Financial Technology (FINTEC), its impact on the banking sector in the Ghanaian commercial banks

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Blockchain, Cryptocurrency, FinTech, MBridge, Mobile Money, and Traditional Banks

Abstract

This research problem is Financial Technology (Fintec), Its Impact on the Banking Sector in the Ghanaian Commercial Banks. The banking sector of Ghana has evolved in several ways. The evolution of the operations of the banking sector in the Ghanaian economy has not come without its challenges. For instance, the introduction of digital currency by several global economies to provide other means of providing financial services, as an option of Traditional Banking (TB) operations is on the increase: This evolvement has had a direct impact on TB sectors to adopt a similar approach, to provide wide range of banking activities to meet different levels of customers requirement. The introduction of blockchain, and its associated technology such as cryptocurrency, provides a generally more secure way of transactions outside the TB operations. In the bid to improve the operations of the banking sector, these sectors may have to compete with the growing acceptance of the different FinTech technologies that may not be associated with mainstream banking activities. Ghana is no exception, as the Central Bank of Ghana has frantically announced the introduction of digital currency into the market. The research investigates the impact of the evolution of the Fintec Technology and its impact on the TB systems in Ghana focusing on the employee in the banking sector. The research employs a quantitative method. The research concluded that in general regulated FinTech has a positive impact on the traditional commercial banks. However, FinTech technologies, which are not within the legal regulatory framework may have a disruptive impact on the traditional commercial banks. However, resolving this requires awareness, training, and a regulatory framework to govern their activities.

Introduction

With the advancement in technology, one of the latest technologies adopted by banks is electronic banking (e-Banking) or Digital Banking (DB) (Ayinaddis., Taye, & Yirsaw, 2023). As a result, e-banking is very attractive to banks and customers. Barri Segal and Laura Woods (2018) indicated that online banking has become so widespread today that customers expect accounts to include free online banking, resulting in many banks desiring to operate only on the Internet, which decreases overhead costs while offering more competitive rates on savings accounts. With the high demand from customers for bankers to be agile, the shift of Traditional Banking (TB) operations to online is developing rapidly, because of various benefits such as cost and time effectiveness (Morawetz, K.2018). Technological developments in the banking sector have speeded up communication and transactions for clients, however, the major technological changes that compete among the banks are not in the banks industries, but the immerging technologies such as mobile money, digital currencies and cryptocurrencies have added another dimension to the way customers transact financially.

According to Chan (2021), digital currency is a brand-new design, which is not only different from the tokens based on accounts but also different from the tokens which are lack value support and issuer management such as Bitcoin. DB is online banking but taken to the next level. Online banking and DB eliminate physical and geographic boundaries and time limitations of banking services (Chan, 2021, Morawetz, K.2018). Online Banking facilitates Internet banking such as e-banking services conducted through a secure website operated by local banks and includes online enquiry, e-payment, and e-transfer (Yoon, 2010). However, Digital Banking (DB) provides more sophisticated security measures, such as

biometric verification, artificial intelligence algorithms based on behaviour that identify anomalous activity, and safe third-party integrations, which may be included in DB platforms.

E-banking reduces not only operation costs to the bank but also leads to a higher level of customer satisfaction and retention. The customers can access funds and transfer funds between accounts, pay bills and make purchases 24 hours a day, 7 days a week (Koirala, 2019).

Statement of the Problem

Previously, the banking industry was with simple electronic like ATMs and SMS alerts, however, the situation has changed in recent times due to the introduction of technological follow-ups like ATMs, Electronic Funds Transfer at Point of Sale (EFTPOS), Internet banking, SMS alerts, and credit and debit cards have graced the Ghanaian banking environment) (Sanusi & Yakubu, 2023). In addition to direct banking technologies, DB, mobile money banking, and cryptocurrencies are also competing fairly with the operations of the banking industry. Karataev (2024) suggested that global geopolitical transformations always create new risks for the financial system. For instance, the increase of sanctions and removal of Russia from the SWIFT system has led to Russia developing a new financial system which competes with SWIFT. According to Karataev (2024), Russia's subverting international sanctions by building new financial pathways presents new risks.

