Innovations

A Systematic Review of Deposit Money Bank Performance and Financial Technology in Africa

[1]Pascal Nkwodimmah; [2]Ochei Ikpefan; [3]Folasade Adegboye
Department of Banking and Finance, Covenant University, Nigeria, Ota, Nigeria

Corresponding Author: Pascal Nkwodimmah

Abstract: *Financial inclusion has been greatly influenced by the rise in popularity and use of financial technologies (Fin Tech). This innovative drive has been influenced by the financial services sector across several economies, especially the commercial deposit money banks. While there has been great progress and successes concerning the benefit of financial technology to the banking industry in developed countries such as the UK, China and the USA, the same may not been exact in Africa. This Study employs a Meta-Analysis-powered Systematic Review of contemporary and relevant literature that has assessed the influence of Financial Technologies on the Performance, Profitability and Growth of deposit money banks in Africa using the PRISMA guide. This research makes use of key parameters for the assessment of Fin Tech and extracts key insights concerning determinants of the Performance of banks examined by these empirical studies. Fourteen articles were successfully harvested and reviewed from three high-impact journal database outlets in Web of Science, Science Direct and Scopus, covering fifteen years (January 2014 to April 2024). The Findings from the review study showed that financial technology has a positive influence on the performance of banks in Africa.*

Keywords: *Financial Technology, Fin Tech, Bank, PRISMA, Profitability, Performance*

1.0 Background to the Study

Financial technology can be seen in two ways: the technology facilitating efficient and effective financial services within the banks and the financial technology-based firms that also offer financial services to customers (Tarawneh, 2024). The rise in these innovative methods of offering financial-based services has greatly contributed to the efficient flow of finance and finance-based operations within and without several economies. Based on the literature, financial technology existed on its own outside of banks from when the money technology was created to Abacus (an early computing technology), to double-entry bookkeeping, and down to the use of machines, computers and now advanced digital interfaces (Giglio, 2021). These improved techniques and technologies have played vital roles in the development of

humanity and how humans have performed their business operations over centuries. Financial technology is not new, as Keynes even stated that orders for goods and services were made via early machines, such as the primitive telephones in the early 20thcentury (Keynes, 1920; Giglio,2021). This establishes the great influence of technology in finance and the progression of the human race.

Over the years, banks have leveraged technology (financial technology) for decades, and this integration of financial technology in bank-based operations has resulted in increased efficiency and impacted their performance (financial and non-financial) (Afriyie et al. 2023; Karakara & Osabuohien 2019; Mustapha 2018). This efficiency in financial service operations, such as the efficient flow of funds through payment and receipt channels, as well as the management and allocation of resources (Isayas 2022), eventually impacts the macro level by contributing to the strengthening national economies (Saffullah and Paramati 2022). In like manner, an unstable banking system lacking efficiency within economies can limit the growth and progress of economies.

Aside from the influence of financial technologies on financial services efficiency, they have also played a great role in catapulting improvements in financial inclusion in several regions, countries, and communities (Guang-Wen and Siddik 2023; Alaassar et al. 2023).In the past, communities that were marginalized were not accessible, but nowadays, because of the facilitating capability of financial technology, these communities are accessible. Financial inclusion, via the sponsor of technology acceptance leading to the use of user-friendly bank-based services by the populace of all kinds of diversity, has been made more than a reality (Tarawneh, 2024).

The operational dynamics of banks have practically been reshaped over the years because of the influence of financial technology (Phan et al. 2020) by offering diverse options in procedures, banking infrastructures, credit accessibility, payment options, financing options, credit adjudications, investment options and other digital-based financial horizons (Sidaoui et al. 2022) that may be innovated in the future. These options have revolutionized the banking industry with the radical transformation of processes and procedures via their integration into modern digitalization. This impact is evident in the transformation of customer experience and feedback, product development, public appraisal, and risk management (Chen et al. 2021). Therefore, with the increase in digital payment systems, mobile applications, and online banking avenues which provide convenience, speed and ease of use for customers, there is an increased acceptance from the customers, leading to a high rate of customer acquisition and retention (Rikkinen and Pihlajamaa 2022).

Despite all the great narratives, depictions, and positive remarks financial technology has had on the banking industry and the world at large, certain questions still need to be critically answered. The questions are: What effect does FinTech have on the financial performance of banks? If it has a significant effect, are these effect(s) positive or negative? These questions are bound to be asked and answered considering various regional differences, levels of development and uniqueness of banking systems across the globe to draw inferences and consolidate the positive remarks tagged on financial technology. Also, other questions which must be asked and answered are: What significant effect or influence do FinTech-based firms have on traditional banks' performance? And if they do have a significant influence, are they positive or negative on the financial performance of banks?

Another interesting aspect of financial performance is profitability, which usually draws the periodic bottom line in terms of finances for every profit-making business. However, banks are concerned with much more than just the profitability aspect of the business (Durguti et al. 2020). They are, in fact, concerned with several financial metrics such as liquidity, loan performance, quick ratio,
Studies have attempted to examine the influence of Fintech on the bank, examining performance using various methodologies (Ashiru, Balogun and Paseda 2023; Mustapha 2018; Zhao et al. 2022). For instance, Nguyen, Tran and Ho (2020) examined the effect of Fintech credit and regulations on the performance of banks in a cross-country analysis of 73 countries. The study solely focused on the financial aspect of performance by examining the stability and profitability of the examined banks. Safiulla and Paramati (2022) also examined financial performance using bank financial stability as an indicator. Xu (2022) also examined performance in the light of financial performance, looking at capital adequacy, earning power, asset quality and liquidity, but also examined a non-financial performance indicator in management efficiency but made use of financial-based measures. Similar to Safiulla and Paramati (2022), Sajid et al. (2023) also examined the role of FinTech, operational efficiency and bank risk-taking. Both these variables, especially operational efficiency, seem to touch both financial and non-financial aspects of performance when it comes to their actual concept, but in this case, the Study made use of financial-based measurements to capture them.

1.1 Research Question and Objective

Some prior studies have made use of review techniques to examine the relationship between Fintech and bank performance. However, few studies have examined FinTech and Bank Performance by using systematic review techniques to examine empirical studies in Africa, especially studies from Sub-Saharan Africa and Africa at large. Therefore, the main research question is: What is the influence of financial

technology on the performance of banks in Africa? This question leads us to the research objective, which is to investigate the influence of financial technology on the performance of banks in Africa via a systematic review.

2.0 Methodology

The choice of method and approach to this Study was based on the works of Alhammad et al. (2021), Khatib et al. (2023), and Tarawneh et al. (2024). According to them, the systematic review method is thorough in its investigative capabilities in specified fields, and it is a well-known technique used in the economics, management and finance fields. The procedures involved in the systematic review also ensure that bias and subjective inferences are not arrived at, which promotes authenticity in the result. The process involved in the systematic review of literature also ensures coverage across several locations.

