International Journal of Intellectual Discourse (IJID)
ISSN: 2636-4832 Volume 3, Issue 2. December, 2020

Effect of Total Quality Management and Innovation on Bank Performance: The moderating Role of Capital Strength among the listed commercial banks in Nigeria

Kabir Musa Shuaib[1] and Auwal Inusa[2]

[1]*College of Management and Economics, Tianjin University, 300072, China.*
[2]*International Centre of Excellence for Rural Finance and Entrepreneurship, Ahmadu Bello University, Zaria-Nigeria.*
Email: kabirms01@gmail.com

Abstract
The objective of this paper was to ascertain the moderating effect of capital strength on the relationship between total quality management practices and innovation on bank performance. Besides, the paper sought to examine the complementary effect of innovation and total quality management practices on the performance of commercial banks in Nigeria. The population involves the entire listed commercial banks in Nigeria. There were 13 listed commercial banks as at 31st December 2016. The data analysis technique used for this paper is Ordinary Least Square Regression. The result revealed that innovation has a significant and positive effect on bank performance. However, total quality management was found to have an insignificant effect but a positive relationship with performance. Also, the capital strength of banks was found to have a positive and significant moderating effect on the relationship between innovation and performance. The study concluded that innovation is an essential factor that can lead to better performance of commercial banks in Nigeria. Specifically, investment in banks' intangible assets, particularly software development and goodwill, could enhance banks' profitability through net interest margin.

Keywords: Bank performance, capital strength, commercial bank, innovation, total quality management.

1.0 Introduction

Banks play a very crucial role in an economy, because of their significant essential role, especially in terms of allocating scarce resources among competing users. Commercial banks collect funds from those who have a surplus to those with a deficit in the economy. Banks are, therefore, essential to the stability and soundness of the financial system and the economic growth and development of any nation (Ongore and Kusa, 2013). A sound banking system has an essential impact on economic growth and development (Levine, 2005). The banking sector remains the backbone of the economy and has a vital role as a financial intermediary; therefore, the soundness of deposit money banks is fundamental (Thalassinos and Dafnos, 2015). The performance of banks is significant in the national or global economy (Al-Omar and Al-Mutairi, 2008; Suryanto, 2016). The excellent financial performance of banks builds more confidence in depositors, encourages savings, and enhances capital formation in the economy.

In Nigeria, apart from their financial intermediation function, banks help in generating employment for a considerable number of youths and hence contribute to reducing unemployment in the country.

Thus, essentially indicates that banks' performance is of great concern to the government, policymakers, and researchers alike. However, banks' performance in Nigeria over the years has been unimpressive (Obamuyi, 2013), and their revenues have been on a declining trend (Umaru, 2017). For example, the first quarter 2016 analysis of the balance sheets of five banks (Union Bank, Ecobank, GT Bank, UBA and Zenith Bank) showed that they got an After-Tax Profit of about N90.07 billion (equivalent about $250m) in the first quarter of 2016. This represents a fall of almost N10.52 billion from N100.59 billion (equivalent to around $277m) recorded in the first quarter of 2015 (Muhammad, Agabi, Shosanya & Ogwu, 2016). This problem, in some quarters, is being attributed to poor total quality management and low investment in innovative activities by banks. Recent literature reveals areas of significant importance for quality improvement through corrective and preventive measures (Basu, Bhola and Chandra Das 2020).

Total Quality Management (TQM) is a management philosophy and company practice that advocates for continuous improvement in all functions of an organization, which can be successful if the concept is utilized right from the acquisition of resources to the last stage of rendering services to the customer. The emphasis on TQM as a new way of managing banks to improve competitiveness, and subsequently, performance has increased considerably over the past few years. Different studies have shown a positive impact of total quality management practices on improving long-term profitability and stock returns (Ittner and Larcker 1996; Hendricks and Singhal 1999). Thus, the intense competition and changing customer demands have dramatically changed the business environment in the past few decades. Similarly, the demarcating lines that divide competing banks are becoming increasingly unclear concerning the products and services they provide to their teeming customers. Increased competition in the sector and the growing customer demands have added complexity to banks' business models. There is anecdotal evidence that the banks are facing environmental volatility resulting from new technologies and e-commerce. That means, the banks must be able to adapt to these technological trends for them to perform. However, banks are characterized by frequent poor connectivity and system failures resulting from the relatively low technological development in the country.

These are among the challenges obstructing innovations in the banking sector. The growth in e-payment channels also does not mirror the vast population of mobile phone users in the country, as more opportunities that can be taken by innovative financial services are left untapped (Basi, 2016). These issues might also be contributing to the banks' declining performance. To date, and even though many banks in Nigeria have begun to adopt TQM principles and new financial innovations in the last few years, the literature on TQM practices and innovation and their effect on Nigerian commercial banks' performance is still limited. To address this problem, we need a longitudinal approach that enables us to go beyond the short-term effects of TQM practices and innovation to reveal their different temporal profile and effect on bank performance. That is because it is expected

that proper implementation of TQM and innovative practices can lead to competitive advantage, which can also translate into performance (Kaylasson, Dinesh, and Hurreeram, 2017). Therefore, this motivates the researcher to examine the joint effect of total quality management practices and innovation on the performance of Nigerian commercial banks.

