



## The Effect of Financial Technology on Bank Sustainability in Nigeria

<sup>1</sup>Ojo, Idowu Adebayo, <sup>2</sup>Akinyede, Oyinlola M. (PhD)

<sup>1</sup>Department of Finance, Faculty of Management Sciences, Redeemer's University, Email: [id.adebayoojo@gmail.com](mailto:id.adebayoojo@gmail.com)

<sup>2</sup>Department of Finance, Faculty of Management Sciences, Redeemer's University, Email: [akinyedeo@run.edu.ng](mailto:akinyedeo@run.edu.ng)

### ABSTRACT

*In recent times, businesses have been urged to participate in sustainable practices and policies that enable environmentally friendly products and services. Financial technology has been seen as a potential tool that promotes sustainability and financial technology tools are leveraged to achieve sustainability in the banking sector. In order to enhance the comprehension of the role of financial technology in driving sustainable banking practices in Nigeria, and advance knowledge around a more inclusive, resilient, and environmentally conscious financial system in the Nigerian banking system, this study examined "the effect of financial technology on bank sustainability in Nigeria". A descriptive survey research design was used in the study, which focused on bank users in Nigeria as the population. A total of Three Hundred and Eighty-Five were sampled from this population, using the Cochran formula (1997) as a determinant for the sample size. For this study, we utilized a primary data collection approach, and the data collected was measured using a Likert scale. Simple descriptive and inferential statistical tools were utilized to present and analyze the data gathered from the field study. According to the test of hypotheses, it was revealed that bank sustainability in Nigeria is significantly influenced by financial technology. The study concludes that financial technology has become a key driver of financial inclusion and capacity building. Therefore, it is recommended that the financial institutions in Nigeria should effectively implement financially inclusive and capacity-building principles leveraging financial technology.*

### 1. Introduction

Sustainability is increasingly being acknowledged as central to the growth of an economy (Saxena et al. 2021). It focuses on integrating financial inclusiveness, and environmental, social, and corporate governance criteria into all sectors of the economy. The banking sector, as one of the economic sectors, joined the goal of achieving sustainability by creating a sustainable environment that helps promote sustainable development. In the last decades, the bank's attitude toward environmental and social issues has witnessed change, and the financial sector's accountability on environmental and social issues has gained importance (Capgemini, 2018).

The banking business has seen a radical change in the banking sector due to financial technology, also known as FinTech. The supply of financial services through technology has fundamentally changed how financial institutions operate, creating new opportunities for environmentally friendly banking practices. Some studies (Chen et al., 2021; Thomas et al., 2019; Kumari et al., 2022; Beck 2020; Pellegrino et al. (2020) showed that the rise of FinTech firms and digitalization have enhanced financial services' accessibility, efficiency, and cost-effectiveness.

The financial sector is crucial in directing the economy's growth toward a sustainable future (Park & Kim, 2020). In 2012, the Nigerian Sustainable Banking Principles (NSBP) were created through a joint effort by the Central Bank of Nigeria (CBN), the Bankers' Committee, and other stakeholders. Included in these principles are Environmental and Social Risk Management, Environmental and Social Footprint, Human Rights, Women's Economic Empowerment, Financial Inclusion, E&S Governance, Capacity Building, Collaborative Partnerships, and Reporting. These guidelines form the cornerstone of sustainable banking practices in Nigeria. Specifically financial inclusion and capacity were used as a standard for assessing how well financial technology drives sustainability in the Nigeria banking system.

All people and businesses, especially those who have been historically excluded from the formal financial system, should have access to financial services and products. This concept is known as financial inclusion, which aims to make financial services more accessible and available to everyone. It aims to provide equal opportunities for people to participate in the economy, manage their finances, and improve their overall well-being.

(Emara & Said 2021; Musau et al. 2018; Zulkhibri 2016), sees financial inclusion as an important component of financial development. From (Huang & Zhang 2020; Jungo et al. 2021) studies, financial inclusion plays a relevant role in reducing poverty and inequality through the easy and safe availability of financial products and services, such as savings, bank credit, insurance, and payments.

In recent times, the principle of financial inclusion has become increasingly important because it is believed to be a key driver of economic growth. By providing financial services to the hundreds of millions of people around the world who are currently excluded, it would be possible to create a substantial pool of savings and investment funds, which in turn would contribute to the generation of global wealth.

