (2016) provide a comprehensive framework for understanding the historical evolution of FinTech, categorizing it into three distinct phases: FinTech 1.0, FinTech 2.0, and FinTech 3.0. This evolutionary approach highlights the dynamic changes in FinTech infrastructure and sources of innovation over the years.

FinTech 1.0 (1866-1987)

The first phase, FinTech 1.0, spans from 1866 to 1987 and marks the foundation of the global telecommunications infrastructure. This period witnessed significant milestones such as the installation of transatlantic transmission cables, which facilitated global communication and interconnected financial institutions. During this era, correspondent banking was established, creating a network of financial institutions that provided reliable services to their customers through interconnected infrastructures. The investment in these foundational infrastructures set the stage for subsequent phases of FinTech development (Arner et al., 2016).

Key characteristics of FinTech 1.0 include:

- **Telecommunications Infrastructure**: The establishment of global communication networks, including transatlantic cables.

- **Correspondent Banking**: The creation of a network of financial institutions that facilitated international banking and financial services.

- **Interconnected Financial Institutions**: The development of infrastructures that allowed financial institutions to provide reliable and interconnected services.

FinTech 2.0 (1987-2008)

FinTech 2.0, from 1987 to 2008, represents a period of significant technological advancements and the digitization of financial services. This phase saw the proliferation of automated teller machines (ATMs), electronic payment systems, and the emergence of online banking. The adoption of these technologies revolutionized the way financial services were delivered, enhancing efficiency, convenience, and accessibility for consumers.

Key developments during FinTech 2.0 include:

- **Automated Teller Machines (ATMs)**: The widespread adoption of ATMs, enabling customers to access cash and perform basic banking transactions outside traditional bank branches.

- **Electronic Payment Systems**: The introduction and growth of electronic payment systems, including credit and debit cards, which facilitated cashless transactions.

- **Online Banking**: The emergence of online banking platforms that allowed customers to manage their accounts, transfer funds, and pay bills electronically.

FinTech 3.0 (2008-Present)

The current phase, FinTech 3.0, began in 2008 and continues to evolve. This phase is characterized by the rise of start-ups and tech-driven companies that leverage innovative technologies such as artificial intelligence (AI), blockchain, and big data to disrupt traditional financial services. The global financial crisis of 2008 played a pivotal role in accelerating the adoption of FinTech, as it exposed the limitations of traditional banking and created opportunities for innovative solutions.

Key trends in FinTech 3.0 include:

- **Artificial Intelligence (AI)**: The use of AI for various applications, including risk management, customer service (chatbots), and personalized financial advice.

- **Blockchain Technology**: The deployment of blockchain technology for secure and transparent transactions, including cryptocurrencies and smart contracts.

- **Big Data and Analytics**: The utilization of big data and analytics to gain insights into customer behavior, improve risk assessment, and enhance decision-making processes.

- **Mobile Payment Solutions**: The proliferation of mobile payment solutions, enabling users to make payments and transfer money using their smartphones.

Associated Risks of FinTech

1. **Cybersecurity Threats:** The digital nature of FinTech makes it vulnerable to cyberattacks, which can result in data breaches, fraud, and financial losses.

2. **Regulatory Challenges:** Rapid innovation often outpaces regulatory frameworks, creating gaps that expose users and financial systems to risks.

3. **Consumer Protection Issues:** Many FinTech products lack transparency, leading to potential exploitation of consumers through hidden fees and unfair practices.

Risk Management Frameworks

Existing literature highlights the importance of robust cybersecurity measures, adaptive regulatory frameworks, and consumer education to mitigate these risks. However, the application of these measures in the Nigerian context remains uneven.

3. METHODOLOGY

Research Design

The research methodology employed in this study to investigate the conceptual clarification, historical evolution, global explosion, and regulatory approaches of Financial Technology (FinTech).

The study adopts a mixed-methods research design, combining qualitative and quantitative approaches to provide a holistic understanding of FinTech. This design is suitable for exploring the multifaceted nature of FinTech and its regulatory environment.

Data Collection Methods

The secondary data is significant as it includes the logical framework of the research. For the purpose of the study, the collected primary data included constructs on FinTech regulatory

services and adoption of services by customer of the selected organizations between the period 2019 to 2023. Data on financial organizations performance was measured through deposit target and cycle time (turnaround)

Sample Size

The study sample size was drawn from the total population of 600 staffs of the including FinTech entrepreneurs, regulators, and academic scholars. Nigeria. Primary data and secondary data were pertinent to the research. The target population is Managers of the organizations who are more directly involved in the decision and regulation of FinTech services in the selected organizations.

Data Analysis

Data on bank organization performances was measured through deposit target and cycle time (turnaround). Data was cleaned, sorted and checked for completeness and consistency after collection. Statistical package for the social sciences (SPSS) was then used to analyze the data's descriptive statistics such as maximum, minimum, mean, and standard deviation to outline sample characteristics and significant trends from the collected data. A multiple linear regression model was then employed to estimate the relationships between the variables. The Pearson's product moment correlation coefficient (r) method will be used to determine the degree of relationship or strength of association between dependent and independent variables

4. RESULTS AND DISCUSSION OF RESULTS

This was indicated in the descriptive analysis further explained in the table below:

Table 1: Dimension of risk posed by Fintech Service

Model Construct		Statistic	Bootstrapa Bias	Std. Error	95% Confidence Interval	
					Lower	Upper
Opay seems more faster in registration process and had no risk incurred	N	235	0	0	235	235
	Minimum	1.00				
	Maximum	5.00				
	Mean	4.23343	.00232	.05854	4.1133	4.35732
	Std. Deviation	.915231	-.006430	.06554	.78665	1.03934
Branch digital platform is handled strictly	N	235	0	0	235	235
	Minimum	1.00				
	Maximum	5.00				

by staff who have specialized training in I.C.T and had little lending rate	Mean Std. Deviation	4.2834 .94145	.0074 -.00634	.0545 .07234	4.1676 .79623	4.4032 1.07532
Moniepoint is cost-efficiency and increase deposit target with less risk involved	N Minimum Maximum Mean Std. Deviation	235 1.00 5.00 4.0985 1.0198	0 -.0062 .00387	0 .0673 .07298	235 3.9576 .84878	235 4.2143 1.15448
Lower threshold of instant access to credit is a good digital platform of Mines that increase the performance of the industries	N Minimum Maximum Mean Std. Deviation	235 1.00 5.00 4.3343 .88678	0 .0002 -.00434	0 .05436 .05934	235 4.2223 .764345	235 4.4576 1.00543
Electronic Fund transfer (EFT) of cash-in-cash-out helps in decreasing the risk involved in fintech industries	N Minimum Maximum Mean Std. Deviation	235 1.00 5.00 3.9423 1.16890	0 -.0024 -.00202	0 .07754 .06309	235 3.8425 1.02645	235 4.1128 1.28765
Valid N (listwise)	N	235	0	0	235	235

a. Unless otherwise noted, bootstrap results are based on 230 bootstrap samples

The statistics table 1 shows, for each level of model construct, the mean value for FinTech service/innovative products. Since the constructs on FinTech services takes agree values (5) and disagree (1) on five-point likert scale, with 5 signifying the maximum score of effectiveness over organizations performance. The mean is equal to the proportion of respondents who agreed. The statistic column shows the values of frequencies, using the dataset produced by the bootstrapping algorithms. The parametric mean (4.2391) which was found between the pendulum of bootstrap confidence interval for the mean $4.1130<\mu<4.3574$ and the standard error of (s.e=0.0583), suggested that the typical respondents agreed on PayStack financial technology is seamy faster in registration process and reduce the risk also involve in its operations. Also result equally revealed that Branch digital platform is handled strictly by staff who have specialized training in I.C.T that leads to reductions in the risk rate with sample mean (4.2870) found between the pendulum of bootstrap confidence interval for the mean $4.1643<\mu<4.4096$ and the standard error mean=0.0599.

The parametric mean score, that moinepoint is cost-efficiency and increase deposit target was found between the pendulum of $3.9528<\mu<4.2130$ and the standard error is 0.0673. Lower

threshold and instant access to credit is a digital platform of Mines that increase the industries service delivery has mean (4.3348) found between pendulum of $4.2295 < \mu < 4.4565$ and the standard error is 0.0565 while the mean score of Electronic Fund transfer (EFT) of cash-in-cash-out helps to risk rate of the industries was found between $3.8286 < \mu < 4.1140$ and has standard error of 0.0781which invariably means that all standard error are too small and that the views of respondents on the average is not due to chance.

H01: There is no risks posed by FinTech which are distinct from those posed by traditional financial service operations?

Table 2: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.965a	.925	.924	.32253

    a. Predictors: (Constant), opay, moniepoints, palmpay, kuda

The table 2 shows the model summary which explains the relationship between FinTech services and risk poses on performance. The result shows the coefficient of determination is $R2=0.925$; which means that 96% of the change in the level of organization performance is explained by a unit change in FinTech services in opay, moniepoints, palmpay, kuda digital platform of financial technologies and that $R=0.965$ indicate that there is positive relationship between FinTech services and the level of risk poses in an organization in Nigeria. The regression equation appears to be relatively useful for making predictions since the value of R squared is very close to 1.

Table 3: ANOVAª

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	276.287	5	55.257	532.154	.000b
Residual	23.261	224	.104		
Total	299	.548	229		

a. Dependent Variable: Banks' Performance

b. Predictors: (Constant), PayStack, Branch, PiggyVest, Mines, NetPlus

Table 3 presents the overall diagnostic test of significant of relationship between FinTech services and industries performance. The ANOVA results for regression coefficients indicate that the significance of the F=532.154>F-table=3.84 at a degree of freedom of (5, 224); i.e. P-value=0.00 is less than 0.05. This indicates that the regulation of FinTtech services like opay, moniepoints, palmpay, kuda significantly predict the fintech Performance in Nigeria (meaning it is a good fit for the model). Therefore, a significant relationship between fintech industries performance and the risk involved exists at 95% confidence level.

Discussion of Findings

The study specifically sought to establish how the FinTech regulatory services tested positive in relationship with the performance of the fintech industries in Nigeria. The significance of the relationship of FinTech regulatory services in opay, moniepoints, palmpay, kuda were retained in the study for improved performance of fintech industries as indicated in the strength of correlation and ANOVA. The descriptive statistics in table 1 reveal that the all FinTech service were normally distributed by equal mean and variance. Thus, practical finding in this study have shown that the bank may not have facilities to adopted all the digital platforms or services because of cost implications. This implies that the industries should embarked on restructuring strategies, compliances and regulatory of financial technology services as suggested by findings by Agboola (2006) and Osage (2012) that the deployment of various e-banking tools was highly evident in industries performance. The finding of this study has shown that FinTech regulatory service is tested positive to internal and external operational performance of industries in Nigeria.

5. CONCLUSION

From the above findings, it can be concluded that certainly, uptake of regulation of FinTech services has significant impact on industries performance. Efficiency, Secure transaction and social structure in digital globalization by mean of regulating the opay, moniepoints, palmpay, kuda reduce the risk and security challenges which increasing customers' needs and the number of FinTech firms in Nigeria. Therefore, to enhance performance in fintech industries and remain competitive; adoption of FinTech service that has the cost-benefits approach will improve efficiency and social structure of FinTech companies in a more secure network.

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