Besides, most of the previous studies on innovation focused on using e-channels, including mobile banking, ATMs, and the rest as proxies for innovation. However, unlike the previous studies, this paper used intangible assets, which comprise goodwill and software development as a proxy for innovation and the customer complaints resolution ratio as a proxy for TQM to study their cumulative effect on bank performance. Similarly, there have been mixed findings (Valmohammadi, 2011; Bilal and Naeem 2016; Al-Damen, 2017; Segarra-Ciprés, Escrig-Tena, and García-Juan, 2017; Alghamdi, 2018) regarding the effect of both innovation and TQM practices on bank performance. Therefore, there is a need to introduce a moderating variable to strengthen the relationship. This study, therefore, introduces capital strength to moderate the relationship between innovation and TQM practices on bank performance. This is because capital strength or intensity helps banks to absorb shocks in a period of declining profitability. On the other hand, capital strength enables banks to invest heavily in identified investment opportunities which can also lead them to higher profitability (Ongore and Kusa, 2013). Thus, the objective of this paper was to ascertain the moderating effect of capital strength on the relationship between total quality management practices and innovation on bank performance. Also, the paper seeks to examine the complementary effect of innovation and total quality management practices on the performance of commercial banks in Nigeria.

2.1 Literature Review

2.1.1. Total Quality Management

Different scholars have defined TQM in a variety of ways, as it forms an integrated management philosophy that applies to both public and private organizations. The concept provides a culture of continuous improvement through which successful organizations are trying to meet customers' perceptions of quality to boost customer satisfaction and organizational performance (Alghamdi, 2018). Crosby (1979) defined quality as the process of conforming to requirements. The concept of quality has been associated mainly with the reduction of variability in processes (i.e., quality control), and the practice of Total Quality Management (TQM) is perceived as being related mainly to standardization (Chen and Reyes, 2017). TQM philosophy involves a set of guiding principles and practices, focusing not only on the management of quality but also on the quality of management (Pride and Ferrell, 2006; Sadikoglu and Olcay, 2014; Alghamdi, 2018). TQM is an integrated effort aimed at achieving and sustaining a high-quality service based on continuous improvement of process and error prevention at different levels and in all functions of an organization. Thus, customers' needs and expectations can be met and or surpassed Gimenez-Espin, Jiménez-Jiménez & Martínez-Costa (2013). Quality is defined as the degree to which a set of inherent characteristics fulfills requirements (O'Neill, Sohal and Teng, 2016).

TQM has been widely adopted by organizations, including banks in different countries, to process and manage the

organization through quality, improvement of service delivery, meeting customer needs, and giving a competitive edge (Pfau, 1989). Additionally, total quality management (TQM) is associated with two significant components, usually referred to as 'soft and hard' tools (Durakovic, Baisc and Muhic, 2014). The authors described "S*oft tools*" as focusing on satisfying customers' requirements, providing training to employees, teamwork, cooperation among employees, the commitment of top management, and the involvement of employees. On the other hand, they described "*Hard tools*" to include the continuous improvement, quality management, process control, as well as all aspects of measurement, standardization, testing, and certification for conformity assessment. Therefore, Total quality management (TQM) is a systematic quality improvement approach for firm-wide management to improve performance in terms of quality, customer satisfaction, productivity, and profitability (Gharakhani, Rahmati, Farrokhi and Farahmandian 2013).

Innovation is defined as new applications of knowledge, ideas, or methods that generate new capabilities and leverage competitive sustainability (Daft, 1978; Anderson and Henfridsson, 2008 Kim, Kumar and Kumar, 2012). Organizational capability to manage processes may play a vital role in identifying routines, establishing a learning base, and supporting innovative activities (Kim, Kumar, and Kumar, 2012). Companies compete based on price and sell necessary products or commodities, with their low productivity reflected in low wages (Honarpour, Jusoh, and Md Nor, 2017). Innovation is also a multidimensional process that does not exclusively result from the Research and Development (R&D) activities of organizations (Durakovic, Baisc and Muhic, 2014). The authors classified innovation as radical or incremental. They opined that Radical innovations usually come from R&D activities and after transformation into new products and processes, open new markets, and new investment opportunities (Durakovic, Baisc and Muhic, 2014). On the other hand, incremental innovation typically builds on existing technologies, products, services, or routines and modifies them to some degree for value addition (Durakovic, Baisc and Muhic, 2014).

In the banking system, the features of innovation are different from the other sectors, such as manufacturing. Unlike in the manufacturing and other sectors, innovation seems hard to define. The European Central Bank (2003) and Frame & White (2004) define financial innovation for banks as product and organizational innovation that enables banks to reduce cost, risk, and or improving the services for the entire financial system. Innovation in the banking sector can come in two forms: first, an innovation that pushes banks to invest heavily in new technologies and methods of doing banking business. Secondly, an innovation that can cause damaging consequences when not used properly on bank performance and the overall economy (Beck, Chen, Lin and Song, 2012; Stiglitz, 2010). Also, innovation is the process of creating new financial products or services, technologies, new markets, and institutions such that they become acceptable to customers (Sokolowska, 2014). Thus, there are several ways of measuring innovation based on recent studies, as highlighted below.

Recent studies, especially in the manufacturing sector, have focused more on research and development (R&D) expenditure as a proxy of innovation.

However, it is unlikely to use R&D spending to represent innovation in the banking sector because banks, especially in Nigeria, do not have research and development departments responsible for developing new products and services. Several studies that examined bank innovation have attempted to categorize a particular innovation type like securitization or credit default swaps (Tufano, 2003). However, this is not generalizable to other categories of products. Hunt, (2008) and Hall, Lotti and Mairesse, 2009) suggest that patents by the financial institution can be used as measures of innovation. However, Boldrin and Levine (2013) point out that no connection between patents, innovation, and performance could be found out by several studies.