Economic development and poverty reduction cannot be achieved without ensuring financial inclusion. Financial inclusion results in increased consumer spending and business growth, which in turn leads to job creation and enhanced productivity. It plays a vital role in promoting entrepreneurship, encouraging savings, and expanding investment opportunities, thereby contributing significantly to economic growth.

Moreso, capacity building is a comprehensive and multi-dimensional process that aims to strengthen the abilities, resources, and institutions necessary for sustainable development. By investing in individuals, organizations, and communities, capacity building empowers them to effectively address challenges, adapt to changing circumstances, and take ownership of their development journey. Capacity building is an evidence-driven process of strengthening the abilities of individuals, organizations, and systems to perform core functions sustainably and to continue to improve and develop over time (Fy, 2012). For the individual, capacity building may relate to leadership development, skills acquisition, speaking abilities, technical skills, organizational skills, and other areas of personal and professional development (Linnell, 2008).

Policymakers, researchers, and development-oriented agencies all over the world are increasingly acknowledging the significance of financial inclusion and capacity building. This recognition is based on the potential benefits that these tools offer for economic development and sustainability, particularly in the areas of poverty reduction, employment generation, wealth creation, and improvement of welfare and living standards in general.

Financial exclusion can have a negative impact on economic growth and development as it prevents individuals and households from accessing loans, savings, and investment opportunities. This, in turn, can lead to lower levels of entrepreneurship, reduced job creation, and a lack of access to capital for small businesses. It is important to address financial exclusion in order to promote economic growth and development. Most of the UN Sustainable Development Goals (SDGs) and the AU Agenda 2063 are driven by the need for financial inclusion, which is crucial for the growth of developing economies, particularly in Sub-Saharan African countries. The primary objective of most developing economies, including those in Sub-Saharan Africa, is to achieve high levels of economic growth.

In 2008, a development finance organization in Nigeria, known as Enhancing Financial Innovation and Access, conducted a survey that revealed how 53.0% of adults were not included in financial services. The pursuit of financial inclusion as a means of economic development yielded a positive result in Nigeria, as the exclusion rate reduced from 53.0% in 2008 to 46.3% in 2010. This led to the launch of the National Financial Inclusion Strategy on 23rd October 2012 by the Central Bank of Nigeria in partnership with stakeholders, with an aim to further reduce the exclusion rate to 20% by 2020. The strategy specifically targeted the increase of adult Nigerians with access to payment services from 21.6% in 2010 to 70% in 2020, while access to savings was expected to increase from 24.0% to 60%, credit from 2% to 40%, insurance from 1% to 40%, and pensions from 5% to 40% within the same period. (CBN)

On October 23, 2012, the National Financial Inclusion Strategy was launched, and it was stipulated that the Central Bank of Nigeria should set up a Financial Inclusion Secretariat. The Secretariat aims to coordinate the activities of all stakeholders to ensure successful implementation. Additionally, it is responsible for gathering and analyzing data which is used to inform the public on the progress made. The Secretariat also provides support and acts as the Secretary of the Financial Inclusion Steering Committee (FISC) and the Financial Inclusion Technical Committee (FITC).

Financial inclusion and capacity building have become an essential priority in the development policies of many countries, particularly those in developing economies, in recent times.

Therefore, based on the foregoing, the objective of this study is to give an insight into how effectively financial technology has impacted the financial inclusion and capacity-building processes of financial institutions within the Nigerian banking industry.

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## 2. Literature Review

The financial sector has been revolutionized through the implementation of technology, which is commonly referred to as FinTech. Technology refers to the set of knowledge and techniques that are applied in an orderly manner to achieve a certain objective or solve a problem (Kwak, 2013; Zhou, 2014). Likewise, digital technology is defined as the application of methods to develop systems that are expressed in numbers or data, allowing the automation of some processes, in addition to compressing large amounts of information in small storage devices (Zhang et al., 2019; Vázquez-Cano et al., 2020). Financial technology innovations such as mobile banking applications and digital wallets enable individuals to access basic financial services such as payments, transfers, and savings, without the need for traditional bank accounts (Allen et al., 2018).

