

**TECHNOLOGICAL INNOVATION AND FINANCIAL PERFORMANCE OF
COMMERCIAL BANKS IN YENAGOA, BAYELSA STATE**

Michael King Atimi-Yousuo & Bomanaziba Idiko
Department of Office and Information Management
Niger Delta University, Wilberforce Island, Yenagoa, Bayelsa State, Nigeria

Email:atimiyousuomk@gmail.com, zibadiko@gmail.com

ABSTRACT

The paper looked at the link between financial performance metrics (profitability, return on investment, and return on assets) and technological innovation in Bayelsa State's commercial banks. The survey research design approach adopted for the study, which includes conducting interviews and using questionnaires. One hundred and five (105) people made up the study's sample size and population. They were sampled from 15 commercial banks in the state of Bayelsa and served as the study's respondents. The study used the Spearman rank-order correlation coefficient to examine the data and evaluate the hypotheses. The research revealed a significant statistically positive correlation between technical innovation and financial performance, meaning that commercial banks that invest in technological innovation see an improvement in their financial performance. To raise their performance level, the research advised commercial banks to purchase the necessary technology infrastructure that supports technological innovation.

Keywords: technological innovation, financial performance.

INTRODUCTION

The link between information technology (IT) and organization's financial performance has drawn a lot of attention from academics (Hasan, Schmiedel, & Song, 2012). Information technology has grown at an accelerated rate, according to the literature (Crawford, Pavanini, & Schivardi, 2018; Ozuem, 2018; Otieno and Ndede, 2020; Kim, 2016). This has had a big impact on how organizations function and made them reevaluate how they think about their strategies. The integration of information technology into an organization's entire strategy is the key to progress in the information age, and this tendency has been consistent throughout the last 20 years.

Early in the 1990s, this tendency was already apparent when, for instance, the CEO of General Electric (GE) ranked technology as the company's primary focus in the strategic emphasis of the company's 1995 yearly report. According to Scott, Van Reenen, and Zachariadis (2017), information technology is considered a crucial facilitator to achieving long-term corporate goals. It cannot be applied haphazardly to current plans; rather, it must be a driver.

Due to the government's liberalization of bank licensing procedures in the middle of the 1980s, which increased bank competition, the banking industry's reach increased in terms of capacity, scope, and operations (Oluduro, 2015). Furthermore, the influence of globalization and the capacity for integration of twenty-first-century establishments exposed the banks to an even greater degree of competition among their sector rivals. As a result, it became crucial that banks use IT instead of the antiquated banking system. Additionally, it forced them to make investments in further interaction networks to automate their workflows and provide efficient service that meets or exceeds the expectations of their clients (Obalum & Okocha, 2018). Consequently, banks will be able to carry out and simplify their operational tasks and maximize their potential for income creation with the help of IT investment and use. When they embrace

financial inclusion and get a sizable portion of the unbanked population financially included, it will also improve their capacity to maximize profits (Bisht and Mishra, 2016; Adegbite and Machethe, 2019). It has never been simple to determine the worth of technology. But thanks to technology, businesses may implement certain cost-cutting measures and assess the effectiveness of these measures (Umar and Sambo, 2021). These efforts are valuable because they help a company become more competitive, which is sometimes unclear and hard to measure (Umar et al., 2021).

A reexamination linking the connections between technological convergence, change, technological infrastructure development, and other aspects of organizations like acquisition of technology has resulted from recent technological advancements, especially inside tiny electronics alongside the systems of computer, which possess the knowledge of technology ability and influence (Liu, Hu, & Kang 2021).

According to Kubbr (2007), financial institutions in Japan have embraced technological advancement as a means of gaining a competitive edge throughout their whole operational spectrum. For example, in India's economy, most organizations face a tremendous issue in managing radical and fast innovation and change. Financial success and organizational competitiveness are largely determined by the correct technology.