Innovation generally is the process of combining inputs and creating outputs from the use of such inputs (Stone, Rose, Lal and Shipp, 2008; Mabrouk and Mamoghli, 2010). Innovation inputs primarily consist of assets and resources deployed and used in the innovation process. The assets can either be tangible or intangible (Gamal, 2011). Inputs are considered assets because of their potential to bring future benefits to the banks. Considering that banks commit huge capital to innovative activity, Prasad and Harker (1997) suggest that IT investment impacts on performance could be used to measure the extent of innovation by banks. Thus, banks' intangible assets such as goodwill, computer software development by the IT departments could be used to measure banking innovation Ekpo and Udo (2015). Now banks collaborate with telecommunications and hardware and software firms to introduce new methods for customers to have access to their account balances and enable them to buy goods and services, pay utility bills, and transfer funds (Frei, Harker and Hunter, 1998).

Thus, ATMs, telephone banking, internet banking, and point of sale terminals could significantly influence bank performance (Humphery, Willesson, Bergendahl and Lindblom, 2006). For banks to be effective in their services and survive, they have to be innovative, thereby adapting to new trends and development in the banking industry. In this regard, Calantone, Cavusgil, and Zhao (2002) considered innovation as the most important determinant of bank performance. In this study, the proportion of intangible assets to total assets would be used to represent bank innovation based on the literature reviewed.

2.1.3. Capital Strength

Capital strength or adequacy refers to the amount of capital needed to be able to withstand operational, credit, and market risks to absorb any losses and protect the bank's customers (Ongore and Kusa, 2013). It refers to the funds made available by owners to carry out the bank's activities and serve as a cushion during bad economic situations (Athanasoglou et al., 2005). Besides, Dang (2011) states that capital adequacy is measured by the capital adequacy ratio, which indicates the banks' strength or capacity to withstand losses during adverse economic conditions. Banks' capital creates adequate liquidity for the bank since deposits are most fragile to bank runs and losses (Ongore and Kusa, 2013). Also, more significant bank capital reduces the potentiality of bank runs and losses during hard economic periods (Diamond, 2000).

2.2 TQM and Innovation

The trade-off between quality management and innovation has dominated management literature in the last two decades. While there are different outcomes from the

studies, there is considerable evidence that many studies supported the positive relationship between the two constructs. The enablers of innovation are practically similar elements that support quality management; these factors include employee involvement, teamwork, and supplier participation (Song and Su, 2015). Organizations adopt TQM as a comprehensive management philosophy that supports the firm by continuously improving the quality of the products/services and processes, that aimed at focusing on either meeting or exceeding customer expectations to achieve customer satisfaction and overall organizational performance (Baird, Jia Hu & Reeve, 2011; García-Bernal and Ramírez-Alesón, 2015; Sadikoglu and Olcay, 2014). Therefore organizations should direct their management practices towards achieving both innovation performance in addition to quality performance. The two concepts have evolved to develop sustainable sources of competitive advantage (Leavengood 2009; Kim-Soon 2012). Moreover, some studies suggest that to overcome deficiencies, organizations combine innovation and TQM practices as strategic elements to achieve organizational sustainability (Rana, Nanda and Sontakki, 2011; Martinez Costa and Martinez Lorente, 2008). Additionally, organizations that strictly implement TQM and innovation practices will gain a competitive advantage (Prajogo and Sohal 2004).

2.3 Total Quality Management and Bank Performance

Several empirical studies have tested the relationship between TQM and organizational performance. Chepkech and Cheluget (2017) examined the effect of TQM practices on organizational performance of tertiary institutions in Kenya. The study found out that TQM practices positively and significantly affect organizational performance. They attributed changes in performance to the elements of TQM practices. Akhtar, Zameer, and Saeed (2014) investigated the impact of total quality management on the performance of service organizations in Pakistan. The results indicate a positive relationship between TQM and the performance of service organizations. Hendricks and Singhal (2000) empirically tested hypotheses that related changes in operating income associated with effective implementation of total quality management (TQM) practices to various aspects of firm characteristics. They found that less capital-intensive firms do better than more capital-intensive firms, and more focused firms do better than more diversified firms. Thus, effective total quality management is associated with financial performance. Though the focus of their study was comparing small firms and larger firms, their findings still support the importance of total quality management and organizational performance.

Similarly, studies reports and supports the significance of excellence for any successful strategic implementation as it enhances sustainable performance through the implementation of quality practices in an organization (Akanmu, Hassan, and Bin Bahaudin 2020). In the same vein, Masudin, Kamara, Salman, and Jian (2018) examined the relationship and effect of practices of Just-in-Time (JIT), Total Quality Management (TQM), and Supply Chain Management (SCM) on firms and their impacts on operational performance. The findings indicate that JIT, TQM, and SCM practices in both the manufacturing and service industry individually and jointly impact organizational performance.

The major limitation of their study was that data was not empirically tested. That is, the only information gathered was related to JIT, TQM, and SCM from different journals and articles based on the survey of various researchers. Imran, Norasyikin and Shabbir (2018) also investigated the mediating role of total quality management between entrepreneurial orientation and SMEs export performance, he mediating role of total quality management between entrepreneurial orientation and SMEs export performance. Their findings reveal a significant relationship between EO and TQM with SMEs' export performance. However, their study focused on SMEs rather than banks or other corporate organizations. However, since the relationship is significant, it supports the hypothesis that TQM has a significant effect on organizational performance. A similar study examined the effect of total quality management practices on organizational performance of tertiary institutions in Kenya. They found a significant and positive relationship between TQM and organizational performance. Given the findings above by different studies, the study proposes the following hypothesis:

H1: TQM practices will be positively associated with bank performance.

2.4 Innovation and Bank Performance

In the literature, many studies examine the relationship between innovation and the financial performance of different banks. Agboola (2008) investigated the effect of information and communication technology (ICT) on the performance of Nigerian banks. The study found out that technology was the main driver of competition in the banking sector, and that enhances bank performance. Therefore, an increase in the new ICT gadgets was witnessed in the country. The results further show that ICT adoption can significantly improve banks' image and subsequently improve performance.