Financial technology has a positive social impact by improving financial inclusion through the provision of banking and financial services to underserved populations. Its usage allows people in remote areas or without access to traditional banking services to manage their finances, access financial services, and participate in the formal economy. It also supports education and skills development through online learning platforms, educational apps, and remote learning tools that offer access to quality education professional development opportunities.

Nwagwu (2020), elaborated on the sustainable activities of the banks and their contribution to the Sustainable Development Goals (SDGs). In his argument, he stated that the policies of banks align with 6 out of the 16 Sustainable Development Goals (SDGs), which are no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water, and infrastructure. The financial assistance provided by banks in the field of education enhances its quality, while their services that strengthen women's microcredit and financial knowledge contribute to the SDG of gender equality.

Adetutu and Ajibolade (2019), examined the relationship between the adoption of the Nigeria sustainable banking principles (NSBP) and the environmental performance of Nigerian deposit money banks. It explores the impact of sustainable banking practices on reducing environmental risks and promoting sustainable development.

More stable banks are more able to offer financial products and services and contribute significantly to increasing financial inclusion (Musau et al. 2018). Therefore, regulatory pressure to mitigate credit risk and increase bank stability may contribute to the unintended exclusion of the most disadvantaged customers (Ackah and Asiamah 2016; Anarfo et al. 2020; Musau et al. 2018). Besides, banks play a key role in connecting the financial system to the real economy, yet financial inclusion makes monetary policy more effective in controlling inflation by expanding its effect to a larger proportion of the population (Jungo et al. 2021).

Technology innovation in financial services has transformed the way traditional banking operations are conducted. By utilizing technologies such as blockchain, artificial intelligence, big data analytics, machine learning, and cloud computing, financial institutions have been able to optimize their operations, enhance the satisfaction of their customers, and innovate new offerings.

These technological innovations have significantly impacted various aspects of financial services, including payments, lending, investment, and risk management. Banks and financial institutions will be able to automate multiple operations, leverage data to make informed decisions, and offer tailored services to their clients with the help of these technological advancements.

Nigeria has made significant progress in achieving financial inclusion, as more residents have been brought into the banking sector. However, the exclusion rates still remain high, which can be attributed to the low financial literacy levels. To address this issue, Nigeria needs to make better use of digital tools for financial inclusion. Although Nigeria has not yet fully embraced digital financial services like mobile money, which has been adopted by other countries, it can improve its digital financial literacy, infrastructure, and support for fintech companies to achieve this goal. Nigeria's CBDC also has an enabling potential if accompanied by a comprehensive package of supportive policies. (Torsten Wezel and Jack J Ree, IMF 2023)

In a study by Joseph Omojolaibi (2017), his findings suggest that to reduce income inequality and increase per capita GDP, more measures must be taken to address the financial exclusion of low-income groups from financial services. According to his research, financial inclusion has the capacity to expand the financial sector's savings portfolio, improve the effectiveness of intermediation, and stimulate entrepreneurship, ultimately leading to economic growth.

Mehrotra et al (2009), emphasized that access to financial services allows the poor to save money outside the house safely, and helps in mitigating the risks that the poor face as a result of economic shocks. Thus, ensuring the availability of financial services is increasingly becoming a major concern for policymakers worldwide, mainly due to its significant socio-economic implications. The promotion of financial inclusion is now a key strategy for fast-tracking economic development, and is deemed vital for driving inclusive growth in any given nation. This realization has, in recent times, been a major driving force behind the implementation of policies and initiatives aimed at boosting financial inclusion on a global scale, as a means of promoting worldwide economic prosperity. Emara and Said (2021), Musau et al. (2018), and Zulkhibri (2016) see financial inclusion as an important component of financial development. From the studies of Huang and Zhang (2020) and Jungo et al. (2021), financial inclusion plays a relevant role in reducing poverty and inequality through the easy and safe availability of financial products and services, such as savings, bank credit, insurance, and payments.

Financial inclusion is today widely considered as a right of all citizens to social inclusion, better quality of life, and a tool for strengthening the economic capacity and capabilities of the poor in a nation (Banco Central do Brazil, 2010). Financial inclusion can produce positive effects on banking stability through the expansion of the deposit and loan portfolio, specifically increasing risk diversification for banks (Musau et al. 2018).

