African Journal of Science Policy and Innovation Management Vol. 1 (June 2020) 118-130

AN ASSESSMENT OF THE LEVEL OF ADOPTION OF FINANCIAL TECHNOLOGY BY NIGERIAN BANKS

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ABSTRACT

The emergence of Financial Technology (Fintech) has brought to forefront the importance of technology in the delivery of banking services. Banking services are being driven by innovative business models, and technology is causing creative destruction in the financial system. This study assessed the level of adoption of Fintech among Nigerian commercial banks. The descriptive analysis reveals that the extent of adoption of Fintech by the majority of the banks sampled is at medium level, and common nature of this Fintech innovation among the banks are money transfer and payment. In addition to that, it was found that the level of adoption of Fintech innovation has a positive relationship with in-house R&D activities (IRD), collaboration with external companies (CEC), hardware technology acquisition (HTA) and software technology acquisition (STA). Results of a least square regression show that Fintech innovation adoption and software technology acquisition have positive and significant impact on the banks' financial performance at 5% level of significant. This study suggests that appropriate investment in R&D and software technologies, finding collaborative Fintech partners by the banks and providing a better regulatory environment by the government/regulators should be given utmost attention. These would enhance robust service delivery, foster wealth creation and promote sustainable economic growth.

Keywords: Financial technology; Innovation, Nigerian Banks

1. Introduction

Developments in information technology over the past few decades have transformed the way banking services are provided. Specifically, the emergence of Financial Technology (Fintech) has brought to the forefront the importance of technology in the delivery of banking services. Fintech are the technologies that are used to provide financial services of all kinds such as online transfer payment, online financial planning services and online lending and borrowing through peer to peer system, among others. The disruptive potentials of Fintech innovation have given the banking industry a new outlook in meeting customer needs and satisfaction. This warrants the continuous and dynamic changes in the financial ecosystem so as to keep pace with global events. There are Fintech companies that provide banking services through the use of technologies and online applications, thereby competing with conventional banks (Chishti and Barberis, 2016). The participation of Fintech companies in delivering banking services in the last few years is seen as both a threat and an opportunity to conventional banks.

As a threat, Fintech have required technology to meet customers' rapidly changing expectations of speed and convenience of service. This has led to bank customers demanding for technology-based banking support from their banks (Accenture, 2017), which in turn put incumbent banks in a very difficult position as they do not have the technologies that match that of the Fintech

companies (Navaretti *et al*., 2017). The use of technology in providing faster and user-friendly services has made Fintech more popular and acceptable (Dorfleitner *et al*, 2017). Similarly, the ability of the Fintech to break the relationship between the banks and their customers and win the confidence of the customer is a matter of great concern to the banks (Xavier, 2017).

On the other hand, banks also see Fintech as an opportunity. First and foremost, banks desire to incorporate Fintech into all facets of their businesses by setting up their own Fintech. For example, banks across the globe now provide banking services via mobile phones to those who do not have a bank account. They also launch digital banking platforms, among others (Chishti and Barberis, 2016). Second, the rapid growth of the Fintech industry has provided the banking sector with an opportunity to collaborate with Fintech companies and gain from their innovative abilities. Banks have goodwill and the trust of customers but lack innovative capacity to solve multifaceted problems (Grazel, 2016). Fintech companies, on the other hand, gain from using the legacy systems of banks instead of building one for themselves. This sort of collaboration, Manthorpe (2017) noted, is what led to the emergence of "Open Banking." Furthermore, the development of Fintech is seen by banks as an easy option to adopt Fintech companies. Instead of developing their Fintech internally, banks now avoid internal development costs by acquiring Fintech companies (Kerenyi *et al.*, 2018). There are various factors which determine the adoption of financial technology innovation among which are the number of secure Internet servers, mobile telephone subscriptions, research and development, training, collaboration with other firms, as well as size of the firm and that of the technical labour force (Haddad and Hornuf, 2019; Akinwale *et al*., 2018; Choi and Phan 2006).