Nader (2011) examined the profitability of Saudi Arabian banks during the period 1998- 2007. The findings show that the adoption of mobile phone banking, the number of ATMs and bank branches had a positive effect on profitability. In contrast, it was found that the number of point of sale terminals (POSs), personal computer banking, and mobile banking did not improve profitability. Also, Ekpo and Udo (2015) opined that high investment in both tangible and intangible assets such as human capital, IT capital, and software development correlate with bank performance. Dauda and Akingbade (2011) investigated the effect of technology innovation on Nigerian banks' performance using 15 banks as a sample for the study. Although they used primary data in running the analysis, the results showed that innovation, especially in technology, enhanced customers' satisfaction, which led to an improvement in banks' profitability. Gichungu and Oloko (2015) analyzed the relationship between financial innovation and the performance of Kenyan commercial banks. They observed that ATM banking, mobile phone banking, agency banking, and online banking had positively impacted on the financial performance of commercial banks.

Similarly, Akhisar, Tunay, and Tunay (2015) investigated the impact of innovations on the performance of banks using electronic banking services as the case for the study. They adopted a sample of twenty-three advanced and developing countries' e-banking services from the year 2005 to 2013. The results indicate that bank performance in both advanced and developing countries is positively related to the ratio of the number of branches to the

number of ATMs deployed and the number of cards issued. However, the results show that POS terminals and internet banking were discovered to have a negative relationship with bank performance, due to the differences in their level of development, their socio-cultural structure, and availability of e-banking infrastructure. Lastly, Kamau and Oluoch (2016) examined whether financial innovation correlates with bank performance in Kenya. Their regression analysis results showed that ATM, mobile banking, use of credit and debit cards, internet banking, and agency banking all have a positive and significant influence on commercial banks' performance in Kenya. Thus, the study proposes the following hypothesis:

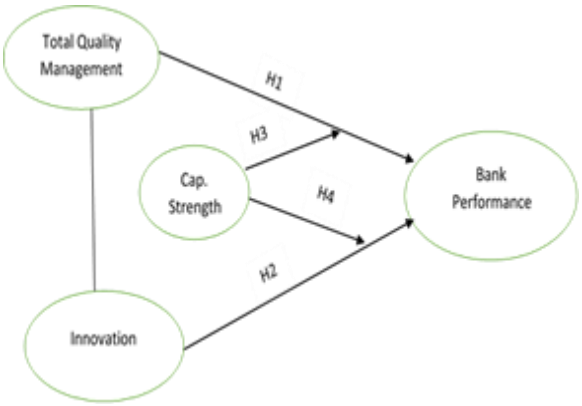
H2: Innovation practices will be positively associated with bank performance.

2.5 Capital Strength and Bank Performance

Capital strength measures the proportion of banks' resilience to situations of the financial crisis. It usually has a direct effect on bank performance and its growth strategy towards business ventures. Generally, it is believed that banks with high capital strength are faced with lower costs of financial distress, and that can be translated into high profitability. Bourke (1989) observes a significant and positive association between capital adequacy ratio and bank performance. The study reveals that a high capital adequacy ratio leads to higher profitability. Similarly, Berger (1995) asserts that banks with adequate capital tend to get more profits than those with low capital strength. Thus, it implies that banks with good capital strength are likely deploying more resources towards innovation and total quality management practices. With the support of adequate capital, the impact of innovative activity and TQM practices is likely to be strengthened. Thus, this study hypothesizes the following:

H3: Capital strength will moderates the positive association between TQM and bank performance.

H4: Capital strength will moderates the positive association between innovation and bank performance.



Developed by the Researchers, (2019)

Figure 1. Hypothesized model based on the theoretical framework**.**

3.0 Methodology

The population of this study is the entire listed commercial banks in Nigeria. There are sixteen listed commercial banks in Nigeria as at 31st December 2017. There were 13 listed commercial banks as at 31st December 2016. The data for the study covers a period of seven years (2010 – 2016). The data analysis technique used for this paper is Ordinary Least Square Regression. The source of the data used was the annual reports of the banks which are available at the official websites of the banks. The model used in the study is presented as follows:

Bank Performance =
f(INN, TQM, CAR) ..... (1)

Where:
TQM = Total Quality Management,
INNOV= Innovation,
CAR = Capital Strength

Thus, equation (1) can be transformed into econometric models as follow:

$NIM = \beta 0 + \beta 1 INN + \beta 2 TQM + \beta 3 CAR^{*} + \varepsilon$.

Where: β0 = Intercept; β1– β3= Coefficients of the regressors as defined above; NIM = Net interest margin; ε= stochastic term

The mathematical model above is also represented graphically as shown below:

3.1 Measurement of Variables

3.1.1 Dependent Variable

The dependent variable for the study is bank performance, which was represented by the Net Interest Margin (NIM). It is measured as the difference between interest income and interest expense (Chagbadari, 2011). It is used to measure performance because it is the most important source of profitability for commercial banks.

3.1.2 Independent Variables

(a) Total Quality Management (TQM): It is measured by Customer complaints resolution. This is because one of the important dimensions of total quality management is customer satisfaction. Therefore, the ability of commercial banks to resolves customers' complaints signifies good attempt at satisfying the customers. Any bank that doesn't resolve its customers' complaints, it is bound to affect its quality service delivery which in turn affects customers' satisfaction. Therefore, a ratio of customers' resolved complaints to total complaints received was used to measure level of TQM by banks.

(b) Innovation: This variable was measured by the ratio of banks' intangible assets to total assets (Ekpo and Udo, 2015).

