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Technology and banking operations: Perspectives of international students in a Ghanaian University

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Abstract

Purpose: The study analysed perceptions of international students in a Ghanaian private university college on the effect of information technology on banking operations as they have experienced it in Ghana.

Research methodology: A mixed methods research approach was used for this study. Data were collected from 60 international students who were sampled randomly from the population of international students in the college. Descriptive statistics from IBM SPSS Statistics 24 was used to analyse quantitative data, while thematic analysis was used to analyse qualitative data.

Results: Findings showed that even though information technology affects banking operations positively by making operations efficient, easier and faster for both employees and customers; it has increased the rate of fraudulent banking activities. This has exposed clients and employees alike, to a higher risk of fraud and other fraud-related activities.

Limitations: This study was limited to international students of a private university college in Ghana. Data were collected from an online survey; hence a limitation to the number of international students who participated in the study.

Contribution: Despite the fact that information technology influences banking operations in Ghana positively, it has resulted in increased fraudulent activities related to banking operations. This requires that policymakers improve online security in the banking space.

Novelty: There is an emphasis that though technology's use in banking operations has a positive effect, it also presents banking institutions with an increased risk of fraud as perceived by international students schooling in a private tertiary institution in Ghana.

Keywords: *banking operation, banking fraud, management, information technology, e-banking*

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1. Introduction

One of the essential areas of the economy, whose contribution to the rate of development and economic growth cannot be fully quantified, is the banking industry (Lekwauwa & Bans-Akutey, 2022). The dominance of natural forces in today's modern world reveals that the financial sector is ill-equipped to deal with the demands of global competition. According to Khanam, Siddiqui, and Talib (2013), bringing information technology into the financial sector will help build strong total quality management which is an important new criterion for coping with global competitiveness. Flexibility, fast response, and information communication technology play a significant role in these areas for

quality enhancement. Thus, according to Fernando (2020), knowledge is as important as other factors of production such as land, labor, and capital.

The importance of information technology in today's effective corporation cannot be overstated. It contributes significantly to an organization's success in a highly competitive environment by making information collection, storage, retrieval, processing, transmission, and distribution simple and fast. There are a variety of additional aspects that might influence a company's success, and a company can employ a variety of techniques to achieve its goals (Khan, 2020). Convenient and simple access to information by the use of technology, on the other hand, is critical to the firm's performance since it influences all other aspects and business advantages cannot be achieved without it. As a result, no business can achieve the top position in its industry if it ignores the use of technology (McDonald, 2013). This is especially true when it comes to financial institutions, such as commercial banks (Makambe & Moeng, 2020). As a result, commercial banks are very information-intensive, and their use of information technology (IT) for simple and fast data collection, storage, access, process, transmission, and distribution should have a significant impact on their performance (Naab & Bans-Akutey, 2021).

Organizations' operations and commercial practices have been shaped by the development and recent advancements in technological tools (Bans-Akutey, 2022; Tamaruddin, Firdaus & Endri, 2020; Kumar, Reinartz, Kumar, & Reinartz, 2018). The Website (internet) and mobile telephony, or telecommunication system, are the driving forces behind this development (Bans-Akutey & Ebem, 2022). As a result, manual and traditional methods of doing business have become obsolete as advanced technology based on automation and connection of computers and computer equipment via electronic communication takes its place. Online billing and payments, extensive websites with product details, and real-time teleconferencing over continents and time zones, for example, are replacing ledger books, paper bills, publications, and business travel. According to Wiredu, Labaran, Nketiah, and Osibo (2020), information systems have greatly transformed how banking is done around the world; the number and speed of banking transactions have greatly improved as a result of rapid growth in computer technology, which has provided banks with new business options. Alshubiri, Jamil, and Elheddad (2019) found that information technology has a direct effect on how managers make decisions, plan, and deliver products and services.