Banks across the world have been adopting Fintech in order to improve their services and gain competitive edge by either partnering or acquiring existing Fintech or establishing their own Fintech (Webster and Pizzala, 2015). Despite the fact that this practice is becoming very rampant in developed economies, little or nothing is known about this in developing economies, especially in sub-Saharan Africa. This has led to a dearth of scientific research on Fintech in Nigeria. It is against this background that this study is undertaken to investigate the level of adoption of Fintech by banks in Nigeria and also to assess the likely constraints or challenges the banks face in their efforts toward institutionalizing Fintech.

2. Literature Review

2.1. Meaning and operation of FinTech

Fintech stands for financial technology and refers to computer software and other technology employed to support banking and financial service delivery (Schüffel, 2016). It is a technology-based invention that led to the emergence of new business models, processes, applications and products that have significant influence on the financial market and services (Derfleitner *et al*., 2017). It is simply the application of financial technologies in the financial industry to improve financial activities (Schüffel, 2016). Fintech companies comprise both start-ups and established companies that are aiming to replace or at least improve the use of financial services provided by incumbent financial companies. They operate in three segments of the financial market, viz; finance, asset management, and payment.

In the financial segment, Fintech companies provide financing services to individuals and corporations in a number of ways, including crowdfunding and crowdlending. In crowdfunding, Fintech facilities consist of face-to-face lending between individuals or companies. In the case of crowdlending, Fintech platforms connect companies that are seeking for capital with investors who are willing to lend directly to businesses. One of the benefits of using this platform is that

fundraising can be easily set up online to quickly market products and at the same time obtain feedback relating to the product (Augustine, 2015). Similarly, the use of crowdfunding to raise funds helps to remove all marketing costs that users incur for hiring consultants and other support organisations (Conrad, 2012).

In the asset management segment, Fintech provides three main services, namely; social trading, robo-advice and personal financial management. Social trading involves a social network in which an investor can see, discuss and copy investment collections of other participants (Liu *et al*., 2014). The benefit here is that each member of a social network can gain useful investment information from the group members. Robo-advice, according to Accenture (2015), is the application of digital systems to create and manage pools of traded funds and other instruments for the investors. It is algorithm-based and sometimes it makes decisions. The main objective of robo-advice is to minimise human intervention in the management of investments (European Supervisory Authorities (ESA), 2015). Investors are charged fees relative to their investment by the providers of robo-advice services.

The payment segment is the main area where the Fintech functions. Here Fintech offers digital payment options that operate both within and outside conventional banking payments systems. For example, e-wallets allow users to store their payment information in order to enable them make real-time transactions (Roubini and Mihm, 2017). Similarly, mobile payment systems enable mobile phone users to effect payments on their mobile phone (Merritt, 2010). These payment systems allow people to transact without stepping in the banking hall.

2.2. Adoption of FinTech solution by banks

This study is situated within the context of the technology acceptance model and evolutionary theory of firm. According to Davis's (1989) technology acceptance model (TAM), a user's intention to adopt a new technology is determined by its perceived usefulness and ease of use. This indicates that a firm or an individual would adopt a new technology if it is perceived that such technology would enhance performance and would require less labour and time to perform a task. The evolutionary theory of the firm emphasises technological capability at the micro level, as an outcome of in-house technological competencies and complex interactions among individuals, firms and organisations within a specific socio-economic and institutional environment (Iammarino *et al*., 2012; Nelson and Winter, 1982). According to this theory, technological capabilities are viewed as the knowledge and skills that firms deploy to continuously acquire, adapt, improve and create technology to achieve sustainable innovative capacity (Akinwale *et al*., 2018; Cerulli, 2014; Zahra and George, 2002). Adoption of financial technology requires the banks to perceive it as an option that could improve their performance and customers relations, as well as an opportunity to develop their in-house and external relation capabilities.