(c) Moderating variable: The study used banks' capital strength as a control variable because of its potential effect on performance. Thus, capital strength (CAR) was measured as equity to total assets (Goddard, Liu and Molyneux, 2011; Ommeren, 2011). The study also ensured robust regression results, and that, some diagnostic tests were conducted to ensure that the assumptions of the panel linear regression model were met. The Variance Inflation Factor (VIF) was used to detect the problem of multicollinearity, but the results show that no such problem exists because none of the values exceeds 10. Thus, the OLS regression results were used to test the hypotheses, as shown in the next section of the paper.

4.0 Results and Discussion

This section presents the empirical results of the study for both descriptive and inferential statistics.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Net interest margin					
	91	.0627648	.0698534	.005	.5293
Innovation	91	.0069154	.0154514	0	.0736
TQM	91	.8671648	.2645991	0	1
Cap. Adequacy				-.4698	
	91	.1708	.1244584		.44

Source: *Authors, 2019.*

From the results in Table1, the analysis shows that the minimum value of NIM recorded by the banks was 0.05, representing 5%. In contrast, the maximum

NIM recorded was 0.5293, representing 53% during the period under review. Innovation has a minimum of 0 and a maximum of 7% throughout the period. TQM also has a minimum of 0 and a maximum of 1. Finally, capital strength has a minimum negative value of – 0.4698 as a minimum and a maximum value of 44%.

Table 2. Correlation Matrix

	nim	**inn**	**tqm**	**car**
Net Int. Margin	1.000			
Inn	0.678	1.000		
TQM	0.101	0.173	1.000	
Cap. Adequacy	-0.102	-0.349	-0.030	1.000

Source: *Authors, 2019.*

Table 2 above shows the results of correlation analysis. It shows that innovation has a positive and strong correlation with the net interest margin, with the correlation coefficient 0.6776. Total quality management, on the other hand, has a positive but weak correlation with net interest margin with the value 0.1012. The relationship between capital strength and net interest margin is negative and weak, with the coefficient -0.1024. The relationship among all the independent variables was normal because none of the variables was highly correlated with another.

Table 3. Regression Results for Direct Relationship

Variable	**OLS Regression**		
Net In Mar	Coeff.	St. Err.	p-value
Constant	.0452814	.0187624	0.018
Innovation	3.076328	.3597574	0.000
TQM	-.0043712	.0210082	0.836
R-squared	0.4594		
Prob> F	0.0000		
F(2,88)	106.92		
Observations	91		

Source: *Authors, 2019.*

Table 3 above shows that the R2 value for the Ordinary Least Square Regression for the direct relationship was 0.4594. That indicates innovation and total quality management have jointly explained the variance in bank performance measured by net interest margin by 45.94%. Thus, it implies that if banks can improve their innovation and total quality management practices, their net interest margin performance would increase. Again, the Prob > F = 0.0000 shows that innovation and total quality management practices are statistically and jointly significant in explaining the variation in bank performance measured by net interest margin.

Therefore, based on the results above and the p-value 0.000, the hypothesis that banks with high innovation drive would achieve greater performance is accepted. The results revealed that innovation is significant in terms of contribution to bank performance and that if banks can deploy more resources to their innovation efforts such as software development, their profitability would increase because of the positive and significant relationship. On the other hand, the hypothesis that total quality management practices significantly improve bank performance is rejected. That means customer complaints resolution does not have any significant effect on banks' profitability through net interest margin. Thus, it implies that other dimensions of total quality management practices, such as customer satisfaction and training, maybe more significant in terms of predicting bank performance. It may also be more important to other sectors, especially manufacturing industry.

Table 4. Regression Results for Moderated Relationship

Variable	**OLS Regression**

Net In Mar	Coeff.	St. Err.	p-value
Constant	.0459137	.0180029	0.013
Innovation	2.371506	.5825309	0.000
TQM	.0062936	.0261879	0.811
Mod. Var.	7.222446	3.198517	0.026
Mod. TQM	-.0594209	.092305	0.521
R-squared	0.5146		
Prob> F	0.0000		
F(4,86)	22.79		
Observations	91		

Source: *Authors, 2019.*

Table 4 above shows that the R2 value for the Ordinary Least Square Regression for the indirect relationship was 0.5146. It indicates that the addition of a moderator to the relationship between innovation, total quality management, and performance has enhanced the predictive power of the model. It shows that both the independent variables and the moderator have explained the variation in bank performance by 51.46%. The results indicate that hypothesis 3, which states that capital strength moderates the relationship between innovation and performance, is supported. Thus, capital strength has positively moderated the relationship between innovation and performance (with p-value = 0.026). It implies that banks with high capital intensity are more likely to experience the high impact of innovation activities on their performance. Similarly, the results revealed that hypothesis 4, which states that capital strength moderates the relationship between total quality management practices and performance of banks in Nigeria, is not supported (with p-value = 0.521). Based on the results, therefore, capital strength has not moderated but instead reduced the intensity of the impact of total quality management practices on the performance of banks in Nigeria.

5.0 Conclusion and Recommendations

It study concludes that innovation is an essential factor that can lead to better performance of commercial banks in Nigeria. Specifically, investment in banks' intangible assets, particularly software development and goodwill, could enhance banks' profitability through net interest margin. However, it is also concluded that total quality management practices through customer complaints resolutions by banks do not lead to higher performance of banks in Nigeria. Thus, it implies that other factors associated with total quality management practices may be more important to banks in terms of profitability that the customer complaints resolution mechanism. Finally, while it is inferred that the capital strength of banks strengthens the impact of innovation on bank performance, it does not moderate. Instead, it reduces the effect of total quality management practices on performance in Nigeria. Therefore, the study recommends that commercial banks in Nigeria should focus more attention on innovation, thereby investing heavily in intangible assets to enhance their profitability. Banks should pay more attention to other areas of total quality management practices to boost their profitability and overall performance. Finally, banks should intensify more efforts to strengthen their capital base to enhance further the effectiveness of their innovative drive on their profitability.