Statement of the problem

Numerous empirical investigations have revealed that there is a substantial body of study on information technology for developed economies (Magutu, 2013; Paul, 2015; Gakuubi, 2018). There are not many publications available, nevertheless, regarding this fascinating study's application in many emerging economies. Studies on the relationship between employee performance and technological change in a particular manufacturing industry have also been published (Yunus and Waidi, 2011; Litwin, 2011), titled the effect of employee involvement on the efficacy of health information technology: Technological Change at Work. There was a gap in the literature on the issue since this empirical research did not supply enough comprehensive data and analysis atop the relationship between organizational financial success and technological innovation.

Aims and Objectives of the Study

The purpose of this study is to investigate the relationship between technological Innovation and commercial banks' financial results in Yenagoa, Bayelsa State.

The objectives are:

1. To identify the relationship between technological innovation and profitability in commercial banks in Bayelsa State.
2. To identify the relationship between technological innovation and return on assets in commercial banks in Bayelsa State.
3. To identify the relationship between technological innovation and return on investment in commercial banks in Bayelsa State.

Hypotheses

The following hypotheses were tested in the course of this study:

Ho1 There is no significant relationship between technological innovation and productivity in commercial banks in Bayelsa State.

Ho2 There is no significant relationship between technological innovation and return on assets in commercial banks in Bayelsa State.

Ho3 There is no significant relationship between technological innovation and return on investment in commercial banks in Bayelsa State.

Conceptual framework

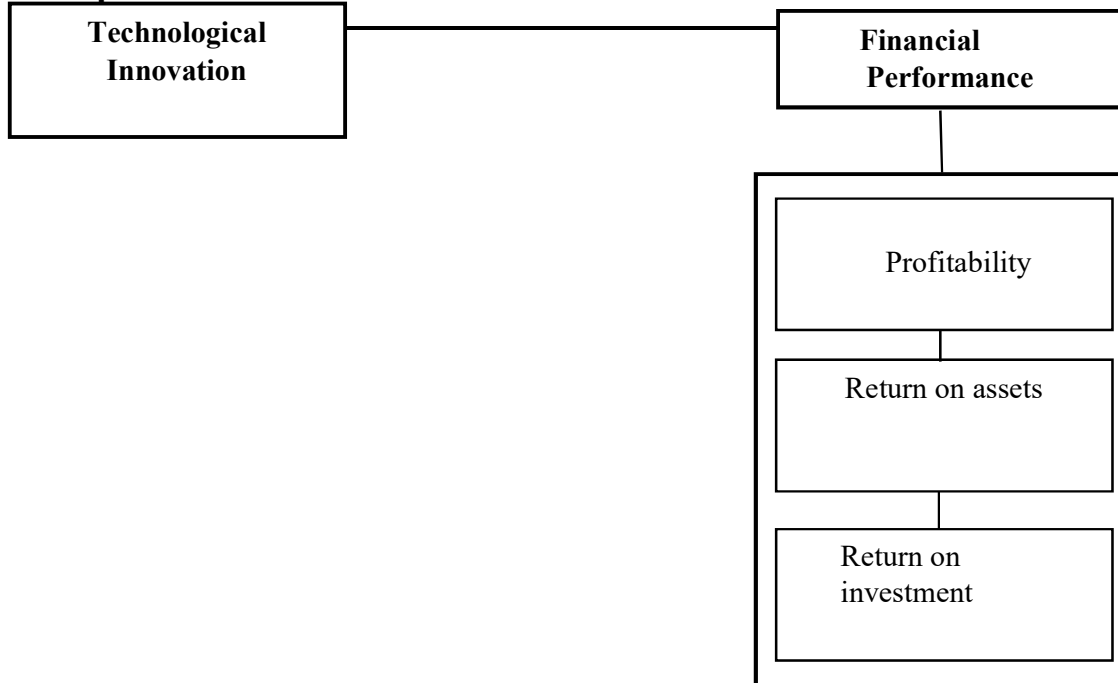


Figure 1.1: Conceptual framework for the relationship between technological innovation and financial performance.

Source: Researcher's desk.