2.2 Strategic and Systematic Review Protocol (PRISMA)

The protocol for review that would be used would be the PRISMA. The PRISMA helps to equip the search for the right and relevant empirical studies, determine inclusion and exclusion criteria and facilitate verification Sierra-Correa and Kintz (2015). It involves using the right review procedures, such as article identification, screening and article eligibility, to avoid bias.

2.4 Search Strategies

The search strategy used for this Study involves the use of search terms to identify articles to be assessed, the use of inclusion and exclusion criteria for the purpose of screening and the determination of eligibility of these articles that were found through search.

2.4.1 Identification

During this stage in the selection process, keywords or search strings were used to determine the search for articles. However, alternative search terms, synonyms or other related terms such as "FinTech", "Financial technology", "Bank", "Banking", and "Banks" were used. This method helps to search for the articles that contain the key terms but also captures other articles that may have used alternative search terms. The choice of terms that were considered was based on similar terms used in the works of (Okoli, 2015 and Tarawneh et al. 2024). These search terms were used to construct a query utilizing Boolean operators, truncations, wildcards and field codes to identify relevant articles within the selected journal database, Web of Science, Science Direct and Scopus.

Table 1.0 Search Strings for Scopus, Web of Science and Science Direct

S/N	**Search strings/ Search terms**	
Search Strings for Scopus, Web of Science and Science Direct		
1	Bank	Bank OR Banks OR Banking OR Banking Sector OR Banking Industry OR "Bank" OR "Banks" OR "Banking"OR "Banking Sector" OR "Banking Industry"
2	Performance	Growth* OR Revenue* OR Profitability* OR Profitability OR Profitable OR Profit OR Performance OR Financial Performance OR Financial Health OR Market Value OR "Profitability" OR "Profitable" OR Profit" OR "Performance" OR "Financial Performance" OR "Financial Health" OR "Market Value"
3	Financial technology	Financial technology* OR Financial technology OR FinTech OR Technology OR Innovation OR Financial Innovation OR Digitalization OR Digital Finance OR Information Technology OR IT OR "Financial technology" OR "FinTech" OR "Technology" OR "Innovation" OR "Financial Innovation" OR "Digitalization" OR "Digital Finance" OR "Information Technology" OR "IT"
4	Africa	Africa OR Africa* OR West Africa* OR South Africa* OR Sub-Saharan* OR"Africa" OR "West Africa*" OR "South Africa" OR "Sub-Saharan"
The selection of keywords is strategically determined by identifying key concepts that facilitate a systematic search to address various elements of the research question. This is regarded as a search string.		

2.4.2 Screening

The articles were identified based on their main research titles and then based on their main objectives so as to ascertain the articles that sought to answer the research question for the Study**.** The search term based on the depiction in Table 1.0 was used to identify the relevant articles. The main objectives of the theme of each paper were used as a means of identification because when "Bank" was used, the result was that

some articles did not talk about banks and their performance. Some revealed articles that talked about banks but under other themes that were not relevant to the objective of this work. These themes include bank regulation, company sustainability, public health, and inclusion. Therefore, the phenomenon of interest and objectives of the study were used as criteria when selecting the articles.

After the identification stage, it was performed via the aid of the search engine in the journal article database used (Scopus, Science Direct and Web of Science). The screening process commenced on the search engine via the enabling search specification on the web page that can help filter the type of document searched for. The filters were able to separate open-access from closed-access journal articles, empirical articles, book chapters, conference reviews, review articles, editorial materials, encyclopedias and proceedings. This platform for search also enables the search of year coverage; therefore, the year range in terms of scope (January 2014 to April 2024) was able to be determined.

Despite the use of the search string to specifically alienate articles that are not in alignment with the chore objective of this Study and articles that can not provide answers to the outlined research question, the results still reveal content that was completely away from the object of discussion. One of the reasons for this outcome was because of the keywords that were identified in these articles, but the articles did not really discuss the desired subject. Therefore, an eligibility examination was needed after the download of the articles through manual reviews to identify the most relevant articles based on the inclusion and exclusion criteria and SPIDER.

The depictions of search outcomes in numbers for each journal database are revealed in the tables below.

Table 2.0 Search Results on Web of Science

Search Presentation on Web of Science (Financial technology and Bank performance Africa)			
		All Years	**Last 10 Years**
Articles		117	108
Review Article		10	9
Proceeding paper		6	6
Early Access		1	1
Editorial Material		1	1

Table 2.1 Search Results on Science Direct

Search Presentation on Science Direct (Financial Technology "Fintech" and "Bank" "Performance" "Profitability" "Africa")			
		All Years	**Last 10 Years**
Articles		147	147

Review Article	9	9
Encyclopedia	2	2
book chapters	14	14
mini-reviews	1	1
Others	6	4

Table 2.2 Search Results on Scopus

Search Presentation on Scopus (Financial AND Technology OR Fintech AND Bank AND Performance OR Profitability AND Africa)		
	All Years	**Last 10 Years**
Article	20	13
book chapter	3	2
Conference paper	2	2
Conference review	2	1
Editorial	1	0

2.4.3 Eligibility

The study, after screening the downloaded articles, further examined the titles, objectives, and central theme of each article, with a manual review to determine its eligibility for use. The Study had to exclude a further number of articles because they do not align with the object of discussion proposed in this Study based on certain criteria. Articles that were not written in English, Articles that did not hold the same phenomenon of interest and other specified criteria in the "inclusion and exclusion criteria".

2.4.4 Inclusion and Exclusion Criteria

The study employed the SPIDER framework to determine the studies that would be included or excluded from the systematic review examination. It is the most appropriate framework to be used to capture qualitative, mixed method and quantitative research studies. Although PICO and CIMO are also eligible frameworks, they lack the ability to capture complex processes such as behaviour, perceptions, attitude, experiences and opinions, which are mostly qualitative. The Spider framework is an established criteria used for the selection of relevant articles based on the sample (S), design (D), evaluation (E), language, phenomenon of interest (PI) and research type (R), all of which combine to form the acronym SPIDER. The sample covers the sample frame and the focus population to be used by the Study. The phenomenon of interest covers the main objective of the Study, ensuring it is able to produce findings that can provide answers to the research question of the systematic

review paper. The evaluation covers areas to focus on empirical-based articles for a critic, from which the answers can be extracted, and not review studies that do not have empirical results. The Design is based on the focus of the design used in the articles and the choice of the focus of the design, whether it is an article using primary data or secondary data. The research type or article in the journal will focus on the type of journal article to be reviewed.

Table 3.0: Criteria for Selection of Studies

S/N	Criteria	Description
1	Sample	This Study's sampling is focused on empirical research specifically related to Banks in Africa.
2	Phenomenon of interest	The primary interest lies in investigating the effect, impact, or influence of financial technology (FinTech) on the Performance of banks.
3	Design	The emphasis is placed on rigorous scientific empirical works.
4	Evaluation	Provide substantial empirical evidence pertaining to financial technology
5	Research type/article in journal	Articles published in peer-reviewed studies in high-impact journals can be found in top-class databases like Scopus, Web of Science and Science Direct.
Plus		
6	Language	All studies must be in the English language
7	Date	This research specifically seeks empirical studies conducted within the last five years (January 2014 to April 2024).