6.1 Managerial Implications

In line with the above discussions and findings, the study should have the following managerial implications: The study will help banks gain a better understanding of the current realities in the banking sector. That is, considering the essential factors in making total quality management and innovation decisions and policies for improvement and better performance. Specifically, the findings could assist banks to identify innovative

opportunities and other TQM practices relevant to their system of operation that could give them a competitive position and thus enhance their performance. Similarly, the banks need to deploy more resources to intangible assets, particularly software development, because of its potential for increasing performance. The study findings imply that commercial banks should make efforts to strengthen their capital base as it has the potential to boost the effectiveness of their innovation on financial performance. Finally, the findings of the study imply that banks need not deploy a large portion of their resources towards resolving customer complaints as it has a weak correlation with banks' net interest margin.

6.2 Limitations and Suggestions for Future Studies

The study suffered some limitations as it is usually familiar with empirical studies. The major limitation suffered by this study was that the number of listed banks on the floor of the Nigerian Stock Exchange as at the year 2016 was sixteen (16) banks. However, the study considered only thirteen (13) because the remaining banks' financial reports and accounts for the period under review were not available. Thus, this study found only 13 banks suitable for the research. Also, the study used a micro panel that covered only seven (7) years, and that has limited the application of some vital regression diagnostic tests such as auto and serial correlation. Another limitation of the study was that only one measure of performance (Net interest margin) was used, whereas several other performance measures could be included. Finally, TQM was measured using only customer complaints resolution by banks, while other dimensions of TQM practices were not included.

However, despite the above limitations, the findings remain valid as rigorous methods and procedures of measurement, an adequate number of observations, and the proper establishment of findings were duly followed. Therefore, the limitations cannot affect the validity of the findings, but they could be improved upon if the issues are taken care of by future researchers. Thus, future researchers could add additional proxies for innovation, TQM, and performance. Similarly, future researchers could use the macro panel rather than micro to see whether the findings would differ. Additionally, when future studies consider additional or different QM dimensions, other methods of data analysis like SEM can be applied to strengthen the analysis and result, respectively.

References

Agboola, A. (2006). Information and communication technology (ICT) in banking operations in Nigeria: An evaluation of recent experiences. Retrieved from: http://unpan1.un.org/intradoc/groups/public/documents/AAPAM/UNPAN026533.pdf

Akanmu, M. D., Hassan, M. G., Bin Bahaudin A. Y. (2020). A preliminary analysis modeling of the relationship between quality management practices and sustainable performance. *Quality Management Journal* 27 (1), 37-61.

Akhisar, I., Tunay, K. B., Tunay, N. (2015). The effects of innovations on bank performance: The case of electronic banking services. Procedia - *Social and Behavioral Sciences* 195, 369 – 375.

Akhtar, S., Zameer, H., Saeed, R. (2014). Impact of total quality management on the performance of service organizations in Pakistan.

International Journal of Academic Research in Economics and Management Sciences, 3 (6), 2226-3624.

Al-Damen, R. A., (2017). The impact of total quality management on organizational performance: Case of Jordan oil Petroleum Company. *International Journal of Business and Social Science,* 8 (1), 192-202.

Alghamdi, F., 92018). Total quality management and organizational performance: A possible role of organizational culture. *International Journal of Business Administration,* 9 (4), 186 – 200.

Al-Omar, H., Al-Mutairi, A., (2008). Bank-specific determinants of profitability: The case of Kuwait. *Journal of Economic & Administrative Sciences,* 24 (2), 20–34.

Andersson M., Lindgren R., Henfridsson, O. (2008). Architectural knowledge in inter-organizational IT innovation. *Journal of Strategic Information System,* 17 (1), 19–38.

Angbazo, L., (1997). Commercial bank interest margins, default risk, interest-rate risk, and off-balance sheet banking. *Journal of Banking and Finance,* 21, 55-87.

Athanasoglou, P., Brissimis, S., Delis, M., (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money,* 18 (2), 121–136.

Baird, K., Jia Hu, K., Reeve, R., (2011). The relationships between organizational culture, total quality management practices and operational performance. *International Journal of Oper*ations & *Production* Management 31 (7), 789–814.

Basi, O., (2016, July 23). FCMB's innovations for the unbanked and the Nigeria's E-banking platforms. *Thisday Newspaper. Ltd*., Retrieved from http://www.thisdaynewspaper/

Basu, R., Bhola, P., Chandra Das, M., (2020). A framework of quality management practices for Indian service SMEs. *Quality Management Journal,* 27 (1), 62-75.

Beck, T., Chen, T. Lin, C. and Song, F. (2012). Financial innovation: The bright and the dark sides, Working Papers 052012, Hong Kong Institute for Monetary Research.

Berger, A., (1995). The relationship between capital and earnings in banking. *Journal of Money, Credit and Banking,* 27 (2), 432-456.

Boldrin, M., and Levine, D. K. (2013). The Case against Patents. *Journal of Economic Perspectives*, 27 (1), 3–22.

Bourke, P., (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. *Journal of Banking and Finance,* 13, 65-79.

Calantone, R. G., Cavusgil, S. T., Zhao, Y., (2002). Learning orientation, firm innovation capability and firm performance. *Industrial Marketing Management,* 31, 515-24.

Chagbadari, M. F., (2011). Corporate governance and firm performance, *International Conference on Sociality and Economic Development,* 10 (1), 484-489.