The Concept of Technological Innovation

The term "innovation" comes from the Latin "novus," which means "new." According to Parra and Guerrero (2020), it is referred to as the "introduction of something new" or an entirely novel idea, instrument or method. The term "innovation" in this study only refers to technological innovation, not other types of innovation. Technological innovation is defined as a method that built on technology, science and systems, among other definitions. This process involves several variables that are influenced by external forces and have an impact on the enterprise's resources within, network, with the capacity for instruction based on technology. The corporation would mobilise all potential resources to boost its capacity for creativity that could end up resulting in the introduction of a new or improved product and/or manufacture methodology. A vital component of every country's growth process is technological innovation and the sensible use of new technology. Research from the literature shows that the technologies that each country has found success with have their roots in its indigenization initiatives. Native American technical innovation might come from localized technology adaptations from developed industrialized nations or from the reimagining of old methods. Within the scientific discipline of innovation studies, a concept known as "technological innovation" was established to describe the kind and pace of technological development. The Innovation System Approach (ISA) is a broader theoretical school that includes the introduction of the idea of technical innovation.

This approach's main tenet is that factors influencing technological evolution may be found not just in specific businesses or research facilities but also in the larger social structure that encompasses both businesses and knowledge institutions (Rossi & Russo, 2022). The impact of sociocultural studies on technical advancement technical as well as superficially, affect the

future expansion of national economies, fields, or technical areas has been highlighted by innovation system studies since the 1980s. The idea of technical innovation highlights the fact that economic performance and technological development cannot be achieved just by promoting knowledge flows. Therefore, it's important to take advantage of these knowledge possibilities.

This emphasizes how crucial individuals are as sources of creativity. Edsall (2019) highlighted that the approach to technological innovation is centered about the dynamics of systems. The emphasis on taking entrepreneurship endeavours have prompted academics to think of technical innovation as the idea that must be developed gradually. Technical innovation structures are described as a result of transfers of skill and knowledge as opposed to streams of regular products as well as activities (Stankiewicz & Carlsson, 2019). They are made up of dynamic networks of expertise and knowledge. These networks have the potential to be transformed throughout an industry or collection of industries, into development phases when an entrepreneur and a significant critical mass are present.

The Concept of Financial Performance

According to Wilkinson and Johnstone (2018), performance is the result of all organizational activities and strategies. Accurately measuring financial performance is still a major challenge for most organizations and is essential for accounting purposes. Methods for measuring performance are crucial for developing basic strategies, assessing an organization's goal accomplishment, and compensating managers (Omran, Khattat, Gleason, & Tahat, 2021). While performance evaluation remains crucial in the marketing literature, it is nevertheless a complex process (Gerstenfield & Wortzel, 2007). Consensual performance assessment encourages academic research and can help managers make more informed decisions, but marketers haven't been able to identify precise, up-to-date, and trustworthy performance metrics to assess marketing quality.

The literature has used two methods to quantify financial performance. Two factors led to the decision to focus on longer-term performance: first, given the changing structures that make short-term investments foolish, it is likely that buyers of "retail" products like unit trusts will be considering that. Second, the subject of how administrative expenditures affect outcomes is one of the draws of examining "real" items as opposed to theoretical research. These expenses may theoretically show up as front-end or recurring yearly management fees. Businesses need to do well financially to survive in today's unpredictable and competitive market.

The management is keen to find out how an organization's success is connected to its efforts to improve service quality (Sousa & Voss, 2012). In the end, a company's financial success indicates the degree to which organisation achieves high standards of service. A business's capacity to make money relies on measuring how much it grows its sales, earnings, and return on equity. These show the overall health of a company and are measures of financial performance (Barnett & Salomon, 2016). Traditionally, a mix of traditional accounting metrics and risk and return metrics has been used to assess the financial success of businesses.

Open statements of finances frequently comprise a range of financial measurements intended to show the success of the organisation. Methodologies including financial ratio analysis, benchmarking, comparing performance to budget, or a mix of these have been utilised in further financial performance analysis. There are drawbacks even flaws with using financial ratios, just like with any other analytical technique intended to assess company performance. This is especially true when using a small number of ratios all by themselves (Goh, 2013). To put it simply, a large portion of the research on contemporary corporate performance characterizes the goal of most organizations as being to maximize profits while minimizing the risks involved in achieving them (Pont & Shaw, 2012).