The current handling of information by electronic means, which includes access to storage, processing, transit, or transmission and delivery, is known as information communication technology (ICT) tools (Bans-Akutey, 2019). It refers to the smooth movement of information around the world when computer and telecommunication systems merge. The major focus of information technology is the merging of computer and telecommunications and their applications in getting relevant and meaningful management information systems (Bans-Akutey & Ebem, 2022). A micro-electronic-based combination of computers and telecommunications is used to acquire, process, store, and disseminate audible, visual, textual, and quantitative information.

ICT is primarily concerned with telecommunications and computerization. It refers to the merging of network technology, telecommunication technologies, as well as their uses or applications for the global internet, intranets, extranets, the world wide web (www), virtual reality, and cyberspace-the new digital mentality and culture (Uwaje, 2000). The hardware resources and software that link multiple computer hardware components and convey data from one physical location to another are referred to as technology. The utilization of electronic distribution channels has been made easier because of connectivity. Financial transactions are no longer hindered by distance or geographical location. ICT advancements are dramatically changing the way business is done in Ghana which is the case in Sub-Saharan Africa (Abor, 2005). Because of the crucial role it plays in the economy, the usage of IT in the banking industry drew this study's interest. It contributes to economic progress by channeling funds to economic agents who require them for productive purposes. This function is critical for any economy that wants to grow meaningfully because it makes agreements that bring financial resource borrowers and lenders together more efficiently than if they had to deal directly with one another.

For both academics and practitioners, determining the effect of information technology on organizational and personnel performance has been and continues to be a key study priority (Phina, Ogechukwuand, & Shallom, 2021). Many studies have examined the effect of information technology on banking operations (Adesola, Moradeyo, & Oyeniyi, 2013; Ankumah & Bans-Akutey, 2021; Appiahene, Missah, & Najim, 2019; Bans-Akutey & Sowah, 2020; Bhatt & Bhatt, 2016; Cudjoe, Anim, & Nyanyofio, 2015; Mittal & Gupta, 2013). However, only a few of these studies examined technology's effect on banking operations in Ghana. None of these studies considers the perspectives of students who are not nationals of the country in which they are schooling despite the fact that such international students depend primarily on banks to receive funds from their guardians. It is in light of this that this study sought to investigate the effect of information technology on banking operations as perceived by international students. The study therefore sought to specifically examine the role of technology in banking operations in Ghana; assess the effect of technology on efficient banking operations in Ghana; and examine the relationship between technology and banking fraud in Ghana.

2. Literature Review

2.1 Data Flow in Banks

According to Hla and Teru (2015), the efficient flow of data, both internally and externally, is critical to the efficient operation of banks. For efficient customer service and the performance of numerous financial activities, accurate, timely, and complete data is critical (Zahedi & Khanachah, 2020). To properly direct the activities of their institutions, bank managers and officials must have enough data. Banks' data generation and distribution units are usually centered on the operations department. This is why banks use computers to help them run their businesses more successfully and efficiently. Certain data must be available at key points in the banking cycle for computerization to be of most benefit to a bank's operations. A data processing system must account for the element of time because any good service delivery has to be timely in order to be efficient and effective. The storage and retrieval of data is a crucial aspect of data processing. Any efficient information is judged on its accuracy and completeness in terms of quality and timeliness, at the appropriate moment according to Cai and Zhu (2015).

2.2 Facilities for The Development of a Management Information System (MIS) In Banks

For the establishment of an efficient information system in banks, numerous facilities are required. The most commonly used are Self-service terminals and Point-of-sale terminals. A self-service terminal (SST) is an electronic gadget that allows you to complete a variety of banking tasks without having to deposit cash. They are more accessible, simple to use, and cost-effective, and they help people avoid long lines. An SST can conduct the following transactions; make payments to third-party recipients and gather data on international currency rates. The Point of Sale Terminal is a computerized cash register that replaces the traditional cash register. It allows you to track and record consumer orders, as well as process debit and credit cards and manage inventory. A restaurant's POS terminal system, for example, is likely to have all menu items saved in a reliable database (Cai & Zhu, 2015).