Ghana is yet to develop a strong electronic banking regulation: there are many ambiguities about the application of e-banking (Sanusi & Yakubu, 2023). The problem of the study therefore is to investigate the Electronic Banking products and services, and the extent to which they contribute to the bank's customer satisfaction and service delivery in the banking sector of Ghana. Thus, providing online facilities by banks is increasingly becoming a "need to have" rather than a "nice to have" service.

Research Questions

1. What is the impact of E-Banking Services on the banking sector?
2. Is there any impact of DB on the banking sector?
3. What is the impact of non-regulatory financial platforms such as the blockchain and its related cryptocurrency on the banking sector?

Hypothesis

Null hypothesis: there is a significant impact of Electronic Banking services on customer satisfaction in the Ghana Banking Sector

- H 1; there is a significant impact of electronic banking on customer satisfaction in the Ghana Banking Sector.
- H2. There is significant knowledge of electronic banking among bank customer
- H 3; There is a significant impact of DB on customer satisfaction in Ghanaian commercial banks.
- H4. There is significant awareness of DB among banks, customer
- H 5. There is significant awareness of blockchain and its related cryptocurrency among customers in the Ghanaian Banking sector.
- H6. Blockchain and related cryptocurrencies may impact the patronage of TB systems

Research Objectives

- To examine the impact of e-banking service delivery on customer satisfaction in Ghana Commercial Bank.
- To understand the significance of DB in the Ghanaian banking sector.
- To study the impact of the blockchain system and its related cryptocurrency on the banking sector.

Literature review

Electronic banking has transformed the way customers interact with financial institutions, offering convenience and accessibility through various digital channels (Ayinaddis., Taye, & Yirsaw, 2023). According to the research conducted by Ayinaddis, Taye, and Yirsaw (, 2023), there is a significant effect

of the variables responsiveness, reliability, security and privacy, speed, and convenience on customer satisfaction. Electronic banking has a wider concept than internet banking: whereas electronic banking covers financial transactions such as Digital Banking (DB) and blockchain, internet banking is limited to online banking. Ashburn (2024), defined Electronic banking as the use of computers, phones, and other technologies to facilitate banking transactions rather than through human interaction (Singhal 2008). Avasthi (2000-01) suggested that revolution of information technology has brought about a fundamental transformation in the banking industry. However, these services have graduated to online bill payment, transfer of funds between accounts and cash management services for corporate organizations and individuals (Khan et al., 2009). E-banking system signifies a range of systems ranging from automated teller machines (ATM), electronic banking, computer banking, cable banking, online banking and most recently, smartphone banking (Kim et al., 2011).

Choudhury and Bharttachargee (2016) examined the nexus between electronic banking channels and customer loyalty, which showed that electronic banking delivery channels have a strong positive impact on customer loyalty. Fatemeh Sakhaei (2014), investigated service quality indexes in Internet Banking, which indicated that service quality have meaningful relationship with customer satisfaction, however, Internet Banking reliability has the most relation on customer satisfaction. Vadivelu Tharanikaran's (2017), study indicated high degree of service quality and customer satisfaction in the electronic banking in Ghana Commercial Bank, Obuasi branch.

Proliferation of Standardized Platforms Regulator

The TB sector has remained largely untouched, due to the strict adherence to the use of common platforms that allow a single interface by the banking institutions to conduct transactions locally and internationally. For instance, the Society for Worldwide Interbank Financial Telecommunication (SWIFT) has a monopoly position for international financial transactions as it is the only institution that provides a platform for almost any international transaction in the regular banking sector (Robinson, Dörry, Derudder, 2022; Köppel, J. 2011). However, the introduction of new technologies has provided huge competition and alternative solutions such as banking, payments, and crediting (Ahmed & Al-Hakim, 2018).

Financial technology (FinTech) attracted overwhelming global interest from different interested parties (Ahmed & Al-Hakim, 2018). In addition, studies conducted recently have also drawn attention to previously less explored forms of financial information, which is gaining traction in light of the rise of fintech and digital platforms: payment transaction data (O'Dwyer, 2019; Westermeier, 2020). Bitinas and Burkšaitienė (2024) stated that one of the most attractive markets for service providers in the payment industry is financial technology (Fintech), which has drawn a lot of attention in the past ten years and allows them to increase the effectiveness of financial activity systems.