There is a well-acknowledged correlation between risk and return, meaning that the predicted return increases with risk. As a result, risks and returns have been assessed via typical company performance metrics (Swanson & Orlitzky, 2017). Financial performance is conceptualised using profitability, return on investment, and return on assets in this study.

Profitability

Capacity of an institution, business, company, or venture to turn a gain from every one of its commercial endeavors is known as profitability. It shows how well the management can use all resources at their disposal to produce a profit. Oladejo (2016) defines profitability is an indicator of an investment's capacity in generating income with its utilization.

Eze and Egoro (2016) assessed the impact of internet-based banking on the financial success of Nigerian commercial lenders. The study's objective was to look at the relationship between distinct e-banking systems and the profitability of commercial banks in Nigeria. The four types of digital payment channels that were found and regressed against the profit before taxed of commercial banks operating in Nigeria between 2006 and 2014 included automatic teller machines, technological mobile banking, internet banking, and point-of-sale services. The study used the validated ECM model (by residue detection) to evaluate its hypotheses. The outcomes demonstrated that, even though the impacts of the different channels varied, wireless banking had a significant overall impact on commercial banks' efficiency.

Asidok and Michael (2018) explored the impact of mobile payments on bank profitability in Nigeria using data from the Electronic Payment System Office and a selection of banks through the Central Bank of Nigeria data journal. The research uses the survey base root and SURE emulates estimator practices to perform quantitative analysis for four selected old and new-generation banks. The study employed econometric, numerical, and financial previous criteria in the interpretation of the results it obtained. Given that the performance of Nigeria's older and younger age banks has a substantial and statistically robust link with their automated teller machines; it is likely that these devices are essential to the running of both kinds of banks.

Oladejo (2016) looked at how the acceptance from all four e-payment methods such as POS, ATM, online and mobile and the specific factors of bank, affected the incomes of Nigerian commercial venture. Between 2005 and 2012, the yearly financial statement of eleven listed non-business financial enterprises provided secondary data. Panel logistic regression method was used for examining the facts. The primary results of the data analysis show that the adoption of e-payment systems by banks affects their financial results metrics, such as gross margin, profits after taxes, return on assets, and return on equity.

Return on Assets

Banks with greater performance would be those that could lower their cost of capital (COC) and absorb concealed losses. Bank performance is directly impacted when the market uses the cost of capital to estimate the potential return on an investment (Tabash, 2019). This occurs because bank revenue is determined by the interest rate, and bank income influences the subsequent financial yield. In other words, return on assets (ROA) measures the way a bank's management generates profits from its cash reserves or inventory of resources. To calculate the return on assets ratio, divide net income by the median amount of assets. This ratio of profits illustrates how much money a bank or other organisation could make from its property. An alternative way to show this ratio is as a product of the total asset turnover and the profit margin. You may compute the return on total assets using either formula. A bank's net income tells investors and customers the amount of money the bank earns. For greater ROA, financial institutions need to be willing to raise their credit quality and maximise their expansion and placement of their income-producing assets.

Return on Investment

A measure of performance for any type of investment is the return on investment or ROI. ROI represents the company's ultimate objective for shareholders. According to Beheshtima and According to Omid (2017), a company's return on investment (ROI) is a gauge of the total amount of money it produces through its application of assets. It shows the potential earning or losing from a purchase taken via a certain course of conduct. As a result, it permits the evaluation of the effectiveness of an investment; put another way, ROI permits the comparison of the outcome to the methods by which it was achieved. ROI is computed by taking the daily value that is realised after an investment activity and splitting it by every cash contributed (or its total budget).