2.3 Database Related to Bank

A distributed database management system provides each bank branch with its own copy of the most recent customer information. The bank replicates the customer's account data rather than transferring it to the central server, allowing it to record and execute each transaction. Banks will continue to use traditional relational databases in their IT infrastructure, where they can serve as useful records. According to Mogaji, Soetan, and Kieu (2020), banks will increasingly look to develop and integrate Internet of Things (IoT), mobile, and artificial intelligence applications in a digital economy, where customer experience is key. DB2, Oracle, Sybase, MySQL, and SQL-Server are commonly used on older systems. These are also common in new systems and NoSQL like databases, applications and others. MongoDB can be used for more scalable applications that need to serve out bank balances to mobile customers. Banks refer to IT museums as data centers. Because it meets all of the project's requirements, MySQL is a popular database for banking systems. Large enterprises, on the other hand, prefer SQL Server, Oracle, IBM, and other vendors for their advanced features and most

importantly commercial support. Because each bank branch has its own copy of the most recent client information, the cost of administering a distributed database management system is lower. Instead of sending each transaction to a central office, the bank can record and process it locally by copying the customer's account data.

2.4 Electronic Funds System

According to Mwangi (2014), this is a technique for electronically transferring funds from one country to another. Commercial banks are the only ones who can use this money transfer system. The bank will debit the customer's account and credit the supplier, either directly or through a bank wire transfer system, with electronic data backing the transaction. The following conditions must however be met for electronic funds transfers to work effectively: Both the customer and the firm must use the same bank, with electronic branch integration; and if the consumer and the business use different banks, both must be electronically integrated.

2.5 Information system processing

Batch processing: As the number of data to be processed grows, it makes more sense to collect and store individual data of the same type in batches, so that when they reach a specific number, they may be sorted and processed all at once. The processing time is specified by the application's creator and is mostly driven by the batch's operational role within the business. Processing can be done on a regular basis, such as hourly, daily, weekly, monthly, or when a certain amount of data has been collected. Batch processing was the first technique of commercial data processing, and it is still used in some cases when transaction data is on paper, such as the processing of cheques and credit card slips according to (Umuhoza, Ntirushwamaboko, Awuah, & Birir, 2020).

Real-time processing: The term "real-time" refers to any system that produces near-instantaneous reactions in response to data input. The most important element of this data processing is that the input data is processed quickly enough that action can be made on the results right away. According to Ada and Ghaffarzadeh (2015) a type of information system known as a "Decision Support System" is built on real-time processing. This is due to the system's reliance on instant access to data stored in the computer system. Dual-purpose input and output devices, such as terminals and visual display units (VDUs), are required in this style of data processing. Interface lines linking remote terminals to the central processing unit (CPU) require a communication front end.

Centralized processing: Centralized processing is a processing mode in which all of the computers in an organization are housed in a centralized computer center or one giant central computer is given with telecommunications connectivity to other microcomputers located elsewhere. Because all data or information is processed at the central point department, this way of information processing is often more efficient because it eliminates duplicate resources and duplication of work.

2.6 Banking Fraud

According to Sims and Bias (2021) one of the most important roles of a bank or financial institution is to safeguard the institution's integrity by working diligently to safeguard the financial assets it controls. To do so, the bank or financial institution must be satisfied that the issue of bank fraud is addressed. Bank fraud is described as unethical and criminal conduct committed by an individual or organization in an attempt to fraudulently hold or obtain funds from a bank or financial institution. Bank fraud come in a variety of forms. According to Ali, Azad, Centeno, Hao, and van Moorsel (2019) skimming, in-person fraud, phone fraud, invoice fraud, online banking fraud, app scams, counterfeit card fraud, loan fraud, cheque fraud, are some of the most prevalent types of bank fraud. However, there are many more sorts of bank fraud both within and outside these fundamental categories.