Nearly, all financial markets are now digital, which has led to unprecedented changes in the financial industry resulting from a variety of fintech actors, innovations, and trends, including the ever-increasing digitalization of payments ((Arner et al., 2015; Wójcik, 2021). Robinson, Dörry, and Derudder (2022) suggested that there are two basic types of payment mechanisms or money forms: objects, tokens and claims, or accounts deposits at the banks (Abrazhevich, 2001; Green, 2008). Payment tokenization is a security approach that uses a random, unique sequence of characters called a "token" to substitute sensitive payment information, such as credit card numbers. As a result of this procedure, credit card information is kept safe throughout transactions, as it is neither utilized nor retained. Due to the bipolar systems in the geopolitical atmosphere, new platforms are being created to circumvent the monopoly of the swift system.

BRICS PAY is a digital payments platform that is jointly developed by the member countries of the BRICS (Brazil, Russia, India, China, and South Africa) economic bloc (BRICS Business Council, 2023). Brics pay provides alternative payment to countries to circumvent the tight grips of the SWIFT system. The Brics Pay system is blockchain-based, which operates on a Distributed Ledger, however not a Central Bank Digital Currency (CNDC) or a Cryptocurrency. The UK's Standard Chartered Bank has integrated Brics Pay into its digital payment platform to enable its customers to make payments to other BRICS

countries. In effect, BRICS PAY prevents third-party actors from seizing the financial assets or removing these countries from the global financial transactions networks (Moderndiplomacy, 2023).

Brief History of the Banking Industry in Ghana

The board of Elder Dempster registered the Bank of British West Africa (BBWA) as a limited liability company, and on March 31, 1894, started operations, first in Lagos and then in England (Vidal L Buckle & Co, 1996), and later establish a branches in Accra and the Gold Coast (now Ghana) in 1896: This branch later changed its name to Standard Chartered Bank in 1969 (Mensah, 2017). After Gold Coast Independent (Named Ghana), the Bank of Gold Coast was split into two: the Ghana Commercial Bank, and the Bank of Ghana, which functioned as a bank and now the central bank (International Institute of Advance Study of Culture Institution & Economic Enterprise, 2015). Among the banks that were legally incorporated between 1957 and 1965 are the Ghana Investment Bank, which functions as an investment banking institution; the Agricultural Development Bank, the Merchant Bank, and the Social Security Bank (Vidal L Buckle & Co, 1996). The 1989 Banking Law also gave qualified locally incorporated entities the ability to apply for licenses to function as banking institutions. Several corporate organizations, including Meridien (BIAO) Trust Bank, CAL Merchant Bank, Allied and Metropolitan, and ECOBANK, were subsequently granted licenses to conduct business as banks.

The Two Sides of the Coin: Digital Currency and Cryptocurrency

Digital currency is a completely new concept that differs from tokens based on accounts such as lacking issuer management and value support (Li, Xiaoya, Jiehua, & Jie, 2021). Digital currency only exists in the digital realm. Murinde, Rizopoulos, and Zachariadis (2022) suggested that the banking industry has experienced significant technological and regulatory changes brought about by digitalization, cybersecurity adjustments, deregulation and liberalization, and breakthroughs in information and communication technology. For instance, the Bank of England indicated in experimenting with a digital currency, digital pound (Jones, 2023). Also, central banks across the world are studying digital currencies, with the European Union due to publish a draft law in May (2023) setting out a legal framework for a potential digital euro (Jone, 2023). The HM Treasury (2024), indicated that the introduction of a digital pound would complement the role of cash in a digital world and give people more choice in how they make everyday payments.

According to the Business Financial Times (2023), the Central Bank of Ghana is dedicated to financial innovation, as the introduction of the e-cedi as a digital currency issued by central banks offers promising opportunities for financial inclusion. China is at the forefront of the development of digital currency, with the introduction of digital yuan or renminbi (Chan, 2023). The global south trade group BRICS+, comprising Brazil, Russia, India, China and South Africa, Saudi Arabia, Egypt, Ethiopia, Iran, and the UAE are also working assiduously to introduce digital currency to facilitate trade among their members (Ledger Insights, 2024). On January 30 2024, China and the United Arab Emirates successfully executed the first cross-border payment utilizing the digital dirham (Otorbaev, 2024).