Capacity building is a dynamic and ongoing process that focuses on empowering individuals, organizations, and communities to enhance their abilities and effectively respond to development challenges. It encompasses a wide range of activities and approaches that aim to build capabilities and strengthen existing resources. Capacity building is an evidence-driven process of strengthening the abilities of individuals, organizations, and systems to perform core functions sustainably and to continue to improve and develop over time (Fy, 2012).

The goal of capacity building, according to DFID (2010), is to facilitate individual and organizational learning which builds social capital and trust develops knowledge, skills, and attitudes and when successful, creates an organizational culture and a set of capabilities that enables organizations to set objectives, achieve results, solve problems, and create adaptive procedures which enable them to survive in the long run. It focuses on empowering individuals, organizations, and communities to enhance their abilities and effectively respond to development challenges.

The act of capacity building in the financial services industry involves enhancing the skillsets and knowledge infrastructure of an organization to adeptly recognize, evaluate, track, and oversee climate-related risks and opportunities.

Gimba & Anyanwu (2022), Sanusi (2012), and Ogunleye (2010) argued that institutional factors consisting of lapses in managerial capacity poor workforce quality, and low human capital inputs may be the possible causes of low performance in the banking sub-sector. Likewise, CBN (2013) indicates that recurring operational and system breaches may have resulted from a poor understanding of basic banking procedures, and inadequate comprehension of banking protocols.

Capacity building is a comprehensive and multi-dimensional process that aims to strengthen the abilities, resources, and institutions necessary for sustainable development. By investing in individuals, organizations, and communities, capacity building empowers them to effectively address challenges, adapt to changing circumstances, and take ownership of their development journey.

The theories of human capital and innovation diffusion underpin this study. Human capital, as described by Romer (1990), is a crucial source of economic productivity. The human capital theory argues that by gaining more education and skills training, humans can enhance their productive capacity. However, critics of the theory highlight its flaws, oversimplification, and conflation of labor with capital. The human capital theory asserts that economic success is chiefly determined by human capital, which refers to abilities, assets, and experience valued by companies. The hallmarks of human capital, according

to the theory, are experience, education, training, and health. Investing in human capital is vital to business success, and companies can evaluate human capital in various ways to ensure that investments yield benefits and create value. The resource-based view studies how managers use firm resources and capabilities to create products that serve customers better than competitors (Penrose, 1959).

Thus, both the human capital theory and resource-based view theory suggest that human capital elements should impact the earnings of employees and the profitability of deposit money banks. This furthermore drives sustainability in the banking system and has an impact of the overall performance of the financial institutions in Nigeria.

The Innovation Diffusion Theory was introduced in 1962 and was fine-tuned by Rogers (1995) to explain the approach through which innovation can be passed in different ways over a certain period among different users (Sarker & Sahay, 2004). Insight into the diffusion and adoption of innovations within a social system can be obtained through the use of innovation diffusion theory. It helps in understanding the effect of financial technology (fintech) on sustainable banking by examining the factors that influence the diffusion and adoption of sustainable fintech practices within the banking industry.

Innovation diffusion theory suggests that individuals who share similar social beliefs continuously exchange innovation through various channels (Echchab & Hassanudeen, 2013). The dispersion of Innovation hypothesis looks at the rate at which new advancements are spreading, how the new development is spreading, and reasons why it is spreading with a specific end goal to research the elements influencing the selection of new data innovation advancement (Monyoncho, 2015).

In the diffusion of innovations, it is not people who change, but the innovations themselves (Les Robinson, 2009). On the other hand, diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003). Fichman (2000) defines diffusion as the process by which a technology spreads across a population of organizations. The concept of diffusion of innovations usually refers to the spread of ideas from one society to another or from a focus or institution within a society to other parts of that society (Rogers, 1962). The whole theory of Innovation Diffusion can be divided into four main elements (Ismail Sahin, 2006).

Understanding the principles of innovation diffusion theory can help policymakers, regulators, banks, and fintech firms design strategies to accelerate the adoption and diffusion of sustainable fintech practices in banking. It highlights the importance of addressing perceived benefits, facilitating knowledge sharing, building supportive networks, and aligning regulatory frameworks to drive the widespread adoption of fintech solutions that promote sustainable outcomes in the banking sector.