After SPIDER inclusion and exclusion criteria were used, a number of studies were identified (after streamlining) as most appropriate for examination across the explored journal database.

Table 3.1Article elimination summary

Database	NΘ of articles before title elimination	NΘ of Articles after title elimination	NΘ After removal of duplicates	NΘ After manual review	Years	NΘ of articles per year
Web of Science	108	14	4	2	2023	1
					2024	1
Scopus	13	11	9	5	2023	4

					2024	1
Science Direct	147	50	46	7		
					2018	1
					2019	1
					2022	1
					2023	2
					2024	2
Total (Used)	**268**	**75**	**59**	**14**		
Other Sources Unused (Google)	93	64	59	10	N/A	N/A
Total	**361**	**139**	**118**	**24**		

One of the reasons for the drastic reduction in numbers from 108 to 14 and 147 to 50 in Web of Science and Science Direct, respectively, was because of the keywords that were identified with these articles, but the articles did not really discuss the desired subject. This also applies to the results for Scopus and google.

3.1 Prisma flowchart outlining the search process

The PRISMA flowchart depicts the step-by-step process involved in the streamlined search, involving the screening eligibility (inclusion and exclusion) of articles to arrive at the relevant and eligible articles for synthesis. The focus of this study is to investigate the influence of financial technology on the performance of banks in Africa via a systematic review. This objective is to be accomplished by examining empirical articles from January 2014 to April 2024, and this is depicted in Figure 1.0. The search was based on the top global database to which the researcher had registered access.

The number of articles initially discovered in the process of the implementation of the search strategy was 268. However, 93 other articles were found through other sources, such as Google. After this initial search and because most of the results for the search (on the database) will be based on the keywords imputed by the Author (s) in each article before their publication, the Study examined the articles by using a title elimination. The keywords imputed in each article by the author before publication will always surface such articles regardless of when a search is made, regardless of the title of the article or objective. This is why title elimination was done to streamline the number of articles that were downloaded (75).

After 75 articles were downloaded, duplicates (16) were removed to arrive at 59 articles. These articles were reviewed briskly by scanning through to identify the central objectives so as to know the theme of the examination. After these manual reviews, a total number of 10 articles were dropped because the objectives could not provide answers to research questions to make them 49 articles remaining. A further 35 articles were eliminated because they did not focus either on fintech or bank performance or bank profitability, were review articles or did not focus on African banks. Therefore, the number of articles left for examination was 14, as distributed in Table 3.1.

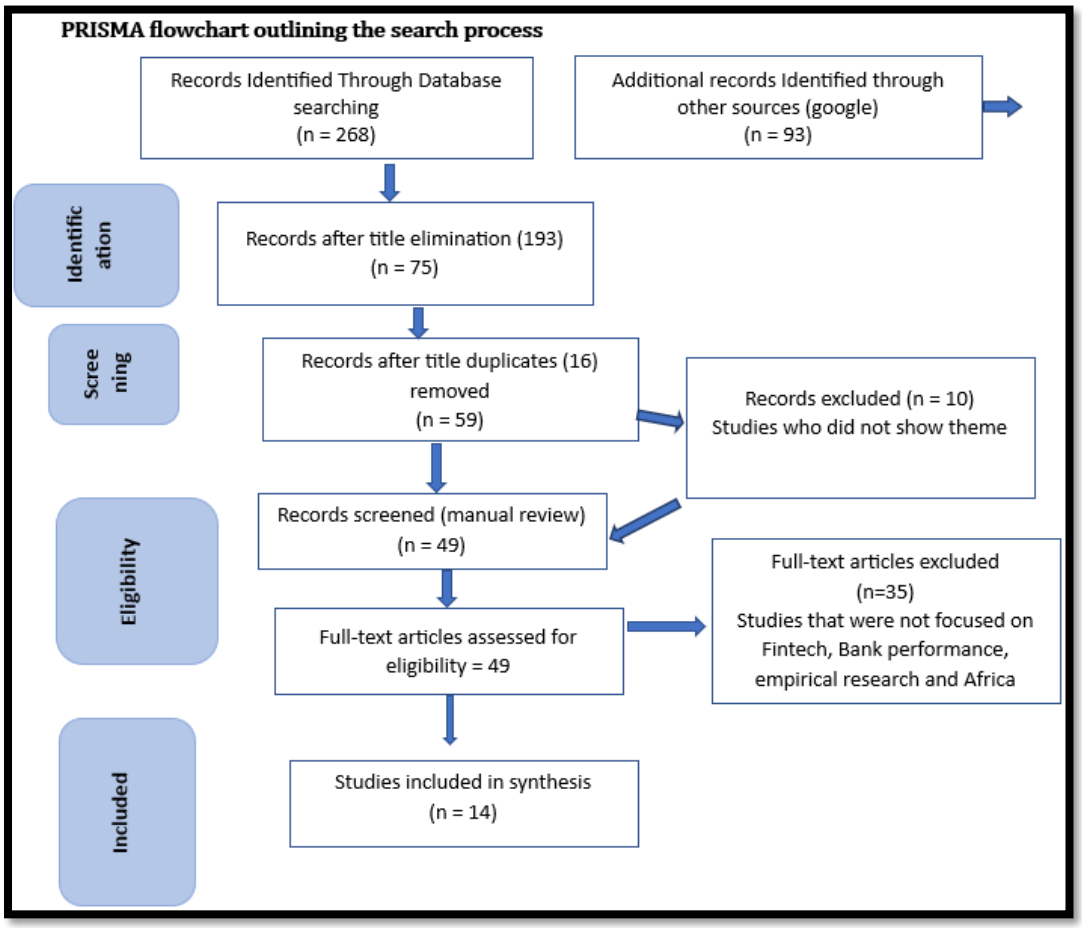

Fig 1.0 PRISMA flowchart outlining the search process

Table 3.2 Database article distribution and date of search

Database	Number of articles	Date last searched
Science Direct	7	10 April, 2024
Scopus	5	12 April, 2024
Web of Science	2	11 April, 2024
Other sources unused (Google)	10	14 April, 2024
Total	24	

Table 3.3 Name of Journals indexed in the database

Database	Name of Journals	Number of articles
Scopus	Cogent Economics and Finance	5
	Economic Alternatives	
	Journal of Financial Economic Policy	
	Investment Management and Financial Innovations	
	Business Strategy and Development	
Science Direct	Financial Research Letters (2)	7
	Research in Globalization	
	Journal of Open Innovation: Technology, Market and Complexity	
	Transnational Corporations Review	
	Heliyon	
	Technology in Society	
Web of Science	South Africa Journal of Information Management (2)	2
	Business Strategy and Development	
Google	Journal of Accounting Business and Social Science	10
	Journal of economics and sustainable development	
	American Journal of Applied Mathematics and Statistics	
	Discovery Scientific Society	
	International Journal of Academic Information Systems Research	

	American Journal of Humanities and Social Sciences Research	
	Journal of Service Science and Management	
	Sapientia Foundation Journal of Education and Gender Studies	
	Brazilian Journal of Education Technology and Society	
Total		**24**

3.2. Characteristics of Selected Study

The selected Study was used to generate data concerning the distribution of the studies. Descriptives of the Country of Study within Africa, the number of years observed (study timeline) in the empirical Study, methodology, source of data and the number of authors (Collaboration). These qualities can also reveal the quality of the Study alongside the ranking of the journal for the articles.