The literature on Fintech has suggested a number of strategies banks employ in implementing Fintech solution (Webster and Pizzala, 2015; Kerenyi *et al*., 2018). Broadly, the strategies of implementing Fintech solution can be grouped into three, namely; internal development, acquisition and collaboration.

Banks now set up innovation laboratories (labs) and research and development units (R&D) to develop and institutionalise Fintech (Webster and Pizzala, 2015). The laboratories, according to Oshodin *et al.* (2017), are used to develop and test technology like blockchain. In the same vein, labs could foster innovation via investment with other participants in the financial ecosystem

(Akinwale, 2018a). Deutsche Bank Global Technology, for example, has established a lab in Silicon Valley in partnership with the North Carolina University (Sposito, 2013). Capital One of the United States, which is a bank holding company specializing in credit cards, auto loans, banking, and savings accounts, has established three labs in three states in the United States, namely; New York, San Francisco and Washington DC. Thakor (in press) showed that Fintech has launched various cheaper ways to solve the problem of financial contracting frictions and reduce the cost of financial services to improve consumer welfare. Furthermore, the study of Fuster *et al*. (2019) revealed that fintech has improved the productivity of mortgage lending which has increased the profitability of the banks.

According to some studies (Ernst, 2016; Haddad and Hornuf, 2019), United States has the largest Fintech industry as well as the highest number of Fintech adopters, followed by the United Kingdom, Canada, India, and Germany at a considerable distance. In Nigeria, a number of banks have developed their Fintech. For example, Guaranty Trust Bank (GTB) has developed GTPay, First Bank introduced FirstPayLink while the United Bank for Africa (UBA) has launched U-Collect. These are mobile payment systems that provide mobile banking to many Nigerians that do not have access to the internet. In addition to setting up labs, banks also develop their Fintech by setting up venture capital funds. A good example is the Japanese Sumitomo Mitsui Asset Management that set up the Global Artificial Intelligence (AI) Fund with over JPY 70 billion to develop artificial intelligence technology for financial applications worldwide (Kodama, 2016). Equally, the Mizuho Securities of Japan has proposed to raise over JPY 2 billion to invest in Singaporean Fund to finance promising Fintech in Asia.

Acquisition is another strategy used to adopt Fintech solution. Many acquisitions have taken place especially in the United States. Recently a total of six acquisitions were made involving JP Morgan, Credit Suisse, BNP Paribas, and TD Bank between 2013 to 2018 (Fintech Futures, 2018). Although it is the least option for the banks (Ernst and Young, 2017), acquisition can increase a bank's digital footprint and also fast track the development of new technology. Investment in Fintech in 2018 has reached a global total of $111.8 billion from just $50.8 billion in 2017 (KPMG, 2019a) involving mammoth acquisition deals such as Vantiv's acquisition of Worldplay for $12.86 billion and Blackstone's investment of $14 billion in Refinitiv (KPMG, 2019a). While investment in Fintech is on the rise globally, it is more pronounced in Americas, Europe and Asia than other parts of the world. KPMG (2019a) noted that the increase was driven mainly from the United States and the Americas where annual volume of transaction is increasing yearly. In Nigeria, recently OneFi, a Lagos-based start-up, took over Amplify, and is also looking to expand its reach to other African countries including Senegal, Ghana, and Cote d'Ivoire, among others (Bright, 2019).

While acquisition is a good strategy, many banks choose to collaborate and cooperate with Fintech companies instead. One of the reasons is the complementary strength banks have with Fintech companies. The Fintech companies have the upper hand in innovation and technology while banks have customer base and infrastructure to build technology on. For example, banks provide Application Programme Interface (API) which is a platform that allows third parties to access information relating to banks customers and create applications and services around the bank. This collaborative effort is termed "Open Banking" (Manthorpe, 2017). In Nigeria, the United Bank for Africa (UBA) provide a savings platform called "PiggyBank.ng" which is a Fintech platform that enables individuals to save money. This Fintech platform enables a person to save by automating the savings procedures such that a certain amount is deducted directly from the person's account. Similarly, Sterling Bank introduced "Social Lender" which is a

lending platform based on the social status of an individual on a social media. This Fintech provides opportunity to people who have restricted access to formal loans to borrow from the bank in accordance to their social reputations. Banks no longer see Fintech as disrupters but rather complementary actors. In this regard, Deloitte (2018) suggests that Fintech are here to power rather than to disrupt banks.