### 3. Methodology and Data Analysis

The study adopted the descriptive and survey research design to examine the effect of Financial Technology (FINTECH) on Nigerian Sustainable Banking. The research adopted the survey research design which entails the collection of data through a questionnaire to the representative sample of the population. The study considered bank customers in Nigeria. A sample size of 385 respondents was selected from the entire population of bank users based on the Cochran (1977) formula.

$$n = \frac{Z^2 P(1-p)}{e^2}$$

Where, Z represents either the standard Z-score or the confidence interval of 95%, which is equivalent to 1.96.

P= estimated population=0.5

e = precision level =5%=0.05

n = Sample Size

$$n = \frac{(1.96)^2 0.5(1-0.5)}{(0.05)^2}$$

n = 385

Approximately 385 respondents were included in the sample size.

Data collected from the field study was collected and analyzed using statistical tools such as descriptive and inferential statistics. The analysis involved the use of statistical tables, percentages, and frequencies to describe the data. Descriptive statistics including mean, median, mode, standard deviation, and variance were used to summarize the data. Additionally, inferential statistics such as t-tests were used to compare means between variables, and ANOVA (Analysis of Variance) was used to determine significant differences in means. The results were presented in tables to facilitate understanding. Lastly, the relationship between dependent and independent variables was examined using the simple regression analysis method.

#### Model Specification

To account for the effect of financial technology on Nigerian sustainable banking principles, the model of the study is hereby specified as follows:

FIT= Financial Technology

FIN= Financial Inclusion

CAB= Capacity Building

The Model is hereby written in mathematical form bringing equations 4.1 and 4.2 together as:

$$FIN_t = \beta_0 + \beta_1 FIT_t + \mu_t \dots\dots\dots 4.1$$

$$CAB_t = \beta_0 + \beta_1 FIT_t + \mu_t \dots\dots\dots 4.2$$

Where,  $\beta_0$  = the constant parameter                       $\beta_1$  = the coefficient of the variable

$\mu$  = Error term (Which accounts for other financial technology variables not stated in the model)

**Validity and Reliability of the Research Instruments**

It is assumed that the data gathering source is dependable because the data collected underwent the Cronbach-alpha reliability test, ensuring the highest quality data. The research instrument used for this study is a structured questionnaire, which captured all relevant aspects of the study’s objectives, and all the contents and items of the research instrument were reviewed and validated by my supervisor, and experts in the field of study to confirm appropriateness and relevance.

Also, Cronbach’s alpha test for the instrument was carried out, to evaluate the internal consistency and reliability of the items on the research instrument. The results of the test were presented.

**Cronbach-Alpha Reliability Test**

Variables	Numbers of items	Cronbach's Alpha value
FINTECH	6	0.929
FINANCIAL INCLUSION	6	0.769
CAPACITY BUILDING	6	0.835

**4. Results of Research and Discussion**

**Regression analysis for FIN and FIT**

$$FIN_t = \beta_0 + \beta_1 FIT_t + \mu_t \dots\dots\dots$$

**Table 4.1: Model Summary <sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.467 <sup>a</sup>	.698	.686	3.20440	.698	106.776	1	383	.000	1.687
Model	Sum of Squares		df	Mean Square	F	Sig.				
1	Regression	1096.393	1	1096.393	106.776	.000 <sup>b</sup>				
	Residual	3932.714	383	10.268						
	Total	5029.106	384							
Model	Unstandardized Coefficients			Standardized Coefficients						
	B	Std. Error		Beta	t	Sig.				
1	(Constant)	12.097	1.004		12.053	.000				
	FIT	.442	.043	.467	10.333	.000				

Source: Author’s computation using SPSS, 2023

According to the decision rule, we will reject the null hypothesis if the calculated t-value (t-cal) is greater than the tabulated t-value (t-tab). Since the t-cal value is 10.333, it is measured with the standard z-score of 1.96, meaning that 10.333>1.96, we reject the null hypothesis, and we conclude that financial technology has a significant impact on financial inclusion in the Nigerian banking system.