3.3 Data extraction

The data extraction for the Study covered data that were necessary to answer the research question and meet the objective. The data collected also includes data that facilitated the explanation of synthesized results and situated recommendations made in context. Aside from the data concerning the characteristics of the examined articles, data concerning the results from the empirical analysis in this study were extracted for summary and inference.

3.4 Data Synthesis

The data obtained from the review of each article is summarized as a review note containing key elements for synthesis and analysis. Data to be used for synthesis are highlighted in the table.

S/N	**Data extracted**	
1	Timeframe of Study	Insights on Length of Study
2	Location/Region of Study	Socio-economic and political climatic peculiarity
3	Number of authors	Quality of contribution
4	Years of Study	Period of time covered
5	Method employed	Research Approach and Methodology
6	Sources of data	Nature of Data
7	Proxies used	Representations of Variables
8	Results	Outcome, direction and impact of variables

Timeframe of Study: The timeframe used in any study could provide insights on the length of the Study and how much the Study covered to come to a conclusion on results.
The years of Study: The years of study also provide insight into what period of time the study was considered and the events during such period.
Location/Region of Study: This also puts in context the peculiarities, practices and policies in the area location of the region of Study so as to give a better explanation of the outcome of the results considering the socio-economic climate of the region
Number of Authors: This gives an idea of the number of contributions made to the Study, and the more contributions it is often said, the better the quality of work done due to the diversity of inputs, especially when it is Multidisciplinary.
Methods Employed: The methodology and approach used in the study play a big part in the outcome of results, the method of analysis employed, and the process followed to arrive at a conclusion.
Source of Data: The sources of data can be influential to the data collected, the method of analysis employed and the outcome of the analysis
Proxies Used: representations of variables matter in the outcomes of results, and this may differ across studies.
Result of the Study: This expresses the outcome of the examination and has gone through rigorous scientific processes. The result reveals the direction and magnitude of the impact of the variables examined.

3.5. Article Review and Analysis

This section contains a review of prior empirical studies that have attempted to answer the research question concerning the influence of financial technology on the Performance of banks in Africa.

3.5.1 Empirical Review

Several studies have attempted to examine this relationship over the last ten years, and a snippet of their objectives, methods and results are captured as follows.
Kulu et al. (2022) examined the influence of Mobile money transactions on the performance of the banks in the Ghanaian banking sector. While mobile money transactions can represent a financial technology proxy, one of the variables used to represent bank performance was the stability, depth, and efficiency of the sector. The Study made use of Autoregressive distributed lag (ADL), covering data from 2015 to 2020. The result revealed that mobile banking negatively impacts the efficiency in the Ghanaian banking sector. However, its influence on the banking sector's stability and depth is insignificant in the longterm. They conclude with a cautionary recommendation for banks when implementing Mobile Money-based services.

Kulu and Bondzie (2024) examined mobile money again and the credit deposit ratio in Ghana. Their examination covered 2015 to 2020 and the entirety of the Ghanaian commercial banks, investigating the credit-to-deposit ratio and effectiveness of the monetary policy rate using ARDL techniques, Granger causality and the impulse response functions. The findings from the Study revealed that the banks' credit-to-deposit ratio is negatively affected by increased mobile money transactions.

Adalessossi (2023) examined the influence of electronic banking on the profitability of Islamic banks in Sub-Saharan Africa. The study covered thirty-one (31) commercial banks in Western and Eastern Africa (Sub-Saharan) for sixteen (16) years (2006 to 2021), using the FGLS and GMM to analyze this influence. The findings from the study revealed that electronic banking significantly improves the profitability levels of the examined banks in Sub-Saharan Africa as a whole. However, the results differed when individually examining regions like West Africa and East Africa. The result revealed that profitability is reduced in West African banks with an increase in electronic banking activity, while an increased profitability results in the East African banks when electronic banking is rampant.

Karakara and Osabuohien (2019) investigated the impact of bank service patronage and domestic access to ICT services in West Africa (Ghana and Burkina Faso). The study represented financial technology with individual access to ICT services and how it has influenced performance, which can be depicted in bank patronage. A 2014 survey was conducted in Ghana and Burkina Faso, and the data obtained were analyzed using logit regression. The findings revealed that the results differed from those in Ghana in Burkina Faso. Based on the findings, access to banks via applications and other ICT means is more rampant in Ghana (48%) than in Burkina Faso (15%), therefore impacting the level of patronage in both countries.

Hodula (2024) examined the influence of Fintech credit on the performance of traditional banks across various regions and captured Sub-Saharan Africa from 2013 to 2019. The study represents performance using profitability (ROA & ROE), and the result revealed the negative impact Fintech has on the profitability of firms in the Sub-Saharan region. The study also revealed that alternative credit line increases can result in a decline in bank profitability.

Afriyie et al. (2023) assessed the impact of financial innovation on Ghanaian bank performance. The study covered data from 2007 to 2015 in Ghana using a panel data regression for the data from 21 banks. The result revealed that financial innovation had a positive influence on the performance of the examined banks.

Mustapha (2018) analyzed the effect of E-payments technologies on the performance of the examined banks in Nigeria from 2012 to 2017. They present an innovative measure of bank performance in the Sortino index while also including risk exposure as a measure of performance. The Study made use of the time dimensional

panel least square models, and the findings revealed that electronic payments triggered increased bank performance.

Ashiru, Balogun and Paseda (2023) examined the influence of financial innovations on the performance of banks in Nigerian deposit money banks. The Study examined twenty-four (24) deposit money banks for ten years (2012 to 2021) using ARDL analysis. The results revealed that POS banking services have a significantly positive impact on the financial performance of the examined banks due to the large volumes and value of transactions. They also opined that ATMS, Mobile banking, online banking, debit cards, credit cards and agency banking are recommended except for electronic fund transfers and instant payments.

Chitimira and Torerai (2023) examined the effect of digital financial services on the performance of the digital currencies of the central bank of Zimbabwe and South Africa in 2020. They represented financial technology with the proxies of digital financial services and the use of products that are enabled with digital devices. The conclusion from the study is that digital financial services contribute greatly to financial inclusion and financial services rendered (depicting performance).

Antwl-wlafe et al. (2023) examined the influence of financial technology on the financial institutions in Ghana, extracting data from the Bank of Ghana statistics and analyzing it using autoregressive distributive lag estimates. The Study covered 10-year 2012 to 2021, and the result revealed that in the long and short run, fintech has a negative impact on the performance of banks.