2.3. Banks' challenges and difficulties in adopting FinTech

The adoption of Fintech is expected to be an easy ride for banks due to prior investments in online banking services. However, no matter how good the strategies are, as explained above, there are certainly a lot of hurdles on the way. First and foremost, there is the issue of regulation. Banks face wide uncertainty regarding the ways in which regulation and supervision will affect their businesses from the adoption and use of Fintech. Regulators and supervisors have been identifying risks related to Fintech and are appropriately responding. According to KPMG (2019b), regulatory response to Fintech is moving on from high to higher level principles, as regulators are relying on current regulations and rules to come up with more detailed application of new rules and guidance to specific aspects of Fintech.

Another challenge banks face in adopting Fintech is how to move away from old legacy that the banks rely upon for decades to new technology. These legacy systems were built decades ago and it will be a complex issue to scale them down or dismantle them without disturbing the structure upon which banks rest. Linked to this difficulty is the decision to implement the change. One approach is to consider launching front-end applications that will provide easy and user-friendly interface to the customer just to allow the banks to stay relevant in the financial market. Another approach is for banks to dedicate one team for the maintenance of its legacy system and another for the development of whole new system. Similarly, there is the related issue of how the banks manage change related problems such as trust (Busco *et al.*, 2007), inertia (Miller and Friesen, 1980), lack of knowledge (Scott, 2001), and decoupling (Dambrin *et al*., 2007), among others.

Another difficulty facing banks regarding Fintech adoption is the misunderstanding of the technical abilities of the various Fintech services. Many banks still do not understand what some of the Fintech products and services are. For example, according to Team (2017), many companies (including banks) are using bitcoin as a form of payment but might not understand how it works or what other things the technology can do.

Furthermore, lack of awareness or distrust of bank customers of the Fintech phenomenon is an issue that influences the level of Fintech adoption by banks. For example, in an investigation carried out by Grazel (2017), it was discovered that customers' trust for banks was higher relative to the trust they had for Fintech companies. Specifically, banks were rated higher than Fintech in terms of fraud protection, quality of services and transparency. Thus, despite the arguments in favour of Fintech in terms of service delivery in the literature (e.g. Dorfleitner *et al.*, 2017), customers are more glued to conventional banking services than Fintech services. This is one of the main difficulties banks face in their decision to implement Fintech.

Finance is also a challenge for banks. First, banks have less expertise in Fintech innovation. This suggests that employees need to be trained. But if this requires that operations be shut down to integrate the Fintech solution, there will be loss of output. Where the bank is uncertain of the demand for the Fintech solution it is adopting, it will be difficult for it to determine whether or not it can recoup the cost of adopting the solution. This will put the bank in a very difficult

position to decide whether to adopt or not to adopt the technology. For example, Helper (1995) found that customers' commitment is fundamental, both directly and indirectly, to technology adoption. Similarly, banks' structural characteristics pose challenges to their efforts toward implementing Fintech. For example, Gallego *et al*. (2011) and Ben *et al*. (2010) found that large banks are more likely to adopt technology than small banks. On the other hand, Bocquet *et al*. (2007) and Hollenstein (2004) found insignificant relationship between bank size and technological adoption. Instead, they noted that the adoption and use of technologies depend on a bank's absorptive capacity, that is, the ability of the bank to value, integrate, and apply new knowledge to improve its innovative performance (Cohen and Levinthal, 1999).