Skimming: Skimming is the illicit process of copying information from a credit card's magnetic strip according to Shetty and Murthy (2022). When a credit or debit card is lost or stolen, the fraudster can skim the data on the magnetic strip or use the card online by entering the card information. Scammers cannot withdraw cash without the card pin, but they can use the card to make contactless payments if

the feature is enabled. A radio frequency identification (RFID) reader may also scan contactless cards through luggage, which is more likely to happen in congested locations like cities and public transportation. Furthermore, certain stores and merchants have been known to take copies of consumer bank information.

In-person fraud: In-person fraud, which is commonly performed by looking over a person who is holding an ATM's shoulder or by utilizing distraction tactics, is a risky type of financial fraud as it can sometimes imply that the scammer has access to their target's bank card and PIN according to King (2019). In order to obtain more identifying information about the victim, the fraudster may engage them in conversation. The card, like skimming, can be used in a variety of ways, but with the inclusion of the PIN and any other information, the possibilities expand to include face-to-face retail purchases.

Phone fraud: This sort of financial fraud, like online banking fraud, tries to persuade the victim to give over personal information or transfer money to another account. According to Whitty (2013), the fraudster would usually try to persuade the victim that they need to relocate money to avoid losing it and to protect their possessions. They may even invent false charges and demand that the target pay fines for them.

Invoice fraud: This bank fraud targets firms by impersonating a supplier and requesting that invoices be paid into new bank accounts. If the fraudster has hacked the supplier's information, the request will appear to be genuine, making it appear completely harmless.

Online banking fraud: Phishing, virus attacks, catfish scams, and clone websites are all examples of online banking fraud. It's hardly surprising that this is a frequent sort of bank fraud, given how much banking is done online. Fraudsters are getting better at crafting convincing emails and websites, making it more difficult for victims to defend themselves according to Button, Nicholls, Kerr, and Owen (2014).

APP scams: Scams involving Authorized Push Payment (APP) involve any fraud in which the target must voluntarily elect to withdraw money from their account. This is a typical strategy in some sorts of financial fraud, but it can also be done over the phone or in person. Typically, the fraudster will notify the victim of a change in their account typically a data breach that puts their money at risk and ask them to confirm their password, PIN, or other sensitive information to establish their identity. According to Tomasic (2011), APP scams are a type of financial fraud that can be very difficult to recover from. Banks frequently refuse to reimburse money if they believe the target gave this out willingly and was careless with their money.

Counterfeit card fraud: This is a more typical sort of financial fraud in nations where chip and PIN systems for bank cards have not yet been widely implemented. The scammer will extract the information off the magnetic strip, just like in skimming, but in counterfeit card fraud, they will transplant it onto another magnetic card and use it again.

Loan fraud: This sort of financial fraud is similar to card identity theft in that it includes taking out a loan in another person’s name using stolen or forged documents. This could be to take advantage of the victim’s superior credit or to avoid repaying the loan.

Cheque fraud: According to Panchal, Khadse, and Mahalle (2018) cheque fraud can be divided into three categories. These are counterfeit cheques, cheques that have been altered and falsified cheques. Counterfeit cheques: these are completely created checks that are used to withdraw funds from a legitimate account. Cheques that have been altered are cheques that have been properly written but have had their details modified without the account owner's permission such as changing the beneficiary or the amount. Falsified cheques are real bank cheques that have had their signature forged after being taken from their owner.

2.7 The Relationship Between Technology and Banking Fraud

New forms of banking fraud are being enabled by the digital revolution that is altering banking (Ebuka, Nzewi, Gerald, & Ezinne, 2020). The shift in banking from branch-based delivery to multi-channel services has created new opportunities for fraudsters. Digital delivery offers numerous advantages: it is less expensive for banks to supply, and it allows for more customer-centric strategies by allowing customers to access financial services whenever and wherever they want (Indrasari, Nadjmie & Endrie, 2022). However, it also introduces new vulnerabilities. Customers become the chain's weakest link. Their understanding of internet security issues is typically lacking, and they are readily tricked into disclosing personal information to criminal organizations, which can subsequently be used to confirm fraudulent transactions. For scammers, digital platforms are also quite appealing according to Chen (2018) and Okeke, Bans-Akutey, and Sassah-Ayensu (2021). These services generate large volumes of online transactions that are processed automatically from beginning to end. Because of the vast number of digital transactions, traditional manual fraud monitoring and detection approaches lack the capacity and speed to address the current issue.

