

Review Article

An Investigation of Management Information System Agility and Performance of Commercial Banks in Nairobi Metropolitan

Trezah Awuor Odindo^{1*}¹Department of management science, Kenyatta University**Article History**

Received: 06.10.2021

Accepted: 10.11.2021

Published: 18.11.2021

Journal homepage:<https://www.easpublisher.com>**Quick Response Code**

Abstract: The dynamic environment and the capability of information systems is one of the challenges companies face in order to achieve effective performance. The purpose of the study was to determine the effect of Management Information Systems agility on the performance of commercial banks in Nairobi city County, Kenya. Commercial banks in Nairobi County have been performing poorly because of poor service quality, insufficient ICT literacy of bank employees, information system insecurity, inadequate information storage and government regulations. The objective of this study was to determine the effect of service quality, ICT literacy, system security and information storage on the performance of commercial banks in Nairobi County Kenya. The target population was 430 employees from 43 commercial banks in Nairobi County Kenya. Purposive sampling was used to draw a sample size of 86 ICT specialists as respondents. Primary data was collected through questionnaires. Data was analyzed using descriptive, relational, and inferential analysis especially use of regression model. The study found out that service quality, ICT literacy, system security, information storage were significant and had positive effect on performance of commercial banks. The study concluded that management information system agility has influence on the performance of commercial banks. The study recommended that commercial banks should formulate strategies that will enhance performance of commercial banks based on service quality, ICT literacy, systems security and information storage in their organizations.

Keywords: MIS Agility, Service Quality, ICT Literacy, Systems security, Information storage, Banks' performance.

Copyright © 2021 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

The commercial banking sector is characterized by intense competition as there is intense battle for customers and where selective growth strategies have been identified and developed because of the need to grow in volume (Wachinga, 2010). To succeed in this highly intense competitive sector, banks require robust and reliable information systems that they need to utilize in the measurement of customer profitability. The financial and banking sector is greatly influenced by information systems because of the connectivity of computers to one another and the computers to the customers who need instant services at the comfort of their locations. Banks have vast amounts of customer data such as personal information and the transactions that they process for their customers daily. The data handled by banks is sensitive and the infrastructure for handling the data is becoming more complex therefore making the sector entirely dependent on information systems (Lilly & Juma, 2014).

Management information systems can be defined as formal systems that give management timely information that is required for efficient decision-making. The type of information obtained from these system is on the past, present, and future forecasts and other intrinsic and extrinsic organizational developments (Mohammed & Wang, 2015). Globally, advancement in technology has seen the development of various industries such as the banking and finance sector. The amount of sensitive data, consumer and market demands and new technology have necessitated the need to have more complex IT solutions to enhance the development of the banking industry (Almaryani & Sadik, 2012).

Several studies have been done globally on the role of Management information systems agility in the banking sector. In a study on the importance of Management information systems in the banking sector, Pilarczyk (2016) notes that failure in information systems have the potential to cripple the operational

performance of a bank. Such a case was witnessed in the Royal Bank of Scotland in 2012 where a failure in banking systems crippled banking operations for a few hours that translated into massive losses of approximately \$286million due to outdated management software (Pilarczyk, 2016). In a survey Conducted by Sainsbury on customers are more willing to trust a bank with the right technology in place. Investment in more advanced Management information systems is thereby require to boost overall performance in the sector

Statement of the Problem

There has been an immense improvement in the effectiveness with which information is handled in Kenyan banks and as such, this has had a positive effect on their performance in regards to the effectiveness with which customers are served and the resulting revenue and profitability (Muriithi & Louw, 2017). Because of this, the Kenyan banking sector is regarded as being more mature and growing faster than others in the East African region. However, its performance is still challenged by a wide range of factors which are both local and global and these include weakness of internal and external control systems, the growth of Fintech companies, non-performing loans, poor governance and leadership and unprecedented financial crises (Carè, 2018). To achieve better results therefore, one of the strategies that is seen as effective and relevant in the present day is improving how data and information is handled and processed. Banks in Kenya handle a vast amount of information that they obtain from their customers' details and the numerous transactions that they process (Benaben & Vernadat, 2017). Therefore, they require technologies and information systems for managing customer data. However due to the complexity and dynamic nature of the industry, technological advances are constantly being rolled out and the needs and demands of clients are constantly changing as well. It is therefore important to identify the issues that affect how information systems of banks is managed in order to keep up with the market and aid the banks in achieving their performance strategies more effectively and efficiently.