Chen, C., Reyes, L., (2017). A quality management approach to guide the executive management team through the product/service innovation

process, *Total Quality Management & Business Excellence*, DOI: 10.1080/14783363.2017.1303878

Chepkech, W. K., Cheluget, D. C., 2017. Effect of total quality management practices on organizational performance of tertiary institutions in Kenya. *International Journal of Economics, Commerce and Management*, 5 (2), 521-536.

Crosby, P., (1979). *Quality is free: The art of making quality certain*. McGraw-Hill, New York.

Dang, Uyen (2011)," "The Camel Rating System in Banking Supervision: A Case Study," Arcada University of Applied Sciences, International Business, Degree Thesis. Available from: https://www.researchgate.net/publication/314446387 [accessed Oct 31 2019].

Dauda, Y. A., Akingbade, W. A., (2011). Technology innovation and Nigeria banks performance: The assessment of employees and customer's responses. *American Journal of Social and Management Sciences*, 2 (3), 329-340.

Diamond, D.W., Raghuram, A., (2000). A theory of bank capital. *The Journal of Finance*, 52 (6), 12-23.

Draft, R. L., (1978). A dual-core model of organizational innovation, *The Academy of Management Journal*, 21(2): 193-210

Durakovic, B., Baisc, H. Muhic, H., (2014). The interrelationships between quality management practices and their effects on innovation performance. *18th International Research/Expert Conference 'Trends in the Development of Machinery and Associated Technology' Budapest, Hungary*, 10-12 September, 2014.

Ekpo, A. H., Udo, E., (2015). External Debt, Growth and Poverty Reduction in a Failing State: Nigeria, 1970 – 2011, *Journal of Business and Economics*, (6) 5, 944 – 951.

European Central Bank, 2003. Annual Report, 60311 Frankfurt am Main, Germany. https://www.ecb.europa.eu/pub/pdf/

Frame, W. S., White, L. J., (2004). Technological change, financial innovation, and diffusion in banking, *Journal of Economic Literature*, 42 (1), 116-144.

Frei, F. X., Harker, P. T., Hunter, L. W., (1998). Innovation in retail banking. Working Paper, No. 20, Wharton Financial Institutions Center.

Gamal, D., (2011). How to measure organization innovativeness? An overview of innovation measurement frameworks and innovation audit/management tools, innovation support department, Technology Innovation and Entrepreneurship Center, 2011.

García-Bernal, J., Ramírez-Alesón, M., (2015). Why and how TQM leads to performance improvements. *Quality Management Journal*, 22 (3), 23–37.

Gharakhani, D., Rahmati, H., Farrokhi, M. R. Farahmandian, A., (2013). Total quality management and organizational performance. *American Journal of Industrial Engineering*, 1 (3), 46-50.

Gichungu, N. Z., Oloko, A. M., (2015). Relationship between bank innovations and financial performance of Commercial Banks in Kenya. *International Journal of*

Education and Research, 31 (5), 443-456.

Gimenez-Espin, J. A., Jiménez-Jiménez, D., Martínez-Costa, M., (2013). Organizational culture for total quality management. *Total Quality Management and Business Excellence,* 24 (5-6), 678-692. https://doi.org/10.1080/14783363.2012.707409

Goddard, J. Liu, H. Molyneux, P., Wilson, J. O. S., (2011). The persistence of bank profit. Retrieved from: http://ssrn.com/abstract=1695396. (Accessed on 02/01/2019).

Hall, B. H., Lotti, F., Mairesse, J., (2009). Innovation and productivity in SMEs: Empirical evidence for Italy. *Small Business Economics,* 33 (1), 13-33.

Hendricks, K. B., Singhal, V. R., (1999). The long-term stock price performance of firms with effective TQM programs. Working Paper, Georgia Institute of Technology, Atlanta, GA.

Hendricks, K. B., Singhal, V. R., (2000). Firm characteristics, total quality management, and financial performance. *Journal of Operations Management,* 238, 1–17.

Honarpour, A., Jusoh, A, and Md Nor, K., (2017). Total quality management, knowledge management, and innovation: an empirical study in R&D units, *Total Quality Management & Business Excellence*, 798-816. DOI: 10.1080/14783363.2016.1238760

Humphery, D., Willesson, M. Bergendahl, G., Lindblom, T., (2006). Benefits from a changing payment technology in European banking. *Journal of Banking and Finance,* 30 (6), 1631-1652.

Hunt, R., (1998). 'Ten Years After: What are the Effects of Business Method Patents in Financial Services?' *Business Review,* Q3: 21–34.

Imran, M., Aziz, A. Abdul Hamid, S. N. Shabbir, M. S. Salman, R., Jian, Z., (2018). The mediating role of total quality management between entrepreneurial orientation and SMEs export performance, *Management Science Letters,* 8, 519–532

Ittner, C. D., Larcker, D. F., (1996). Measuring the impact of quality initiatives on firm financial performance. In: Fedor, D.F., Ghosh, S. (Eds.), *Advances in Management of Organization Quality*. JAI Press, Greenwich, *CT*, 1: 1-37.

Kamau, D. M., Oluoch, J., (2016). Relationship between financial innovation and commercial bank performance in Kenya. *International Journal of Social Sciences and Information Technology,* 2 (4), 576-594

Kaylasson, M., Dinesh, K. and Hurreeram, V. R. 2017. Total quality management and innovation: Relationships and effects on performance of agricultural R&D organizations, *International Journal of Quality & Reliability Management,* 34 (3), 418-437.

Khan, B. A. Naeem, H., (2016). Measuring the Impact of Soft and Hard Quality Practices on Service Innovation and Organizational Performance. *Total Quality Management & Business Excellence.* DOI:

10.1080/14783363.2016.1263543 (Accessed 20/11/2019).