The origin of cryptocurrency was a pseudo-inventor known as Satoshi Nakamoto who provides peer-to-peer transactions avoiding the TB systems (Hodson, 2016). Tang (2019) argues that P2P platforms can be seen overall as supplements to banks and not as a substitute. Not all FinTech does have access to central bank liquidity like banks do, which limits the liquidity that FinTech lenders may offer: This is one of the reasons FinTech cannot completely replace traditional banks. Moreover, as explained by Navaretti et al. (2018), FinTech firms cannot replace banks but rather coexist with the banks. The IMF (2019) issued a policy Bali Fintech Agenda (BFA), which is a set of high-level topics that nations should take into account when debating their respective fintech policies at home to control fintech risk.

Conceptual Framework

The conceptual framework is design to identify the reliability of the dependent variable on the independent variable. In the study, the banking systems is the dependent variable, and the independent variables are the Financial Technology (FinTech). This research Focuses on TB is in the larger financial setup, the introduction of any financial technology may have a direct impact on the TB system.

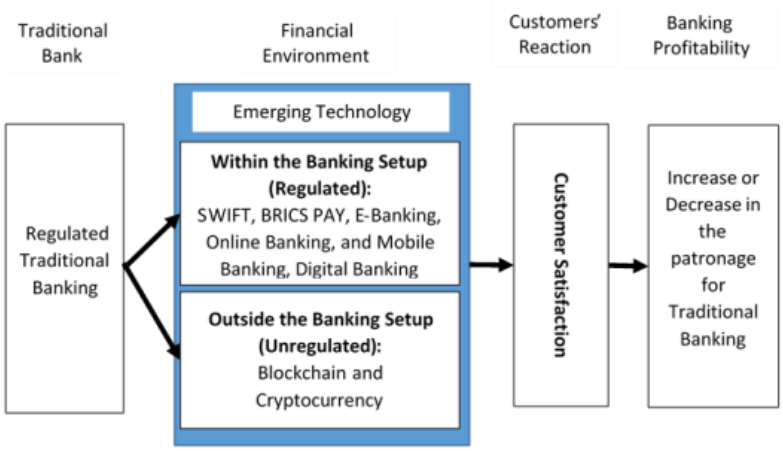


Figure 1: Conceptual Framework

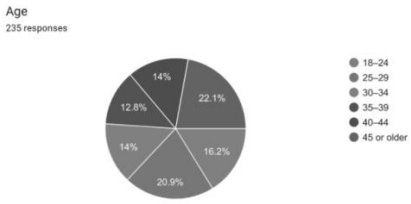
As indicated in the diagram, the financial environment may have some of the technology strictly regulated by the banking regulatory body (E-Banking, visa systems, mobile money) while others may not be regulated. General the banking system is impacted both by regulated and unregulated FinTech, if the unregulated FinTech provides more satisfaction to customers, the banking industry may lose its market share to the unregulated FinTech, and vice-versa.

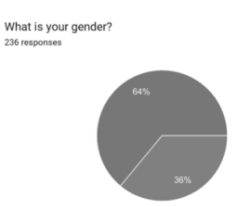
Research Methodology

The research uses a quantitative method, which provides a scientific approach to research (Mohajan, 2020). The sampling technique for the study is non- non-probabilistic sampling; convenience sampling. Survey questions were manually distributed through e-mail, whatApp. The researcher may contacted banks' staff to send the link of the Google form via whatApp platforms or emial, where the questionnaire has been designed for customers to answer. The data was collected using snowball, purposive, and random sampling. An inform concern were attached to each of the questions assuring the participants of their full anonymity, and data collected used for the research and nothing else. Secondary sources of data were used, to provide triangulation, to find out if there was a bearing of the primary data with the secondary data.