2.8 Banking Fraud in Ghana

Corporate fraud has arisen as a cankerworm that has eaten its way deep into Ghana's economy, particularly the financial sector, where fraudsters have stolen billions of Ghana Cedis. According to Bonsu, Dui, Muyun, Asare, and Amankwaa (2018), the total value of all reported cases in Africa has climbed from 10.8 billion to 11 billion dollars. Employees in partnership with clients were involved in fraud in both governmental and private entities, particularly financial institutions (Ghorbani & Khanachah, 2020). According to the Central Bank of Ghana, the total monetary value involved in all recorded fraud instances in corporate financial institutions, both attempted for the fiscal year 2016-2017, was roughly GH$244.32 million. In general, financial institutions and national economies suffer from fraud (Zunzunegui et al., 2017). Fraud and its management have been the main cause of bank distress, and various steps have been implemented to reduce the rate of misrepresentation as much as feasible. Regardless, it continues to rise, owing to the fact that fraudsters routinely devise new techniques of extorting money. The majority of fraudulent acts are committed by workers, according to the Association of Certified Fraud Examiners. Despite the fact that this phenomenon is not specific to financial institutions, businesses, or Ghana alone, the high rate of misrepresentation within the banking industry has become a problem that requires attention due to the large sums of money involved and the negative effects on the economy.

2.9 Computer Technology in Banking Industry

Despite the undeniable accuracy, speed, storage, and glamour that have defined its employment, opinions on the use of computer technology in the banking industry are mixed. On the status of computer applications in Ghanaian banks, Agama (2017) focused on commercial and merchant banks. He concluded that the Ghanaian banking industry began paying attention to computerization 20 years ago and that the bulk of banks had automated their operations, leaving only a few unfortunate, significant indigenous banks to catch up.

According to Kwami (2020), the electronic gadget is the latest obsession in Ghana today, and they will continue to be relevant as the country grows. Computers are now widely used in all sectors of the economy, including education, banking, and health care. These facts have increased the popularity of the computer nowadays, but with the success and advancement in computer development, as well as the numerous benefits it has, it has been argued that computers cause unemployment, which can be caused by re-organization and restructuring the use of computers; however, one will disagree with this statement because the interests of the employees are usually taken into account before a system is computerized. Though it cannot be denied that computerization has harmed some organizations, it has greatly benefited mankind.

Marcus (2018) explained what computers can do to make the banking business more profitable. It was proven that the adoption of magnetic ink character readers (MICR) cheques will aid in the faster clearing by reducing errors caused by incorrect sorting. It was further explained that if all of a bank's branches are linked up within a state, a customer in one region of the branch can issue an instruction

for monies to be transferred into the account of another customer in another area of the branch via Electronic Fund Transfer (EFT). Furthermore, it was stated that the computer system boosts profitability and efficiency while also reducing customer wait times in the banking hall.

According to Berdik, Otoum, Schmidt, Porter, and Jararweh (2021), there are numerous practical approaches for management to ensure that computer technology is accepted. First and foremost, management must be convinced or educated that the goal of computerization is to improve operational efficiency. The company's growth and expansion of operations are expected to be ensured as a result of this increased efficiency. As a result, computerization will boost job creation in the long run. Most employees believe that computerization will send as many people to the unemployment line as possible as there is a common misconception that automation entails the replacement of humans with machines. They also stated that there must be a constant and adequate flow of information to all stakeholders and that the purpose of computerization is to create jobs in the long run, not to send as many people to the unemployment line. Many accountants and bankers now use computers in accounting, system auditing, and firm internal control, according to Siyanbola (2013). Computers are attractive and valuable tools for accountants and bankers, according to him, because of their speed, reliability, and storage capacity. It also allows for the production of more information from a given amount of data. It is impossible to overstate the importance of a computerized system; it eliminates or lowers data duplication. Data is entered in both the payroll and budgeting systems in some departments; however, this data only needs to be recorded once. To summarize, the computer is extremely valuable in all aspects of managerial decision-making, and it improves customer service.