Environmental factors in terms of the industry where the bank is situated also influence the adoption of Fintech by banks. Competitive pressure, from other conventional and non-conventional banks, is one of the environmental factors that pose challenge to the adoption of Fintech by banks. The relationship between competition and technology adoption is researched. For example, Porter (2001) and Kowtha and Choon (2001) confirmed that the adoption of technology allows a bank to enjoy competitive advantage by reducing costs and improving their reaction to market changes. There is dearth of information in the literature regarding the extent to which banks utilize Fintech innovation to drive the delivery of banking services especially in developing economies.

3. Methodology

This study adopts descriptive and inferential approaches to assess the level of adoption of financial technologies (Fintech) by Nigerian commercial banks. A set of structured questionnaire was administered on the population of 20 commercial banks in Nigeria categorised according to the level of authorization. The commercial banks are 8 banks with international authorization, 10 banks with national authorization and 2 banks with regional authorization. Jaiz Bank Plc was excluded because it is a non-interest bearing bank. Data was collected between the first and second quarters of 2019. The response rate was 70%. The initial draft of the questionnaire was sent to three experts and their comments were incorporated in the final questionnaire to ensure that the questions capture what was intended. The questionnaire elicits information on the extent of introducing Fintech products or services by the banks, sources of Fintech innovations and various Fintech innovation activities that the banks engage in. The questionnaire was purposively administered on the head of Finance or Information Technology in each bank. The constructs of Fintech innovation, Fintech innovation activities and financial performance are measured and proxied by various variables. For instance, Fintech innovation was measured by asking the respondents the extent to which their banks introduced or used fintech innovation in the last three years. The responses were captured on a 5-point Likert scale ranging from 1 (very low extent) to 5 (very high extent). The same scale was also applied to Fintech innovation activities which comprise the following:

i. In-house R&D activities (IRD)
ii. Collaboration with external companies (CEC)
iii. Training of employees (TRA),
iv. Hardware technology acquisition (HTA) and
v. Software technology acquisition (STA)

Furthermore, banks' financial performance was measured by the reported profit after tax for the most recent financial year, as obtained from their income statement.

A descriptive approach is adjudged suitable when the aim of a research is to attain a subterranean understanding of a topical issue or when the nature of the issue is exploratory, evolving and there

are few empirical articles on the topic (Akinwale, 2018b; Myers, 2009). The study also uses correlation to determine the relationship between Fintech innovation adoption and Fintech innovation activities. Furthermore, regression analysis is utilised to establish the impact of Fintech innovation adoption on the banks' financial performance.

4. Analysis of Results

Of the survey respondents, 57% have international authorization, 43% have national authorization while none has regional authorization as shown in Table 1. This showed that the respondents represent the commercial banks with both international and national authorization, making the data largely representative of the banking system. Majority (64%) of the respondents claimed that they collaborate with other companies to develop their Fintech products/services; 21% indicated that their banks wholly developed their Fintech products/services while 15% of them stated that it was developed mainly by other companies. This implied that majority of the banks have started collaborating with the Fintech companies that already understand these disruptive innovations. This is expected to bring about a win-win situation as the banks have the large customer base upon which this innovation would be applied.

Table 1: Nature of commercial bank with authorization and sources of Fintech innovation

Banks characteristics	Frequency	% of firms
Nature of commercial bank with authorization		
Bank with international authorization	8	57
National authorization	6	43
Regional authorization	0	0
Total	14	100
Sources of Fintech innovation		
Mainly by the bank	3	21
The bank together with other companies	9	64
Mainly by other companies	2	15
Total	14	100

Table 2 highlights the levels of Fintech adoption among the sampled banks in the last three years. Majority (43%) of the respondents claimed that their level of adoption of Fintech is medium, 29% of the respondents claimed that their level of adoption is high, 7% stated their level of adoption is very high, 21% believed that their adoption level is low and none claimed very low level of adoption. This clearly showed that the extent of adoption of Fintech by Nigerian commercial banks is still at the medium level. This is similar to the results obtained in the study conducted by Ernst and Young (2017).