Technological Innovation and Financial Performance

A major component distinguishing civilization or society is its technical know-how. There is evidence that the advancement of technology occupies a vital place in an organization's development with its impact on the financial success of firms. According to Ayres (2016), technology is an organization's greatest asset. The main purpose of technological development, in the words of Utterback and Abernathy (2018), is making sure that entity's longevity as well as the survival of the business ecosystem, both of which depend on generating sustainable financial performance. The use of web-based modern technology, various forms of advancement, and monetary success within the business unit were examined by Gerstenfield and Wortzel (2007).

The empirical investigation's data came from 7,302 European businesses as a sample. The empirical findings demonstrate that in 2003, Internet-based innovation tools played a significant role in fostering creativity. All forms of innovation that were examined—both technical and product innovations that are facilitated by the Internet and those that are not—were shown to be positively correlated with job growth and turnover. Ultimately, it was shown that the majority of the time, inventive activity is linked to increased profitability. Technological advances may be linked to profitability and expansion in an organisational context via gains in market share, positioning for competition, efficiency, effectiveness, and numerous other areas. according to Adam, Farber, and Khalil (2015). They also discovered a favorable relationship between performance and technical innovation.

Developing nations (DCs) have worked hard in history to succeed in the process of generating effective technologies. The four interrelated components of technology—human ware, orgaware, informware, and technoware—must be developed concurrently and simultaneously for the sake of technological advancement. Nonetheless, the majority of studies on the process of technology development in underdeveloped nations have concentrated on the sequential study of technology acquisition, absorption, and dissemination. This methodical approach disregards the distinctions between different types of technologies, such as goods and processes, which may take distinct paths, and instead presumes that technological breakthroughs happen uniformly throughout all organizations (Abernathy & Utterback, 2018). Furthermore, the process of developing new technologies is even more dynamic and complex when considering both the circumstances inside and outside of the company. Research from the past demonstrates that emerging nations were innovators in invention. According to the United Nations (1991), developing nations' technical progress has occurred in three separate epochs. Many scholars have conducted researches on the subject of innovation of technology significance. Industrial sectors rely on technological innovation to survive and grow, and it is acknowledged as a key driver of money expansion with key component of corporate achievement both in developed and under-developed nations (Wilkinson & Johnstones, 2018).

According to Gerstenfield and Wortzel (2007), developing nations' capacity for effective innovation is one of the prerequisites for their industrial and economic growth. According to Tefler (2014), a firm has to innovate in order to survive and grow. Those that don't innovate ultimately fail. Technological progress has been linked to greater commerce, productivity growth, job expansion, an advantageous spot in countries that export goods, and an improved quality of life, according to Hill and Utterback (2018). It is also a major engine of societal growth and shifts.

Researching the nature of technological innovation, however, seems difficult because of the process' inherent richness and interactions with several external and specific industries variables. Lall (2019) emphasized, however, that a great deal of technical innovation is occurring in the contemporary sectors of emerging nations, especially in those with wide-ranging investments industries and relatively lengthy manufacturing histories.

Theoretical review

Diffusion of Innovation Theory

Rogers (2003) propounded the Diffusion of Innovation Theory (DOI). He clarified how technology affects people's lives and how businesses operate generally, as well as how easily people may obtain services.

Regardless of when technology was invented—inside or outside of their communities—people and organizations still view it as innovative and fresh. Therefore, whereas innovation is defined as an idea, practice, or item, diffusion is the procedure by which reported new developments in technology or creativity is spread over time among members of the community through specific avenues (Rogers, 2003). There are five main components to the theory of the diffusion of innovation. First of all, the comparative edge indicates the degree to which creativity is believed to provide more benefits. This indicates that customers find newer technologies more valuable than older ones (Roberts and Amit, 2003).

According to Chen, Li, Wu, and Luo (2017), compatibility refers to the degree to which a service is seen to be consistent with the previous habits, attitudes, beliefs, and experiences of subscribers, both past and present. Third, observability is the extent to whereby innovation is visible to members of a social system and its benefits are easy to understand (Rogers, 2003). Fourth, trialability, as defined by Al-Jabri and Sohail (2012), is the capacity to evaluate new technology before its adoption. Fifth, observability (Rogers, 2003) is the degree to which the results of innovation are visible to other individuals. A lot of research, such as those on banking (Al-Jabri and Sohail, 2012; Yahaya, Yusoff, Idris, & Haji-Othman, 2014), health (Cain & Mittman, 2002), and the use of information and communication technology (ICT) (Echchabi and Aziz, 2012).