3. Research Methodology

This study employed a mixed methods approach to achieve its objectives. An explanatory sequential design was used; which allows the researcher to tackle a broader range of research questions because it is not limited to the tenets of a particular method of research (Creswell, Plano Clark, Gutmann, & Hanson, 2003). Baran (2016) defines a population as a group of individuals, persons, objects, or items from which samples are taken for measurement. The target population is the entire group of individuals about whom you want to gather information. To design a useful research project, there is a need to be specific about the size and location of your target population. Based on this, the targeted population for this research comprised international students of a private university college in Ghana, who numbered 120 as per data provided by the institution. A sample is a proportion of the population selected for observation and analysis. Baltar and Brunet (2012) posit that a sample enables the researcher to study a relatively smaller number of units in place of the target population and to obtain data that are representative of the target population. All members of the target population were sampled for the study as the link to the online questionnaire was shared with all members of the target population. A total of 60 valid responses were received from the shared link. This number represented 50 percent of the international students which is representative of the population according to Lakens (2022).

To facilitate the collection of data for the study, the researcher used questionnaires and interviews. A link to an online questionnaire was shared with the international students; also interview was conducted by the researcher to gather more information. The data collection instrument for the survey allowed respondents to choose from options; strongly agree; agree; neutral; disagree; or strongly disagree. The researcher used one week to collect data both for the survey and the interview.

This study used the principle stipulated by Mawere (2012); which is the principle of beneficence, of respect for human dignity and of justice. The study respected the right to privacy of all participants, as well as ensuring that all the data generated were also treated with confidentiality. The study treated every respondent fairly because all the participants were thoughtfully respected despite their beliefs, habits, culture and lifestyle. Quantitative data were analysed with descriptive statistics and presented in percentages. Qualitative data was analysed with the use of thematic analysis.

4. Results and Discussions

The study revealed that the majority of the students representing 93.4% were between the ages of 20-30 years whiles the least of the students representing 1.6% were between the ages of 10-20 years. On the other hand, 3.3% representing 2 people were between the ages of 30-40 years. Out of the total respondents, 57.4% representing 35 persons were male, 39.3% representing 24 participants were females, and 1.6% representing 1 person picked others. This shows that the majority of the respondents were males. 59% of the respondents have been banking for 1-5 years; 26.2% of the respondents, for 6-10 years; 11.5% of the respondents have been banking for more than 16 years; and 1.6% of the respondents have been banking for 11-15 years. 78.7% of the respondents use savings accounts while 11.5% use current accounts; 4.9% use business accounts and 1.6% use both domiciliary and government accounts.

The survey showed that the majority (60.6%) strongly agree, 36.1% disagree and 3.3% remained indifferent about the positive change of information technology in banking operations. The percentage of students who regularly use banking outside the banking hall was 34.4% and 26.2%, once and twice a month respectively. 8.2% and 29.5% of the respondents patronize online banking thrice and severally in a month respectively. The survey showed that the majority of students (41%) consider the use of information technology for banking as excellent, while 27.9% and 18% consider IT in banking as very good and good respectively. 9.8 % and 1.6% of students consider information technology's use in banking as fair and poor respectively. The survey showed that the majority (57.4%) strongly agree, 39.3% agree and 1.6% disagreed that information technology in banking increases profitability. Since more than 96% were in agreement that information technology has helped banks become more profitable and caused expansion, it can be inferred that IT has played a significant role in the banking sector.