Kammoun et al. (2023) examined the resilience of financial technology to epidemics and how they influences stability. During the years 2011, 2014 and 2017 (3yrs). Although the Study's main aim was to see if financial technology use can contribute to economic stability, the Study was successful in revealing the link between electronic payments (fintech) and the stability of money in banks (bank performance) and how this, in turn, can affect inflationary pressures. Their opinion on how financial technology is used in terms of electronic payment should be facilitated by government infrastructure.

Daniel and Timothy (2023) examined the influence of financial technology development on traditional banking systems in Africa. Covering a timeline of 1800 to 2020, the Study broke down the timeline into three phases of financial technology, namely analogue (1800 to 1967), Digital (1967 to 2008) and modern phase (2008 to 2020). Using ARDL and descriptive analysis, the results revealed that in the short-run, fintech reduced the profitability of banks and, therefore, may not be healthy for traditional banks because of its disruptive tendencies.

Mashambe and Chikutuma (2023) examined what determines the profitability of banks in Zimbabwe from 2011 to 2020. The Study utilized a panel data analysis for data from eleven (11) commercial banks, and the result revealed that fintech may not

significantly influence and impact the competitiveness and performance of banks in Zimbabwe.

Kharrat, Trichilli and Abbes (2024) investigated the nexus between the financial technology index and the performance of banks in the Middle Eastern and North African region (MENA). The major result to be extracted in the Study is the influence of financial technology on the bank performance of North African Nations. The Study covered eleven years (11) from 2010 to 2020, using panel data in a Simultaneous Equation Model to test the interdependence of bank performance and fintech. The findings of the Study revealed that Fintech use improves the performance of Islamic banks and conventional banks in terms of profitability, efficiency and stability.

A total number of fourteen empirical articles were reviewed, and the results are not all in tandem; instead, they are in conflict. However, a closer look at the region of Study, the timeline, methods and proxies used in representing fintech and bank performance in Table 4.0 gives insight into the disparity.

4.0 Results and Discussions

This section reveals all the results obtained from the synthesis of the data extracted from the reviewed articles. The data is presented in table form and further re-represented in descriptives of smaller tables to explain results and factors that may influence the results. The section also discusses the results in relation to the supporting data extracted for clearer understanding and insight.

Table 4.0 Summary of empirical reviews

S/N	Studies	Year	period	Country/ Region	Representation of Fintech	Representation of Bank Performance	Effects on Mobile money	Nominal representation
1	Kulu et al.	2022	6	Ghana	Mobile Money	Bank Stability	Insignificant	Neutral
						Bank Efficiency	Significantly Negative	Negative
						Bank Depth	Significantly Negative	Negative
2	Adalessossi	2023	16	Sub-Saharan Africa (East)	E-Banking	Profitability	Significantly positive	Positive

				Sub-Saharan Africa (West)			Significantly Negative	Negative
3	Kulu&Bondzie	2024	6	Ghana	Mobile Money	Credit-to-deposit ratio	Significantly Negative	Negative
4	Karakara&Osabuohien	2019	1	Ghana	ICT facilitated Banking	Bank Patronage	Significantly positive	Positive
				Burkina Faso			Significantly positive	Positive
5	Afriyie et al.	2023	9	Ghana	Financial Innovations	Profitability	Significantly positive	Positive
6	Hodula	2019	7	Sub-Saharan Africa & other regions	Fintech credit, Big Tech Credit, Tech to DPS and Tech share	Profitability	Significantly Negative	Negative
7	Mustapha	2018	6	Nigeria	E-Payment Technology	The Sortino Index	Significantly positive	Positive
8	Ashiru, Balogun&Paseda	2023	10	Nigeria	E-banking POS banking ATMS Mobile banking	Profitability	Significantly positive	Positive
					Electronic fund transfers and Instant payments.		Significantly Negative	Negative
9	Chitimira&Torerai	2023	1	Zimbabwe	Digital Financial Services	Quality of Services	Significantly positive	Positive
				South Africa			Significantly positive	Positive
10	Antwl-wlafe et al.	2023	10	Ghana	Fintech payment systems	Profitability	Significantly Negative	Negative

11	Daniel & Timothy	2023	13	Three Eras of Financial Technology	Analogue, Digital and Modern Era of Fintech	Profitability	Significantly Negative	Negative
12	Mashambe&Chikutuma	2023	11	Zimbabwe	Technology innovations	Profitability	Insignificant	Neutral
13	Kammoun	2023	3	Sub-Saharan Africa	Electronic Payments	Stability of money in the bank	Significantly positive	Positive
14	Kharrat, Trichilli & Abbes	2024	11	North-Africa	Technology innovations	profitability, efficiency and stability	Significantly positive	Positive

Table 4.0 contains the summarized data from the articles reviewed based on the authors, the time of Study, country or region of Study, proxies for both fintech and bank performance and results obtained from the empirical studies.

4.1 The distribution of these studies across country and region

The distribution of these studies across country and region are displayed in Figure 2 and Figure 3, respectively.

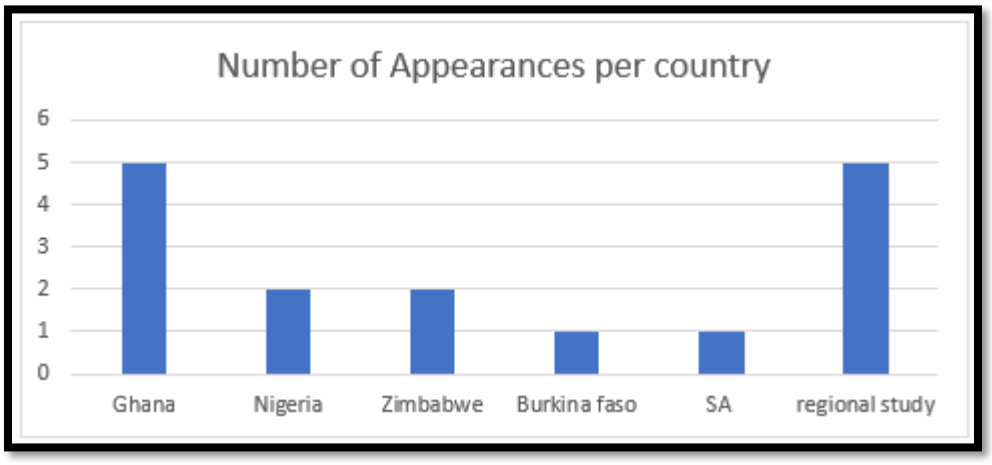

Figure 2.0. The number of times a country was examined individually based on the articles

Figure 2.0 reveals that Ghanaian banks were identified to be examined about five times across the examined articles. In this case, the Ghanaian banks were examined comparatively in one article. In that article, they examined West African banks and zeroed in on Ghanaians with Burkina Faso banks, and the results for the two countries gave two different outcomes. This reveals the differences between the two West African countries. Even though the result from the Ghana-based studies seemed to be the most in comparison with the other countries, Nigeria (2), Zimbabwe (2), Burkina Faso (1), and South Africa (1), there were studies that examined regions (5) such as the West Africa, North Africa, Sub-Saharan Africa without necessarily specifying the individual results of the countries they examined.