METHODOLOGY

This study used the survey research design approach, which includes conducting interviews and using questionnaires. One hundred and five (105) people made up the study's population; they were drawn from 15 commercial banks in the state of Bayelsa and served as the study's respondents. A total of one hundred (100) surveys were distributed and returned. The study used the significant Spearman correlation coefficient to review the outcomes and assess the theories.

Results

An analysis of the link between Financial Performance and Technological Innovation

ITEMS	Independent	Dependent Variable
-------	-------------	--------------------

		Technological innovation	Profitability	Return on assets	Return on investment
Technological innovation	Rho	1.000	.427**	.371**	.237
	Sig.	.	.000	.000	.018
	Mean	2.65	2.49	3.00	2.87
	N	100	100	100	100
Remark			moderate positive relationship	weak positive relationship	weak positive relationship

Source: SPSS Output from Field Data (2022)

Table 1.1 demonstrated that technological innovation produced rho values of .427 for profitability, .371 for return on assets, and .237 for return on investment when compared to other financial performance metrics. The findings indicated that technological innovation and profitability had a somewhat favorable and significant association ($\rho = .427$, $p < 0.05$). Additionally, it revealed a small but substantial positive association ($\rho = .371$, $p < 0.05$) between technological innovation and return on assets. Additionally, the outcome demonstrated a slender positive correlation ($r = .237$, $p < 0.05$) between technological innovation and return on investment. Therefore, the null hypothesis was rejected (H_04 , H_05 , and H_06).

Thus, technological innovation and the financial success of the commercial banks in Bayelsa State are significantly correlated.

Discussion of findings

The paper examined the relationship between financial performance metrics (profitability, return on investment, and return on assets) and technological innovation in Bayelsa State's commercial banks. The results of the study showed a statistically significant positive association between technological advances and economic performance. The results demonstrated that commercial banks' financial performance is enhanced by investments in technological innovation. This conclusion is consistent with the study by Herring and Roy (2017), which indicated that the information technology market's fastest-growing category is technical innovation, which gives the banking industry's operating models flexibility.

Additionally supporting this study are studies by Scott et al. (2017) and Davenport (2015), which found that technological innovation enables businesses to move non-critical services, like software patches and maintenance, to information technology and helps customers respond more quickly and efficiently.

CONCLUSION AND RECOMMENDATION

The research looked at the connection between Bayelsa State's commercial banks' financial success and technological innovation. The findings indicated a strong and favorable correlation between technological innovation and the Bayelsa State commercial banks' financial performance.

Therefore, to improve their performance level, commercial banks are recommended to purchase the necessary technical infrastructure that supports technological progress.

REFERENCES

Abernathy, W. & Utterback, J. (2018). A dynamic model of process and product innovation, *Omega*, 3(6), 639-656.