The survey showed that 42.6% of respondents strongly agree and 42.6% agree that the availability of IT products and services significantly improves banking services whiles 13.1% are neutral. Since the majority (95.2%) agree that IT products and services have a significant improvement in banking operations, it can be inferred that advancement in information technology has a positive impact on banking operations. On a scale of 0 to 100% with 100% being the highest positive impact, 19.7% of students believe IT has a 100% impact on banks, 55.7% of students believe IT has an 80% impact, 14.8% believe it has 60% impact, and 8.2% believe it has 40% impact on banks. On whether IT has increased globalization in the banking sector, the survey showed that 37.7% of participants strongly agree, 52.5% agree, 6.6% are neutral and 1.6% disagree that IT has increased globalization in the banking space. The survey showed that the majority of students, 41.0% agree that IT has given banks an advantage over their competitors in the market, 39.3% strongly agree, 16.4% are neutral and 1.6% disagree. 27.9% of the students strongly agree that the benefits of using the infrastructure justify the cost of IT implementation, 42.6% agree, 23.0% are neutral whiles 4.9% disagree. The survey showed that 41.0% of students strongly agree that IT has a significant effect on facilitating banking operations for customers. 47.5% agree whiles 6.6% are neutral and 3.3% disagree.

According to the survey, 13.1% of students indicated that the overall level of convenience for delivering financial services is 100%; 52.5% indicated that the overall level of convenience is 80%; 27.9% indicated it is 60% and 1.6% indicated it is 40% convenient for delivering financial services. 26.2% of the respondents strongly agree; 49.2% of students agree; 18.0% are neutral and 4.9% disagree that IT significantly influences fraud. Since the majority are in agreement that information technology has a meaningful effect on the increase of fraudulent banking activities, it can be inferred that IT has increased banking fraud therefore there is a relationship between technology and banking fraud. According to the survey, 29.5% of students have not been victims of banking fraud whiles 68.9% have been victims of banking fraud. Consequently, 59% of the respondents consider electronic banking a security risk in Ghana whiles 41.0% do not consider it as a security risk.

Emerging themes from the qualitative interviews are tabulated below from the results of the thematic analysis

Information technology's effect banking operations	1. IT facilitates transactions without any stress. 2. Nowadays everything is easier and faster because of E-banking. 3. Information technology has a positive impact because of distance barrier.
Information technology and bank profitability	4. The more people save the more the profit margin increases. 5. Banks gain more due to charges they collect from ATMs and POSs. 6. Banks have fewer workers resulting in a low cost of operations. 7. They are able to conduct advertisement through the internet which helps them get more customers.
Information technology and globalization.	8. Because of information technology banks are known worldwide and this helps them expand and have affiliates all over the world. 9. IT facilitates the network between banks so that customers can access banking services everywhere in the world.
Information Technology and modern banking	10. Being able to transact outside the country through ATM. 11. Easy, fast and simple transactions as compared to the past. 12. Fraud through phone calls.
Information technology and efficient banking operations	13. IT makes work easier and faster for both bankers and customers which helps them do it better. 14. Getting instant reply and assistance when in need virtually anywhere you are.
Victim of banking fraud as an international student	15. Nowadays everyone is computer literate people are more aware of fraud in the banking hall and through personal phones.
Information technology and the increased rate of banking fraud	16. People are more educated now about fraud. 17. Everything that has an advantage also has a disadvantage; it has increased fraud because now bank transactions are prone to hacking. 18. Because of the coding system which is created by people, it is easy to be accessed.
Information technology and security risk in Ghana	19. It is helping the bank as transactions are safer than traditional banking. 20. Ghana doesn't have the security facility, manpower, and finance to support E-banking details are not safe online which is a general case in Africa. 21. People are becoming more advanced in information and technology in a way that they can use it for both good and evil thereby putting people at risk.