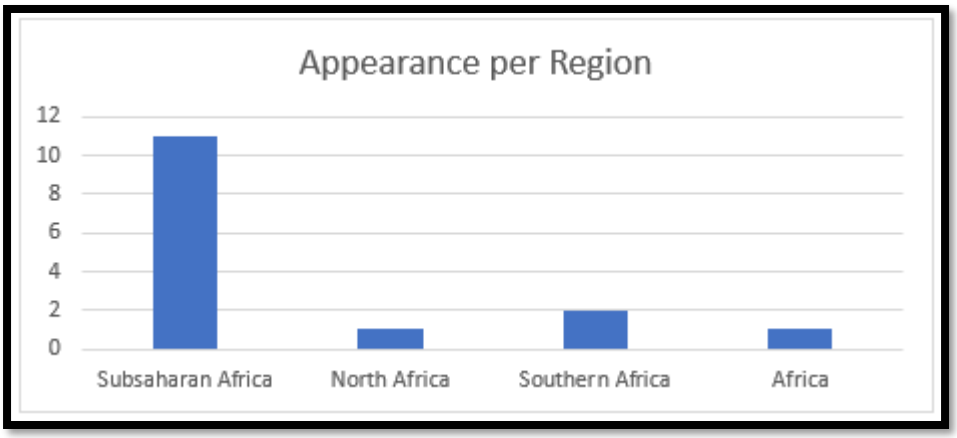

Figure 3.0. The number of times a region was examined individually based on countries in the articles

The number of articles that examined regions was five (5). However, the region depiction in Figure 3.0 is based on the recategorization of the country's studies into their regions. For instance, Southern Africa was not studied as a region among this examined articles, but since Zimbabwe and South Africa were examined in the same article, the Study had to capture the appearance of Southern Africa twice because two countries from the Southern part of Africa were examined in the selected articles. This is also because of the possibility of two different outcomes from these countries, as was seen with Ghana and Burkina Faso. The regions that were examined were Sub-Saharan Africa (11), North Africa (1), and Southern Africa (2), and an article examined Africa as a whole.

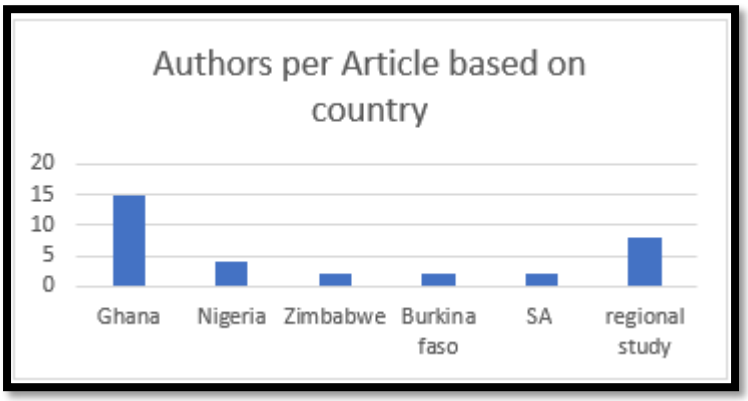

Figure 4.0. Author per Article based on country

Figure 4.0 reveals the number of authors that collaborated based on the article examining countries, and it is clear that the articles examining Ghana had the highest collaboration efforts (15). Therefore, the average direction or outcome of results pertaining to the articles that examined Ghanaian banks would be more accurate than the articles examining the other highlighted nations, which are all less than five (5).

4.2 Proxies and Variable Representations

Table 4.1 Proxies of Variables in the reviewed articles

Proxies of Variables in the reviewed articles			
	Article Representation	**Recategorized Proxies**	**Frequency**
Dependent Variable	**Bank Performance**		
	Profitability	Profitability	10
	Credit to Deposit Ratio	Credit to Deposit Ratio	1
	Bank Efficiency	Bank Efficiency	2
	Bank Stability	Bank Stability	3
	Bank Depth	Bank Depth	1
	Bank Patronage	Bank Patronage	1
	Service Quality	Service Quality	1
	Sortino Index	Sortino Index	1
	Article Representation	**Recategorized Proxies**	**Frequency**
Independent Variable	**Fintech**		
	Mobile Money	Mobile Money	2
	E-Banking	E-Banking	6
	E-payment		
	POS Banking Service		
	Electronic Fund		

	transfer		
	Instant Payment		
	Fintech payments systems		
	Digital Financial Services	Digital Financial Services	1
	Financial Innovations	Financial Innovation	5
	Technology innovations		
	ICT	ICT	1

Table 4.1 describes the proxies that were used for the studies to represent the dependent and the independent variables. The representation varied in several of the articles, but these were recategorized in the third column and the number of times they were used as proxies was captured in the fourth column. From what is revealed in Table 4.1, under the bank performance, profitability was used ten times, which is a financial-based performance with the highest representation. Therefore, the average results obtained have been greatly influenced by the choice or use of profitability (50%), which is a financial-based performance measure. This implies that most of the Study preferred measuring performance using profitability measures such as ROA, ROE, ROI and ROCE. However, bank stability and efficiency, which are important measures of core bank performance, were used in three studies and studies, respectively. This simply implies that 75% of the proxies used to represent banking performance are solid proxies when it comes to the financial performance aspect.

Table 4.2 Years/Period of Study of Articles and sources/type data

S/N	Studies	Year	N0 of Years	Period Covered	Type data
S1	Kulu et al.	2022	6	2015-2020	Secondary
S2	Adalessossi	2023	16	2006-2021	Secondary
S3	Kulu &Bondzie	2024	6	2015-2020	Secondary
S4	Karakara & Osabuohien	2019	1	2014 (survey)	Primary
S5	Afriyie et al.	2023	9	2007-2015	Secondary
S6	Hodula	2019	7	2013-2019	Secondary
S7	Mustapha	2018	6	2012-2017	Secondary
S8	Ashiru, Balogun & Paseda	2023	10	2012-2021	Secondary
S9	Chitimira & Torerai	2023	1	2020	Primary

S10	Antwl-wlafe et al.	2023	10	2012-2021	Secondary
S11	Daniel & Timothy	2023	13	2008-2020 (Modern era)	Secondary
S12	Mashambe & Chikutuma	2023	10	2011-2020	Secondary
S13	Kammoun	2023	3	2011, 2014 & 2017	Secondary
S14	Kharrat, Trichilli & Abbes	2024	11	2010-2020	Secondary

Key: S1, S2, S3… Stands for Study One, Study Two and Study Three respectively

Table 4.2, Figure 5.0, Figure 6.0, Table 4.2.1, and Table 4.2.2 reveal the year of publication of the articles, the number of years they covered, the period of time (timeline) they examined, and the type of data used. From Table 4.2, it is clear that secondary data was used in the majority of the articles examined. Secondary data is mostly known for objectivity and consistency, unlike primary data, which is mostly subjective and inconsistent. It also reveals that the financial-based data would be obtained from audited public financial statements and regulated reporting based on standards.