Kim D. Y., Kumar, V. Kumar, U., (2012). Relationship between quality management practices and innovation. *Journal of Operations Management* 30, (2012), 295–315.

Kim-Soon, N., (2012). Quality Management System and Practices. Available from https://www.researchgate.net/publication/283047825 [accessed January 01 2020].

Leavengood, S., (2009). Managing for Quality and Innovation. *Forest business solutions research brief*, 7 (4).

Levine, R., *'Finance and Growth: Theory and Evidence',* in Aghion, P. & Durlauf, S. (2005). Handbook of Economic Growth (Amsterdam: Elsevier).

Mabrouk, A., Mamoghli, C., (2010). Dynamic of financial innovation and performance of banking firms: Context of an emerging banking industry. *International Research Journal of Finance and Economics* 5.

Martínez-Costa, M., Martínez-Lorente, A. R., (2008). Does quality management foster or hinder innovation? An empirical study of Spanish companies, *Total Quality Management & Business Excellence*, 19 (3), 209-221.

Masudin, I., Kamara, M. S., (2018). Impact of just-in-time, total quality management and supply chain management on organizational performance: A review perspective. *Jurnal Teknik Industri*, 19 (1), 11-20.

Muhammad, H., Agabi, C. Shosanya, M. & Ogwu, S.M. (19th June, 2016). Investigations: Banks to Loose 80% Profit. Daily Trust Newspaper. Retrieved from: http://www.dailytrust.com.ng/news/general/investigation-banks-lose-80-profit/151719.html

Nader, A., (2011). The effect of banking expansion on profit efficiency of Saudi banks. *2nd International Conference on Business and Economic Research* (2nd ICBER 2011) Proceeding 269.

O'Neill, P., Sohal, A., Teng, C. W., (2016). Quality management approaches and their impact on firms′ financial performance–An Australian study. *International Journal of Production Economics* 171, 381–393.

Obamuyi, T. M., (2013). Financial development and economic growth in emerging markets: The Nigerian experience. *Indian Journal of Finance*, 6 (4), 16-27.

Ommeren, S., (2011). Banks' Profitability: An examination of the determinants of banks' profitability in the European banking sector. Erasmus University Rotterdam, Erasmus School of Economics, Department of Accounting & Finance, Masters Thesis. October 14th, 2011.

Ongore, V. O., Kusa, G. B., (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, 3(1), 237-252.

Ongore, V.O., Kusa, G.B., (2013). Determinants of financial performance of commercial banks in Kenya. *International Journal of Economics and Financial Issues*, 3 (1), 237-252.

Pfau, L. D., (1989). Total quality management gives companies a way to enhance position in global marketplace. *Industrial Engineering*, 21 (4), 17-25.

Prajogo, D. I., Sohal, A. S., (2001). 'TQM and innovation: A literature review and research framework, *Technovation*, 21 (9), 539–558

Prasad, B., Harker, P. T., (1997). Examining the contribution of information technology toward productivity and profitability in U.S. retail banking. Working Paper 97-09, Financial Institutions Center. The Wharton School, University of Pennsylvania (Philadelphia, PA).

Pride, W. M., Ferrell, O. C., (2006). .*Marketing Concepts and Strategies*. Houghton Mifflin Company, Boston, MA.

Rana, A., Nanda, S., Sontakki, B., (2011). Innovation Quality Management in Agricultural R&D Organizations: Mapping Innovation Quality and Performance, *Asian Journal of Management Research*, 1 (2), 629–643.

Sadikoglu, E., Olcay, H., (2014). The effects of total quality management practices on performance and the reasons of and the barriers to TQM practices in Turkey. *Advances in Decision Sciences*, 1-17. https://doi.org/10.1155/2014/537605

Segarra-Ciprés, M., Escrig-Tena, A. B., García-Juan, B., (2017). The link between quality management and innovation performance: a content analysis of survey-based research, *Total Quality Management & Business Excellence*, DOI:10.1080/14783363.2017.1401460.

Sokolowska, E. 2014. *Alternative investments in wealth management*. Springer, Switzerland.

Song, Y., Su, Q., (2015). The relationship between quality management and new product development: Evidence from China. *Operations Management Research*, 8 (1–2), 1–14.

Stiglitz, J. E., (2010). Financial innovation. The Economist Debates. Available at http://www.economist.com/n debate/days/view/471

Stone, A., Rose, S., Lal, B., Shipp, S., (2008). *Measuring innovation and intangibles: A business perspectives.* Science and technology policy institute, Washington, December, 2008.

Suryanto, T. 2016. Audit delay and its implication for fraudulent financial reporting: A study of companies listed in the Indonesian stock exchange. *European Research Studies* 19(1): 18.

Thalassinos, I. E., Dafnos, G., (2015). EMU and the process of European integration: Southern Europe's economic challenges and the need for revisiting EMU's institutional framework. *Book Chapter in Societies in Transition: Economic, Political and Security Transformations in Contemporary Europe*, 15-37, Springer International Publishing, DOI: 10.1007/978-3-319-13814-5_2

Tufano, P., (2003). *'Financial innovation'*, in Handbook of the Economics of Finance: Volume 1A Corporate Finance. G.M. Constantinides, M. Harris, and R. Stulz (eds.),

Amsterdam: North Holland, 307-335.

Umaru, I., (2017. January 18). 7 Banks may seek merger over worsening liquidity. *Leadership Newspaper*. Retrieved from http://leadership.ng/news/567632/20 17-7-banks-may-seek-merger-over-worsening-liquidity

Valmohammadi, C., (2011). The impact of TQM implementation on the organizational performance of Iranian manufacturing SMEs. *The TQM Journa*l, 23 (5), 496–509.