Table 2: Levels of Fintech adoption and Nature of Fintech in the last three years

Description	%
Levels of Fintech adoption in the last three years	
Very high	7
High	29
Medium	43
Low	21
Very low	0
Total	100
Nature of Fintech innovation in the last three years*	
a. *Money transfer and payment* (This includes mobile phone payment, payment via crypto currency, overseas remittances, Online digital-only banks without branches)	79
b. *Insurance* (This includes car insurance using telematics, Activity-based health insurance)	36
c. *Savings and Investment* (This includes Peer-to-peer platforms for high-interest investments, Online investment advice and investment management)	57
d. *Borrowings* (This includes Borrowing using peer-to-peer platforms, borrowing using online short-term loan providers)	22
e. *Financial planning* (online budgeting and financial planning tools)	29

* Multiple response

Table 2 further reveals the nature of Fintech introduced in the last three years. Most (79%) of the respondents stated that their banks introduced "money transfer and payment" which includes mobile phone payment, payment via crypto currency, overseas remittances and online digital-only banks without branches. "Savings and investment", which includes peer-to-peer platforms for high-interest investments, online investment advice and investment management, was introduced by 57% of the banks. Fintech for "insurance service", "financial planning" and "borrowing services" are the least common. It can be deduced from these results that the sampled commercial banks have engaged in some form of financial technology innovation but the concentration has been on money transfer payments. Other forms of financial technologies that are now rampant in other emerging and developed economies such as peer to peer borrowing and investment platforms are still very limited among the Nigerian banks. This shows that the Nigerian commercial banks are still lagging behind in terms of the introduction of disruptive Fintech innovation. This is because few of the banks have been using the platform for peer-to-peer lending and borrowing and financial planning among others. This could be as a result of security concerns and an inability to fully secure the relevant platforms against hackers and fraudsters.

The relationship between introduction of financial technology innovation (FTI) and Fintech innovation activities is observed using spearman correlation in Table 3. These Fintech innovation activities include in-house R&D activities (IRD), collaboration with external companies (CEC), training of employees (TRA), hardware technology acquisition (HTA) and software technology acquisition (STA). The results reveal that all the variables representing Fintech innovation activities are positively related to Fintech innovation except training. This indicates that IRD, CEC, HTA and STA move in the same direction with financial technology innovation. That is, they are positively correlated. However, of all these variables, only software technology

innovation and collaboration with external companies have a statistically significant relationship with financial technology innovation.

Table 3: Correlation matrix between the Fintech innovation activities

No.	Variables	1	2	3	4	5	6
1	Fintech Innovation (FTI)	1	-	-	-	-	-
2	Inhouse R&D activities (IRD)	0.31	1	-	-	-	-
3	Training (TRA)	-0.21	0.11	1	-	-	-
4	Hardware Technology Acquisition (HTA)	0.37	0.25*	-0.19	1	-	-
5	Software Technology Acquisition (STA)	0.51*	0.42*	0.24	0.37	1	-
6	Collaboration with External Companies (CEC)	0.46*	-0.13	0.31	0.23	0.38	1

** denotes significant at 5% level of significance*

The impact of the adoption of Fintech innovation (FTI) on banks' financial performance was evaluated using a multiple regression specification. The financial performance is proxied by the profit after tax (PAT) reported by the firm. The independent variables are FTI, STA and CEC. Table 4 shows that all the independent variables are positively associated with financial performance but the association is significant only in the cases of FTI and STA.