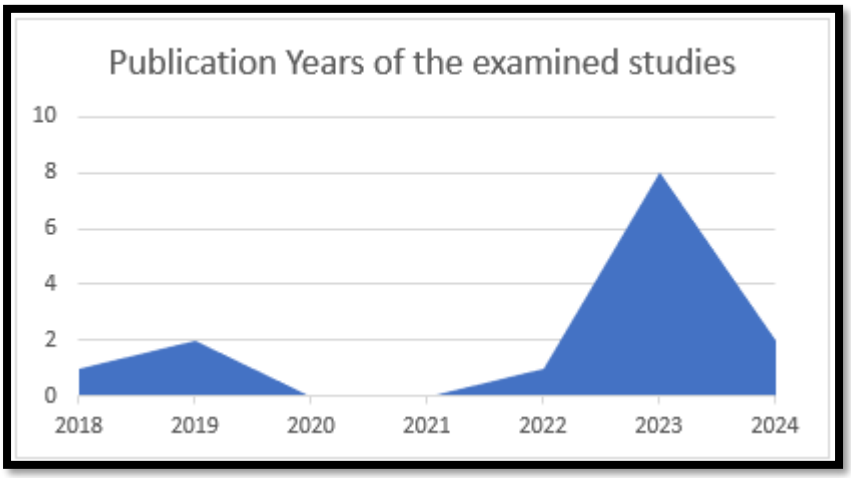

Figure 5.0: Years of the examined studies

Figure 5.0 reveals the frequency of year of publication for the review articles, and it is clear that most of the examined articles were published in the year 2023 (from January 2014 to April 2024), which reveals the recency of the articles; thus, the relevance of the research.

Table 4.2.1 Average number of the period covered for reviewed articles

Studies	Number of years
S1	6
S2	16
S3	6
S4	1
S5	9
S6	7
S7	6
S8	10
S9	1
S10	10
S11	13
S12	10
S13	3
S14	11
Average Number of Years of Articles	**7.785714**

The average number of periods covered for the reviewed articles is 7.79, which is approximatelyeight years. The highest number of years of observation of the article is 16 years, and the lowest is one year because of the nature of the studies (surveys).

Table 4.2.2 Period Coverage during Empirical Investigations

Years	Period Coverage during Empirical Investigations (Studies)														
	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	Total
2006	0	**1**	0	0	0	0	0	0	0	0	0	0	0	0	1
2007	0	**1**	0	0	**1**	0	0	0	0	0	0	0	0	0	2
2008	0	**1**	0	0	**1**	0	0	0	0	0	**1**	0	0	0	3
2009	0	**1**	0	0	**1**	0	0	0	0	0	**1**	0	0	0	3
2010	0	**1**	0	0	**1**	0	0	0	0	0	**1**	0	0	**1**	4
2011	0	**1**	0	0	**1**	0	0	0	0	0	**1**	**1**	**1**	**1**	6
2012	0	**1**	0	0	**1**	0	**1**	**1**	0	**1**	**1**	**1**	0	**1**	8
2013	0	**1**	0	0	**1**	**1**	**1**	**1**	0	**1**	**1**	**1**	0	**1**	9
2014	0	**1**	0	**1**	**1**	**1**	**1**	**1**	0	**1**	**1**	**1**	**1**	**1**	11
2015	**1**	**1**	**1**	0	**1**	**1**	**1**	**1**	0	**1**	**1**	**1**	0	**1**	11
2016	**1**	**1**	**1**	0	0	**1**	**1**	**1**	0	**1**	**1**	**1**	0	**1**	10
2017	**1**	**1**	**1**	0	0	**1**	**1**	**1**	0	**1**	**1**	**1**	**1**	**1**	11
2018	**1**	**1**	**1**	0	0	**1**	0	**1**	0	**1**	**1**	**1**	0	**1**	9

2019	**1**	**1**	**1**	0	0	**1**	0	**1**	0	**1**	**1**	**1**	0	**1**	9
2020	**1**	**1**	**1**	0	0	0	0	**1**	**1**	**1**	**1**	**1**	0	**1**	9
2021	0	**1**	0	0	0	0	0	**1**	0	**1**	0	0	0	0	3
2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

This Study represented the covered years in Table 4.2.2 using "**1**" and "0". "**1**" represents coverage, and "0" represents no coverage. The purpose of this table is to reveal the number of times a year that were covered during the empirical research of these authors of the fourteen studies examined, the oldest year covered was 2006, and the latest year was 2021, although the most recent publication date was 2024. Given this year-to-year distribution, it is easy to explain the outcome of the result by the consideration of the time and the events that occurred during the year. For instance, the COVID-19 period could affect the performance of banks, and the knowledge of this year's coverage would provide insights into the results obtained. From Figure 6.0 and Table 4.2.2, it is clear that the most covered year period was a 2014-to-2017-year period (pre-COVID-19)

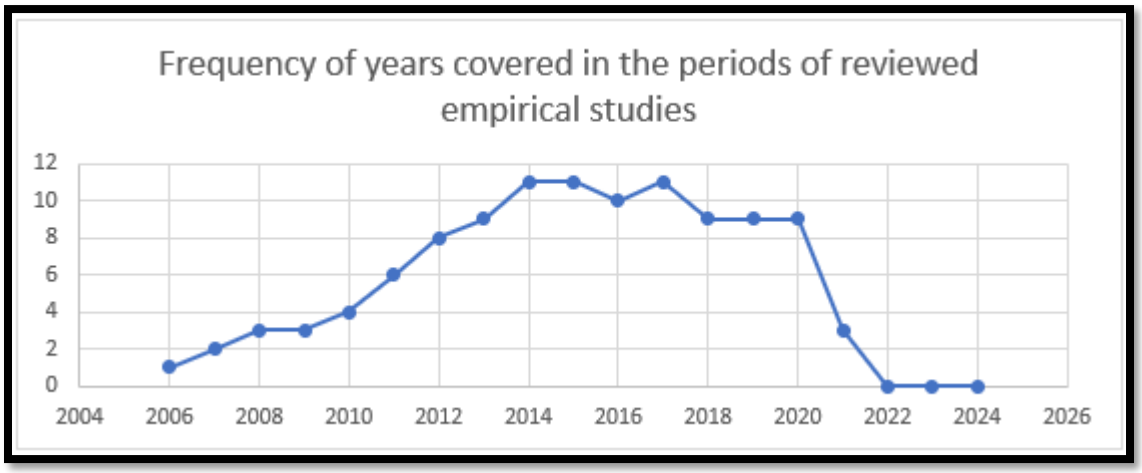

Figure 6.0 Frequency of years covered in the periods of reviewed empirical studies

Table 4.3 Result extraction summary

Results	**Frequency**	**%**
Neutral	2	10%
Negative	8	40%
Positive	10	50%

Key: Where: Neutral = Insignificant, Positive = Significantly positive, Negative = Significantly negative

Table 4.3 was represented with summarized results from the systematic review of fourteen literatures. The result expresses the level of influence fintech has on the performance of African banks, which was empirically examined across the selected literature. The Neutral depicts an insignificant influence of fintech on bank performance, the Positive depicts that fintech has a significantly positive influence over bank performance, and the negative depicts that fintech has a significantly negative influence over bank performance. The total number of results is above fourteen due to the separated examination of countries and regions in some articles, especially considering that this separated analysis resulted in different results (contrasting). The separated outcomes were captured and imputed in the table.