- Adegbite, O. O. & Machethe, C. L. (2019). Bridging the financial inclusion gender gap in smallholder agriculture in Nigeria: An untapped potential for sustainable development – *World Development* 127, 104755.
- Adam, M.C., Farber, A. & Khalil, T. (2015), Financing technological innovation: *Strategic Management Journal*. 27(4), 1101-1123.
- Al-Jabri, I. M., & Sohail, S. M. (2012). Mobile banking adoption: Application of diffusion of innovation theory. *Journal of Electronic Commerce Research*, 13(4), 379-391.
- Asidok, N. O., & Michael, A. A. (2018). Mobile banking transactions and bank profitability in Nigeria. *International Journal of Economics, Commerce and Management*, 6(6), 692-716.
- Ayres, R. U. (2008). Technology: the wealth of nations. *Technological Forecasting and Social Change*, 33(2), 189-201.
- Barnett, M. L. & Salomon, R. M. (2006). Beyond dichotomy: The curvilinear relationship between social responsibility and financial performance, *Strategic Management Journal*, 27(12), 1101-1156.
- Beheshtima, M. A., & Omid, S. (2017). A hybrid MCDM approach for performance in the banking industry. *Kybernetes* 10(2), 21-35.
- Bisht, S. S. & Mishra, V. (2016). ICT-Driven financial inclusion initiatives for Urban Poor in a developing economy: Implications for Public Policy, *Taylor and Francis Group - 35*(10), 817 – 832.
- Cain, M., & Mittman, R. (2002). *Diffusion of innovation in health care*. California: California HealthCare Foundation.
- Carlsson, B. & Stankiewicz, R. (2019). On the nature, function, and composition of technological systems. *Journal of Evolutionary Economics*, 1(2), 93-118. doi: 10.1007/BF01224915
- Chen, Z., Li, Y., Wu, Y. & Luo, J. (2017). The transition from traditional banking to mobile internet finance: an organizational innovation perspective-a comparative study of Citibank and ICBC. *Financial Innovation*, 3(1), 12-34.
- Crawford, G. S., Pavanini, N., & Schivardi, F. (2018). Asymmetric information and imperfect competition in lending markets. *The American Economic Review*, 108(7), 1659e1701.
- Davenport, T. (2015). Putting the enterprise into the enterprise system. *Harvard Business Review* 76 (4): 121–131.
- Echchabi, A., & Aziz, H. A. (2012). Empirical investigation of customers' perception and adoption towards Islamic banking services in Morocco. *Middle-East Journal of Scientific Research*, 12(6), 849-858.

- Edsand, H. E. (2019): Technological innovation system and the wider context: A framework for developing countries. *Technology in Society* 5(8), 101-125.
- Eze, G. P. & Egoro, S. (2016). Electronic banking and profitability of commercial banks in Nigeria. *Journal of Finance and Economic Research*, 3(1), 202-222.
- Gakuubi, D. K (2018). Impact of information and communication technology on organizational performance: A case of Nairobi Bottlers Logistics Operators. United States International University. Unpublished research report.
- Gerstenfield, A. & Wortzel, L. (2007). Strategies for innovation in developing countries. *Sloan Management Review*, Fall, 57-68.
- Goh, A. (2013). Evolution of industrial policy-making in support of innovation: The case of Singapore. *International Journal of Innovation and Learning*, 1(4), 1-28.
- Hasan, I., Schmiedel, H., & Song, L. (2012). Returns to retail banking and payments. *Journal of Financial Services Research*, 41(3), 163e195.
- Herring, H. & Roy R. (2007). Technological innovation, energy-efficient design, and the rebound effect. *Technovation* 27(4): 194–203.
- Hill, C.T. & Utterback, J. M. (2009). *Technological innovation for a dynamic economy*, Pergamon Press, London.
- Kim, H.J. (2016). Technological alliance drivers, formation and performance: the case of Korean high-tech SMEs. *International Journal of Technology Transfer and Commercialization*, 15(6), 24-36
- Kubbr, G. (2007). The role of credit market imperfections in the monetary transmission mechanism: Arguments and Evidence, *Scandinavian Journal of Economics*, 12(3), 44-61
- Lall, S. (1980). Developing countries as exporters of industrial technology, *Research Policy*, 9, 24-52.
- Litwin, A. S. (2011). Technological change at work: The impact of employee involvement on the effectiveness of health information technology. *Review*, 64(5), 863-888.
- Liu, Hu & Kang (2021): The Effects of Absorptive Capability and Innovative Culture on Innovation Performance: Evidence from Chinese High-Tech Firms. *The Journal of Asian Finance, Economics and Business* 8(3), 1153-1162.
- Magutu, P. O. (2013). Supply chain strategies, technology and performance of large scale manufacturing firms in Kenya. Unpublished Thesis Submitted to University of Nairobi.