Table 4: Multiple linear regression for the impact of Fintech innovation activities on banks' financial performance

Dependent Variable: Financial performance (PAT)	
Explanatory Variables	Coefficient (B)
Fintech innovation (FTI)	0.05* (0.012)
Software Technology Acquisition (STA)	0.21* (0.04)
Collaboration with External Companies (CEC)	0.01 (0.13)
C	14.13
R^2	0.21
ARCH	0.51 (P-value)
Breusch-Godfrey Serial Correlation LM Test	0.48 (P-value)
Jarque-Bera (JB)	0.324 (P-value)

* denotes 5% level of Significance

The coefficient of determination R^2 is 0.21 which signifies that the proportion of variance in the banks' financial performance that could be explained by these three variables is 21%. The value of R^2 is relatively low but this is understandable as there are several other factors that explain the variation in the banks' financial performance that are not captured in this study. Three diagnostic tests are also conducted for the model to ascertain the status of the normality and serial correlation of the data. The results reveal that there is normality in the series as the p-value (0.324) of the Jarque-Bera (JB) test is greater than 0.05, and Breusch-Godfrey Serial Correlation LM test with the corresponding p-value of 0.48 could not also reject the null hypothesis of no

serial correlation. Moreover, ARCH test with a p-value of 0.51 suggests that there is no heteroskedasticity in the data.

The results of the Spearman's correlation in Table 3 suggest that it is important for the banks to continuously conduct in-house R&D, increase their spending in the acquisition of both hardware and software technologies and deepen their collaboration with external companies (mainly Fintech companies). All these are expected to improve their level of adoption, penetration and use of Fintech innovation towards the satisfaction of their clients. The negative relationship of training with Fintech innovation could be as a result of the present poor competence level of the banks' employees in Fintech innovation. The banks should try as much as possible to also train their employees on the cutting-edge technologies required for easier application of Fintech innovation. The results in Table 4 further buttressed the importance of the adoption of Fintech innovation as well as the application of software technology and external collaboration for the growth of the banks' profit.

The challenges and constraints facing banks in the introduction and use of Fintech innovation is reported in Table 5. Poor understanding/acceptance and distrust of Fintech innovation by the customers was perceived to be a constraint by 93% of the respondents. In contrast, only 36% of the banks thought that market domination by big banks was problematic. These results are similar to that of Grazel (2017), Busco *et al*. (2007) and Scott (2001). The banks perceived that majority of their customers do not trust the security level of the online platform where transactions are being carried out, as these can be compromised and hacked leading to loss of funds. This clearly shows that great sensitization is required to expose the costumers to the benefits of Fintech, improve the banks' regulations on the part of the government to create a good system for the banks to adopt Fintech innovation, as well as training the banks' personnel to develop capabilities to be able to facilitate efficient use of Fintech innovation.

Table 5: Challenges/constraints of adoption of Fintech innovation by commercial banks

Challenges	**%**
Poor understanding/ acceptance and distrust of Fintech innovation by customers	93
Difficulty in finding reliable cooperation partners for Fintech innovation	79
Lack of adequate information on Fintech	71
Regulatory challenges	71
Consumers unwillingness to pay higher prices for better Fintech	57
Lack of qualified personnel	43
Lack of adequate finance for Fintech innovation in the bank	43
Market is being dominated by the big banks	36

* Multiple responses

5. Conclusion

The participation of Fintech companies in the provision of banking services has been seen by banks as both a threat and an opportunity. Despite the fact that this practice is becoming very rampant in developed economies, little is known about this in developing economies, especially in Sub-Saharan Africa This study examined the level of the adoption of Fintech innovation by Nigerian banks. The finding of this study revealed that commercial banks in Nigeria have adopted some forms of financial technology with particular concentration on money transfer payments. The adoption of other forms of technologies such as peer-to-peer borrowing and investment platforms are still very low among the banks. The results of this study also show that

in-house R&D, increased expenditure on the acquisition of both software and hardware, and external collaboration are fundamental to improving the level of Fintech adoption of Nigerian commercial banks. The study finally concluded that the adoption of Fintech has a positive and significant impact on financial performance of Nigerian banks. Further research is recommended to examine the extent of awareness of Fintech innovations by customers of Nigerian banks.

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