Table 4.3 reveals that the majority (50%) of examinations of the influence of fintech on the performance of banks reveal that there is a positive and significant influence. The total number

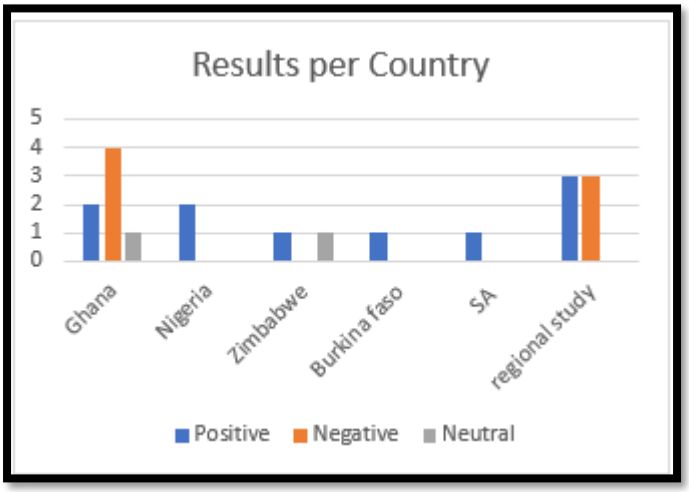

Figure 7.0 per bank in the country examined by the selected empirical studies

Figure 7.0 reveals this same result in terms of the banks in the country examined. From the figure, it is clear that most of the results in Ghane revealed that fintech has a negative and significant influence on the performance of banks. The relationship between Nigeria and Burkina Faso revealed a significant positive influence only, while that of Zimbabwe revealed a positive and insignificant relation.

Figure 8.0 reveals the result per region, and from what is depicted, most of the results from Sub-Saharan Africa reveal a negative significant influence of fintech on bank performance, probably because of the volume of studies from Ghana. Southern Africa and North Africa reveal a significant positive influence of fintech on bank performance.

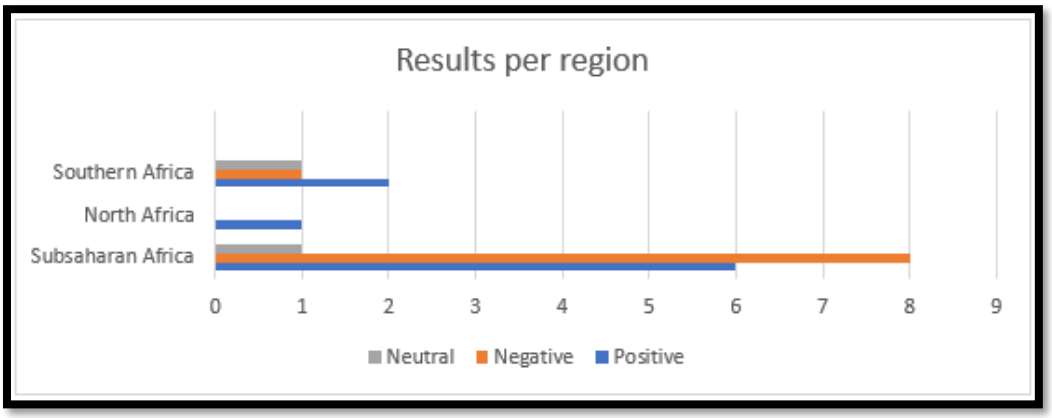

Figure 8.0 Results per region of article

The summarized result of the review of studies is that fintech has a significantly positive influence on the performance of banks. This can be seen in the summarized result of Table 4.3. This result implies that when financial technologies are embraced and promoted in the banking institutions of Africa, there will be an increased performance. This performance pertains especially towards the financial aspect of performance because most of the performance proxies examined in the reviewed studies are financial performance.

5.1 Limitations and Recommendations for Future Research

The TCCM Framework for recommendations for future research was used for the recommendation for future studies. The TCCM covers the Theory, Context, Constructs and Method (Chen et al. 2021).

Future studies should be able to address the relationship between related theories captured in reviewed studies and the outcome of results and explain the phenomenon. Theoretical underpinning could be crucial to changing the landscape of beliefs and thoughts in academia and practice through policies. When theories can be related to the outcome of each objective, then it opens the literature to clearer insight concerning the subject matter, especially if findings deviate from established theories.

Studies in the future can consider specifically examining proxies used by review literature, such as narrowing down on the influence of fintech on profitability, fintech on bank growth or fintech on bank market value. In addition, the measure of fintech could be considered from the macro-level (examining Peer to Peer, Inflation, third-party payment, etc.) rather than focusing on fintech metrics on the bank level, such as mobile money, ATM service, digitalization, and e-payments. Aside from the financial technologies, future studies should examine fintech firms and see how they have impacted the performance of banks in Africa, especially with the rampant growth of that industry.

As a limitation ofthis study, it is clear that the majority of the studies examined fall within the region of West Africa, and Ghana has the highest frequency. Therefore, future studies on Africa should purposively distribute the selected studies across several geopolitical zones in Africa for a balance of observation or specific zones that can be examined with the right distribution of the countries across sub-regions in such zones. This would create more concrete and reliable results because of the balance in the distribution of regional assessment.

Comparative analysis of the nature, method, and results of studies from separate countries or regions in Africa or another continent can be made. Data can be extracted and synthesized from these articles to get a bird view of the overall influence of fintech on bank performance within the plurality of the country or region. In addition to this, comparative analysis can be done using synthesized data to assess the difference in results based on the different methodological approaches and the source of data collection so as to better understand the outcomes of results based on the methods employed.

5.2 Conclusions and Recommendations for policy implementation

As financial technology firms all over the globe are rising to meet the financial needs of citizens and have increased competitiveness with traditional banks, it is evident that there has been a surge of interest to examine the next between fintech and bank performance (Tarawneh, 2024). However, many of the studies have been focused on fintech integration in bank operations and the performance of those banks in developed economies. In the last five to ten years, studies on financial technology and bank performance have shed light on the determinants of bank profitability and the measurements of financial technology, considering the bank-level and the county-level measurements.

For several decades, the examination of fintech and bank performance in Africa has been a great empirical study. This study was successfully able to objectively review relevant empirical literature found on Web of Science, Science Direct, and Scopus on the influence of financial technology integration on the performance of banks in Africa.

The Study concludes with the understanding that financial technology does have a significant impact on the performance of banks in Africa. The majority of studies reveal there is a significant change or effect whenever financial technology is introduced to banking operations. The majority of the findings from these examined studies have pointed out a significantly positive outcome whenever. Therefore, given the influence fintech has on the banking industry, which is a chore part of every economy, the Study recommends that policymakers should consider the infiltrating influence of financial technology across other disciplines, and there should be a

regulatory framework or set of standards that can govern the incorporation of financial technology in banks and fintech company operations.

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