- Obalum, A. I. & Okocha, B. F. (2018). Business process reengineering and corporate performance of deposit money banks in Rivers State, *International Journal of Business Systems and Economics* ISSN: 2360-9923, 12(1), 91 – 104
- Oladejo, M. (2016). E-payments adoption and profitability performance of deposits money banks in Nigeria. IPASJ *International Journal of Information Technology* (IIJIT), 4(3), 1-9.
- Oluduro, O. F. (2015). History and evolution of banking in Nigeria, *Academia Arena* 1:9-14 (ISSN1553-992X)
- Omran, M., Khattat, A., Gleason, K & Tahat, Y. (2021). Non-financial performance measures disclosure, quality strategy, and organizational financial performance: a mediating factor. *Total Quality Management and Business Excellence* 32(5-6), 652-675.
- Otieno, O. S., & Ndede, F. W. S. (2020). Adoption of digital banking technology and financial performance of commercial banks in Kenya. *International Journal of Current Aspects in Finance, Banking and Accounting*, 2(1), 42-50. <https://doi.org/10.35942/ijcfa.v2i1.108>
- Ozuem, W., Howell, K. E. & Lancaster, G. (2018). Developing technological induced environments: the case of the Nigerian banking sector. *Journal of Financial Services Marketing* 23(11), 50-61.
- Parra, D. T. & Guerrero, C. (2020): Technological variables for decision-making IoT adoption in small and medium enterprises. *Journal of Information Systems Engineering and Management*, 5(4), 56-72.
- Paul, J., Mittal, A., & Srivastav, G. (2016). Impact of service quality on customer satisfaction in private and public sector banks. *International Journal of Bank Marketing*, 34(5), 606-622.
- Pont, M. and Shaw, R. (2012), Measuring marketing performance: a critique of the empirical literature, paper presented at the ANZMAC, Adelaide.
- Roberts, P., & Amit, R. (2003). The dynamics of innovative activity and competitive advantage: the case of Australian retail banking, 1981 to 1995. *Organization Science*, 14(2), 107-122.
- Rogers, E. M. (2003). *Diffusion of Innovation* (5th edition), Free Press
- Rossi, F., Caloff, A. and Russo, M. (2022): New business models for public innovation intermediaries, supporting emerging innovation systems: The case of the Internet of Things. *Journal of Technological Forecasting and Social Change*, 6(3) 175-193
- Scott, S. V., Van Reenen, J., & Zachariadis, M. (2017). The long-term effect of digital innovation on bank performance: An empirical study of SWIFT adoption in financial services. *Research Policy*, 46(5), 984-1004.

- Sousa, R. & Voss, C. (2012). Quality management revisited: a reflective review and agenda for future research, *Journal of Operations Management*, 20(1), 91-109.
- Swanson, D.L.& Orlitzky, M (2017). Towards a conceptual integration of corporate social and financial performance. Handbook of integrating CSR. *Communication*, 7(4), 129-148.
- Tabash, M. I. (2019). An empirical investigation on the relationship between disclosure and financial performance of Islamic banks in the United Arab Emirates. *Journal of Asian Finance, Economics, and Business*, 6(4), 27–35. <https://doi.org/10.13106/jafeb>
- Tefler, J. A. (2002). Managing innovation within networks, *Journal of Operations Management*, 20(1), 91-109.
- Umar, D. M. & Sambo, A. (2021). Information technology capabilities and competitive advantage: A review. *International Journal of Technology and Systems*, 5(1), 1-14
- United Nations (1991). Technological innovation, entrepreneurship and development, *Small Industry Bulletin for Asia and Pacific*, UN, 25(6), 19-27.
- Wilkinson, A. & Johnstone, S. (2018). The potential of labor-management partnership: a longitudinal case analysis. *British Journal of Management*, 29(3), 554-570.
- Yahaya, S., Yusoff, W. S., Idris, A. F., & Haji-Othman, Y. (2014). A conceptual framework for adoption of Islamic banking in Nigeria: The role of customer involvement. *European Journal of Business and Management*, 6(30), 11-24.
- Yunus, A. D. & Waidi, A. A (2011). Technological change and employee performance in the selected manufacturing industry in Lagos State of Nigeria. *Australian Journal of Business and Management Research*, 1(5), 32-43.