Source: (Field data, 2023)

4.1 Discussion

The study sought to assess the effect of information technology on banking operations in Ghana. It was revealed that the role of technology in banking operations in Ghana is very crucial. Similarly, a recent study by Berdik et al. (2021) showed that the role of computerization is to improve operational efficiency. Growth and expansion of operations are expected as a result of the increased efficiency in Ghana. Also, IT facilitates the operations of banks by making it easier and faster. The study revealed that information technology has helped banks to become more profitable and initiated an expansion which shows that information technology plays an important role in banking operations in Ghana. Also, the study of Hla and Teru (2015) is in affirms that for efficient customer service and the performance of numerous financial activities, accurate, timely, and efficient flow of data, both internally and externally, is critical to the efficient operation of banks which shows the important role information technology is playing in the banking sector. The same has been confirmed in this study.

The second objective sought to assess the effect of technology on efficient banking operations in Ghana. The study revealed that IT facilitates the network between banks so that customers can access banking services everywhere in the world. The survey indicated that 90.2 percent of students strongly agreed or agreed that IT has increased the globalization of the banking sector. Also, the survey showed that the availability of IT products and services has resulted in a significant improvement in banking services with 85.2 percent of participants agreeing or strongly agreeing. Information technology makes the banking operation more efficient because it makes the work easier and faster for both bankers and customers. Marcus (2018) revealed that technology boosts profitability and efficiency while also reducing customer wait times in banking halls. According to Kwami (2020), technology is the latest obsession in Ghana, and it will continue to be relevant as the country grows. These studies also affirm that banking operations are more efficient with technology.

The third objective sought to examine the relationship between technology and banking fraud in Ghana. Results showed that an increase in the use of information technology increased the rate of fraudulent activities in banking operations. Furthermore, according to Bonsu et al. (2018), corporate fraud has arisen since the implementation of information technology in Ghana. Also, according to Chen (2018), for scammers, digital platforms are also quite appealing. The survey revealed that 75.4 percent of participants confirmed that information technology has a meaningful effect on the increase of fraudulent banking activities and 68.9 percent of students have been victims of banking fraud. IT has increased fraud because now bank transactions are prone to hacking. On the other hand, people are more educated now about fraud and technology so it is not modern banking that increased fraud. The survey has also revealed that the use of E-banking as a security risk in Ghana can be considered because Ghana does not have adequate security facilities, manpower, and finance to support E-banking and people are becoming more information and technology advance with that knowledge they can put people at the risk of their own safety.

5. Conclusion

5.1 Implication

Information technology has changed the way banking operations are conducted in the 21st century which is a positive change for both bankers and customers it has helped develop the financial sector in Ghana which is Growing. The banking sector in Ghana is developing quickly as a result of an expanded customer base and the new, upgraded, and reduced spending provided by technology. Also, since banks adopted the use of technology in their banking operations customers are satisfied with the banking services.

Secondly, the effect of information technology on efficient banking operations cannot be ignored. Information technology has helped banks become more efficient in their banking operations since the implementation of technology in transactions has become faster and easier. No matter where you find yourself you just need the internet and you can transact. The availability of information technology has resulted in a significant improvement in banking services and a meaningful effect on facilitating operations for customers.

Thirdly, the use of information technology in the banking sector has increased the rate of banking fraud, especially with the introduction of new technologies. Technology in the Ghanaian banking sector has both positive and negative sides, much like a coin has two faces. The dangers are substantial, but they can be reduced, and technology will support Ghana's banking sector going forward.

5.2 Limitation

The study was limited to international students of a private university in Ghana.

5.3 Suggestion

Considering the important role that technology plays in banking operations banks should embrace information technology fully. With the immense benefit that comes from its use. In terms of the

availability of computer hardware spare parts and software, banks should make sure they have adequate backup methods.

For more efficiency in banking operations banks should keep their staff up to date with changes in computer technology as they apply to bank operations. Also, the bank should make sure that trained individuals are available to staff their computer departments.

To reduce and avoid banking fraud banks should also train their customers more on those malpractice so that they will be aware and therefore preserve themselves from banking fraud.

Future research can probe into the extent to which fraud affects banking operations in a developing country like Ghana from the perspectives of small business owners and other entrepreneurs. It is also recommended that future research considers larger sample sizes.

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