Findings/results

Participants were encouraged to share the research questionnaires through their email contact and WhatsApp group platform to increase the range of responses. The data collected were uploaded on SPSS for analysis. From the SPSS, a frequency table that reports the percentage of each of the categories and frequencies that are easy to understand and interpret was used. In this study, 236 respondents and one sample t-test were performed to test the hypotheses. The correlation coefficient was used to depict the association between e-banking services and customer satisfaction. Other than the descriptive analysis were conducted to validate the hypothesis. Descriptive statistics was used to explain the demographic characteristics of the respondents along with e-banking services and customer satisfaction. The following are the demographics:





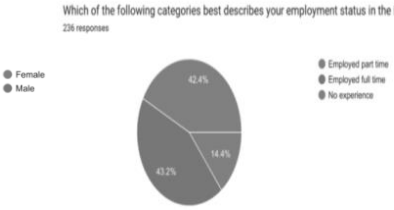
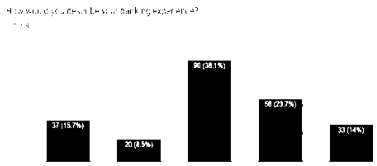
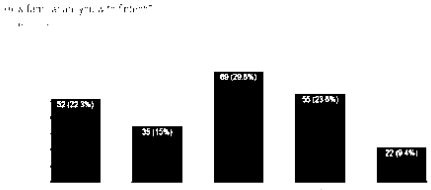


Figure 2:Age Distribution *Figure 3: Gender Distribution*
Figure 4: Employee Distribution

Figure 2 indicated the age groups of the respondents, these were in percentages as follows: 18-24 (16.2%), 25-29 (20.9%), 30-34 (14.0%), 35-39 (12.8%), 40-44 (14.0%), and 45 or older (22.1%). Figure 3 shows that respondents male category was greater than the female: Male category forms 64.0%, while female is 36%. Out of the 236 respondents, 56.8% were bankers representing 134 of the total participants, non bankers represented 43.2%, representing 102 participants. Requesting to know how knowledgeable the participants are in fintech, using likert scale (5-Point Likert Scale: 1= No Experience, 2= Slightly Experience, 3=Moderately Experience, 4=Experience, 5= Very) for Figure 4, 5, and 6 tested various perceptions.





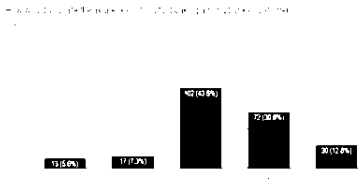
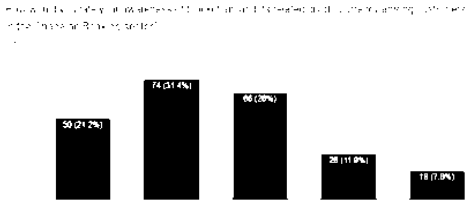


Figure 5: Banking Experience rating (3.12) *Figure 6: Fintech Understanding (2.83)* *Figure 7 Awareness of Digital Currency (3.38)*

For instance the average banking experience of the participant is 3.12 indicate in figure 5, shows a moderating significance in banking among experience among the participants. However, participants understanding of the concept of FinTech is 2.83 on average as shown in Figure 6. Figure 7, indicates that the awareness of digital currency among respondents is significan with average score of 3.8: This supports Hypothesis (H4: There is significant awareness of DB among banks and customers), and the same is true for hypothesis 2 (H2: There is significant knowledge of electronic banking among bank customer). However, the awareness of the types of FinTech is not the same across the technological systems in place. for instance, respondent had an average score of 2.53 when asked about their awareness of blockchain systems and cryptocurrency. Figure 8, further clearly indicates that the awareness of FinTech technologies is not even across respondents. Whereas Fintech technology like digital currency, and mobile money are well known among the respondents, blockchain and associated cryptocurrency are not popular among participants: This does note suppoert the Null Hypothesis H 5 (There is significant awareness of blockchain and its related cryptocurrency among customers in the Ghanaian Banking

sector), and that we should accept the alternative hypothesis which indicates that there no significant awareness of blockchain. Figure 9, throws more light on the patronage of Financial technology among respondents. The chart indicates that mobile payments are widely used with an average of 89.7% usage, followed by online banking at 63.7%, and cryptocurrency at 11.8% respectively.