**Regression analysis for CAB and FIT**

$$CAB_t = \beta_0 + \beta_1 FIT_t + \mu_t \dots\dots\dots$$

**Table 4.2: Model Summary <sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.485 <sup>a</sup>	.735	.733	3.02431	.735	117.525	1	383	.000	1.774

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1074.933	1	1074.933	117.525	.000 <sup>b</sup>
	Residual	3503.093	383	9.146		
	Total	4578.026	384			

  

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	12.608	.947		13.310	.000
	FIT	.438	.040	.485	10.841	.000

Source: Author's computation using SPSS, 2023

According to the decision rule, we will reject the null hypothesis if the calculated t-value (t-cal) is greater than the tabulated t-value (t-tab). Since the t-cal value is 10.841, it is measured with the standard z-score of 1.96, meaning that  $10.841 > 1.96$ , we reject the null hypothesis, and we conclude that financial technology has a significant influence on capacity building in the Nigerian banking industry.

### Discussion of Findings

The research conducted aligns with the assertion made by Ene, Abba, and Fatokun (2019) that there exists a strong and positive correlation between financial inclusion and the number of point-of-sale (POS) facilities in Nigeria, which is a tool of financial technology. This is because the public perceives these facilities to be user-friendly and easily accessible.

This research also lends support to the argument, as evidenced by the findings, that financial technology plays a substantial role in enhancing financial inclusion within the Nigerian banking sector. This affirms that deepening financial inclusion can play a role in attaining sustainability in the banking system.

This study also agrees with a related study by Monyoncho (2018), who conducted a study using voluntary data collected over five years to determine the association between electronic banking and financial inclusion as practiced by Kenyan deposit money institutions and from his findings, a significant number of clients found it convenient to access formal financial services.

Furthermore, this study also corroborates Ayeomoni and Aladejana (2016) who argued in favor of a positive relationship between commercial banks' credit to the agricultural sector and economic growth in Nigeria. This finding can be explained by the idea that providing the agricultural sector with credit fosters the growth of the green economy, leading to sustained economic progress in a sector that is both economically profitable and environmentally conscientious, aligning with the principles of sustainable banking. This study also supports the work of Tijani and Ilugbemi (2015), who argued from their study that financial technology using POS as a proxy led to a reduction in the use of papers by the banks thereby enhancing banking sector sustainability as well as increased economic growth in Nigeria.

## 5. Conclusion

The results of this study showed that all the explanatory factors used effectively described the impact of financial technology on financial inclusion and capacity-building principles in Nigeria. These explanatory variables play pivotal roles in influencing the constant variable as the findings revealed all variables employed were significant.

The ANOVA test confirmed that the model is highly significant, and this indicates that the predictors have a significant impact on the dependent variable. From the results derived, the coefficient showed that the relationship between the variables is statistically significant, which suggests that financial technology plays a crucial role in influencing Nigeria's financial inclusion and capacity-building practices.

Banks have adapted their practices, shifting towards universal banking, while embracing technology and technology-driven services that provide alternative avenues for accessing banking services. The adoption and implementation of sustainable principles in the banking system is a strategy that enhances the institution's success over the longer term while ensuring that it remains environmentally and socially responsible. Financial technology tools can be used to enhance risk assessment by helping banks identify and mitigate environmental and social risk, while its innovations such as mobile banking and digital payment systems, can enhance accessibility by reaching the unbanked and underbanked.

To further enhance the impact of the study, banking institutions can provide cost-effective and easily accessible banking services, thus enabling unbanked and underbanked individuals to engage in the formal financial system. Banking institutions also need to accept the importance of technology in their capacity-building efforts. Financial technology brings innovation to traditional financial services by using modern technologies. The promotion of sustainable financial technology innovation is crucial for fostering economic growth, financial inclusion, and environmental responsibility. Financial innovations deployed by financial institutions should not only drive profitability but should also align with environmental and social principles.

Furthermore, financial institutions need to invest more in capacity building in major areas such as organizational development, branch expansion, scaling-up or building up of IT infrastructure, recruitment and training of staff, and more. Capacity building will help financial institutions and individuals to perform more effectively and efficiently. This equips the institutions and individuals with the ability to adapt to the ever-changing environment and technologies, and thereby foster the culture of continuous improvement.

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