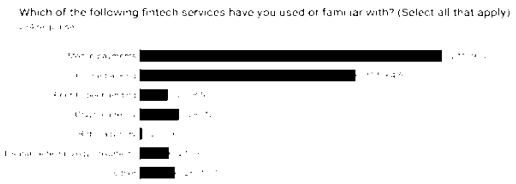
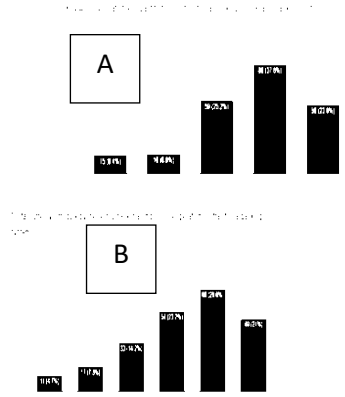


Figure 8: Awareness blockchain and cryptocurrency (2.53) *Figure 9: Patronage of Fintech*

Figures 8 (A & B) and indicate participants rating on the impact of fintech on TB in Ghanaian Banking Sector (5-Point Likert Scale: **1= Not Significant, 2= Slightly Significant, 3= Moderately Significant, 4= Significant, 5= Very Significant).** Figure 7 (A) has an average score of 3.65 and Figure 7 (B) has an average score of 3.71: Both figures indicate a significant impact of Fintech on the TB system. However, figure 8 (A&B) further indicates that this impact is significant and positive.



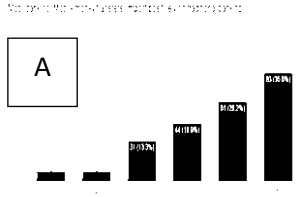
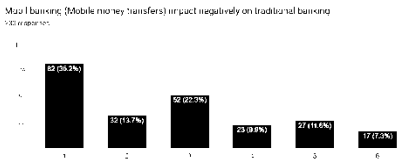
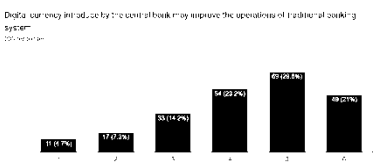


Figure 10: A B: Significant Impact of fintech on traditional banks *Figure 11: A & B: fintech impact on traditional banks Positively*

Figure 10 (A), indicates that mobile money have high significant impact on TB sector with an average score 4.73. Figure 10 (B) provide similar average score of 4.26, which indicates that participants believe that the introduction of the digital currency may impact positively on the commercial banks. In addition, figure 11 (A&B), indicates that Fintech provides significant customer satisfaction, with an average score of 3.86 representing a significant impact on customer service. In addition when participant were asked to rate their acceptance of mobil banking paying negative impact on TB the rating was (2.71), indicated in figure 12. This indicate less significant impact on TB.





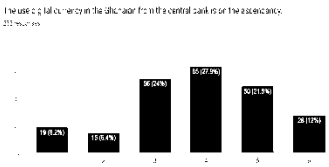


Figure 12: Mobil banking impact Nagtively 2.71 *Figure 13: Figure 10: DB improve TB* *Figure 14: Digital Currency Increasing*

Also, figure 13 indicated similar findings related to Digital Banking (DB) and customer satisfaction. Respondent generally believes that DB provides significant satisfaction to customers, and the use of digital currency is increasing as indicated in Figures 13.

The conclusion may be drawn for hypothesis H1- there is a significant impact of electronic banking on customer satisfaction in the Ghana Banking Sector: Albeit, blockchain systems such as cryptocurrency work outside the TB systems, there is a wide belief among respondents that blockchain systems may have a negative impact on TB systems. For instance, when participants were asked about the disruptive impact on the operations of the TB system, the average score was 3.28, which indicates a moderately significant impact on the TB system as indicated in Figure 10. So the conclusion for hypothesis 6 may be that H6. Blockchain and related cryptocurrencies may impact the patronage of TB systems.

- H 1; There is a significant impact of electronic banking on customer satisfaction in Ghana Banking Sector: True
- H2. There is significant knowledge of electronic banking among bank customers: True
- H 3; There is a significant impact of DB on customer satisfaction in Ghanaian commercial banks: True
- H4. There is significant awareness of DB among banks, customers: True
- H 5. There is significant awareness of blockchain and its related cryptocurrency among customers in the Ghanaian Banking sector: False
- H6. Blockchain and related cryptocurrency may impact the patronage of the TB systems: True

Analysis II

The next analysis check if there is correspondent relationship between those working with the bank and those who have no banking experience. T test is use to test if the population of the different group interest (i.e. those in the banking sector and those who do not have banking experience) may have impact on the results: $$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{(s^2(\frac{1}{n_1} + \frac{1}{n_2}))}}$$

Table 1: Statiscal Analysis 1

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.701	.129		13.154	.000
	How would you rate your awareness of blockchain and its related cryptocurrency among customers in the Ghanaian Banking sector?	.013	.032	.030	.393	.695

Knowledge in fintech	-.096	.028	-.249	-3.395	.001
How would you rate the awareness of DB among banks' customer?	-.011	.042	-.022	-.270	.788

a. Dependent Variable: Work in the Bank

The **dependent variable** is **"Work in the Bank,"** and thus has three independent variables. the Constant (B = 1.701, p < 0.001). This represents the baseline level of "Work in the Bank" when all independent variables are zero. Since p = 0.000, and it is **highly significant**.

"How would you rate your awareness of blockchain and its related cryptocurrency among customers in the Ghanaian Banking sector?" B = 0.013: Indicates a very small positive relationship with the dependent variable. **t = 0.393, p = 0.695**: with high p-value (>0.05) means this variable is **not statistically significant**, meaning awareness of blockchain has no meaningful effect on working in a bank.

1. **"Knowledge in fintech" B = -0.096**: A negative relationship with the dependent variable. **t = -3.395, p = 0.001**: Since p < 0.05, this variable is **statistically significant**. **Interpretation**: Higher knowledge in fintech is significantly associated with a lower likelihood of working in the bank. This could indicate that those with fintech knowledge may prefer non-TB roles or fintech-related careers.
2. **"How would you rate the awareness of Digital Banking (DB) among banks' customers?"**

B = -0.011 indicates a very small negative relationship. **t = -0.270, p = 0.788**: The high p-value (>0.05) means this variable is **not statistically significant**.

Overall Insights

Only **"Knowledge in fintech"** has a statistically significant effect (p = 0.001). **Blockchain awareness and DB awareness** do not significantly influence the likelihood of working in a bank. The negative coefficient for **Knowledge in fintech** suggests that individuals with higher fintech knowledge might be less likely to work in a TB sector. The research concludes that there is no significant relationship between the awareness of FinTech base on the person's job relationship.

Table 2: Statiscal Analysis II

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	T	Sig.
(Constant)	.783	.361		2.167	.031
How would you rate the awareness of DB among banks' customer	.461	.097	.348	4.758	.000
How would you rate your awareness of blockchain and its related cryptocurrency among customers in the Ghanaian Banking sector?	-.031	.081	-.028	-.384	.701
Blockchain and related cryptocurrencies may disrupt the operations of TB systems	.137	.063	.151	2.180	.030
The use of digital currency in the Ghanaian from the central bank is on the ascendancy.	.031	.065	.034	.479	.632

a. Dependent Variable: Knowledge in fintech

This table presents the results of a multiple linear regression analysis, where the dependent variable is "Knowledge in FinTech." And here is the breakdown of the findings:

1. **Constant (Intercept)**: **B = 0.783, p = .031**: The intercept is significant, suggesting that when all independent variables are zero, the predicted fintech knowledge score is 0.783.
1. **B (Unstandardized Coefficient) = 0.783**: This means that for every **one-unit increase** in the independent variable, the Knowledge in fintech increases by **0.783 units**, assuming all other variables are held constant.

2. **p = 0.031**: The **p-value** indicates statistical significance. Since **p < 0.05**, this suggests that the relationship between the independent variable and the Knowledge in fintech is **statistically significant** at the 5% significance level. The p-value (0.031) confirms that this effect is unlikely due to random chance.

2. **Awareness of DB**

B = 0.461, p = .000: This variable has the strongest positive impact on fintech knowledge. The coefficient indicates that a one-unit increase in DB awareness is associated with a 0.461 increase in fintech knowledge. The significance level (p < .001) indicates high confidence in this relationship.

3. **Awareness of blockchain and cryptocurrency**

B = -0.031, p = .701: This variable has a negligible and non-significant relationship with fintech knowledge. The negative coefficient suggests a slight inverse relationship, but the high p-value indicates no reliable association.

4. **Potential disruption by blockchain and cryptocurrency**

B = 0.137, p = .030: This variable shows a significant positive relationship with fintech knowledge. A one-unit increase in the belief that blockchain could disrupt TB corresponds to a 0.137 increase in fintech knowledge.

5. **Perception of rising digital currency use** (**B = 0.031, p = .632**): The relationship here is positive but not statistically significant.

From the analysis there is an indication that most influential predictor of fintech knowledge is awareness of Digital Banking (DB). Beliefs about blockchain disruption also contribute significantly, while awareness of blockchain and perceptions of rising digital currency use do not show a meaningful impact in this model.

Discussions and conclusions

The research indicated that participants generally have substantial awareness and understanding of Fintech, and how FinTech support the TB systems. The assertion supports Hypothesis H4 - There is significant awareness of DB among banks and customers, and the same is true for Hypothesis 2 (H2): There is significant knowledge of electronic banking among bank customers. Nevertheless, this awareness of FinTech is not the same across the technological system in place, for instance, respondent had an average score of 2.53 when they were asked about their awareness of blockchain systems and cryptocurrency. In addition, the research concluded that there is no significant relationship between the awareness of FinTech base on the person's job relationship. There is also strong support for the assertion that FinTech improves customers' satisfaction, especially mobile money: This is indicated in an average score of 3.86, which represents a significant impact on customers' services. In addition, respondents generally believe that Digital Banking (DB) provides significant satisfaction to customers and, as such, has a positive impact on commercial banks. The conclusion supports hypothesis H1- there is a significant impact of electronic banking on customer satisfaction in Ghana's Banking Sector; which also supports hypothesis H3.

As indicated the awareness of FinTech varies across the participants, there was general acceptance of the disruption impact of some types of FinTech on traditional commercial banks. Though indicated that some Financial Technology may have a positive impact on the traditional bank, there was also an indication that some Financial Technology may disrupt technology for the TB System. The research concluded that blockchain systems such as cryptocurrency, which work outside the TB systems, may have a negative impact on TB systems. For instance, when participants were asked about the disruptive nature of blockchain (cryptocurrency) on the operations of the TB system, the average score was 3.28, which indicates a moderately significant impact on the TB system as indicated in Figure 17. So, the conclusion supports hypothesis 6 - Blockchain and related cryptocurrency may impact the patronage of TB systems.

Participants were allowed to provide solutions to how FinTech and TB systems may work harmoniously to provide optimum customer satisfaction and secure the operations of traditional commercial banks. The suggestions range from education, regulatory, Infrastructure, Implementation, awareness, collaborations.

Education and Awareness: Participant suggested the need to intensify frequent education: Financial Technology should be part of students' curriculum from the junior high schools, and mandatory for institutional banking. **Infrastructure Development**: To improve the effectiveness and efficiency of FinTech there is the need for wider internet coverage in Ghana. By focusing on these area, Ghana can create a conducive environment for the successful introduction and integration of digital currency within its banking system. **Collaboration with Financial Institutions:** Participants suggested there was a need for Collaboration between regulatory bodies such as the Ghana Revenue Authority (GRA) and Financial Intelligence Centre (FIC) to align tax policies and fraud prevention measures. **Regulatory Framework:** The Bank of Ghana (BoG) should establish clear policies, guidelines, and legal frameworks to govern the use of digital currency, ensuring compliance with financial regulations, anti-money laundering (AML), and consumer protection laws, and combating the financing of terrorism (CFT) regulations.

Conclusion

The research indicate significant customers satisfaction in the use of fintech associated with banking services. The research shows no significant relationship between awareness and knowledge and job: This means that even though FinTech activities in Ghana have no strong regulatory framework, both bankers and customers are heavily involved using FinTech. The research questions were answered follow:

1. E-banking has a positive impact on the banking sector, however, DB may have a positive or disruptive impact on the traditional baking system, depending on the type of instrument being considered (Choudhury & Bharttachargee. 2016).
2. DB has significant positive impact on the banking sector.
3. Blockchain and its related cryptocurrency may be disruptive, however, when there are regulatory frameworks to govern the activities of these financial technologies, its impact on traditional commercial banks may be minimised.

Limitations of the Study

The study is highly constrained to the researcher because there is no ready data available on the subject matter. Another case in point is the fact that the busy schedules of commercial banks may make the study very cumbersome in that going for relevant information or data to aid the study would be stressful, and also due to the confidentiality clauses of the commercial bank, data needed is not readily available. The administering of questionnaires to busy respondents may pose a limitation to the study. Though there is this challenges, a wider future this research form as a good platform to establish future research.

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