A shift towards agile banking information systems is now a requirement for banks because of the advanced and highly sophisticated banking technologies to meet the changing demands of customers such as high need for product value with decrease in costs and enhanced convenience (Gorlca, Somcers, & Wong, 2010). The growth of agile information systems in banking is under strict government supervision through its regulations and policies (Benaben & Vernadat, 2017). Commercial banks therefore need to incorporate the regulations on their operational and service systems. If Kenyan commercial banks do not manage the challenges they face in uncertain operating environment and changing customer demands, their information

systems will fail and the desired value in terms of operational and business performance from the systems might not be achieved despite the high cost of implementation. Commercial banks in Nairobi County have been performing poorly because of poor service quality, insufficient ICT literacy of bank employees, information system insecurity, inadequate information storage and government regulations. Government regulations range from privacy, copyright, pricing and market entry. Government regulations are put in place to make markets more competitive. The study hence sought to investigate the best way service quality, ICT literacy, system security, information storage and government regulations can be used to enhance commercial banks' performance in Nairobi County. The general objective of the study is to determine the effect of Management Information Systems agility on the performance of commercial banks in Nairobi city County, Kenya.

Empirical Review

This section discusses the study variables. These are the dependent variable which is performance of banks and the independent variables which include service quality, ICT literacy, system security, information storage and government regulations which represent the Management Information systems agility.

Kenyan banks are crucial stakeholders in allocation of economic resources in the country as they play a role in directing funds from depositors to investors. The banks however can meet their role by generating income that is sufficient enough to cover the operational costs that they incur. The ultimate goal of commercial banks is to make profit therefore every strategy and activity performed are designed to achieve this major goal apart from the social and economic goals.

Statistically, ICT strategies influences income, profitability and customer deposits of commercial banks in Kenya significantly (Wasilwa & Omwenga, 2016). Mobile phones have a high effect than internet services on ICT strategies of commercial banks in regard to influencing performance of Kenyan banks positively. From the findings from the study of Wasilwa & Omwenga (2016), Kenya's commercial bank performance is positively influenced by ICT strategies. A recommendation is made that the government and the management of banks should explore and implement collaborations that are sustainable with mobile phone service providers and internet service providers so as to accelerate the penetration of ICT as this will in the long run result into desired impacts in the economy.

Banks have adopted various ICT innovations which have led to the development of information systems for example ATMS (automated teller machines), mobile and internet banking, point of sale (POS) terminals, debit and credit cards and electronic

funds transfer. These have led to a positive response from banks' customers in terms of customer deposits and the total income from commission fees and interest (Kamau, 2015). The banking information systems have expanded the income generating potential of commercial banks therefore enhancing performance. The use of ICT products and innovations have led to positive return on assets for commercial banks. ICT can be developed in various ways to design banking products that increases organizational performance (Kamau, 2015).

There is debate on the adoption of ICT and its improvement of bank performance despite the potential benefits of ICT on e-commerce (Mwangi, 2012). An investment on information systems and ICT infrastructure is a vital element in growth and productivity in the banking industry as it enables banks to offer several services to clients (Mwangi, 2012). ICT is the core of electronic banking in Kenya and information systems through ICT innovations play key roles in improving banking efficiencies. Service delivery standards in banks have improved because of technological advancements such as ATMs which allow customers to perform banking transactions even beyond banking hours and from their respective remote locations without going to banking halls (Mwangi, 2012). New ICT based processes and technologies lead to improvement in banks' operating efficiencies and customer service levels. There is a positive effect of ICT on the performance of a firm in terms of market value, profitability, productivity, market share, process efficiency, cost savings, customer satisfaction, service quality, process flexibility and general organizational flexibility (Mwangi, 2012).

According to the study by Juma (2012), ICT improves the operations, liquidity and the asset quality of Kenyan banks. The study shows that commercial banks not only increases competitiveness in the market but also increases their market share. Management information system improves the quality of service that is offered by banks (AL-Adwan, 2016). In this study by AL-Adwan (2016), it is recommended that policies should be drawn to uplift management information systems because it improves customer service quality satisfaction. In a study to establish whether ICT innovations impacts operational performance Kenyan banks, it was found that management support, process re-engineering and customer service delivery enhance the performance of commercial banks through enhancement of acquisition of new clients, strategic operational objectives and improved performance agenda (Mbogo, 2017). Commercial banks are investing in ICT innovations in order to remain competitive and sustainable. The operational performance of banks is achieved by accomplishing specific outputs in regard to expected outcomes. These outcomes are based on speed of product delivery, quality of service, quality of products, dependability and flexibility (Mbogo, 2017).

Commercial banks are enhancing operational performance by consistently establishing different delivery methods of products and services to their customers.

Research Design

The study design is a framework that answers research questions and works towards attaining research objectives (Walliman, 2014). Descriptive design was applied in this study. The descriptive research design is a research plan which determines and report the answers to the following questions; what is happening, how is it happening and why is it happening? (Mohajan & Mohajan, 2018) (Castillo, 2016). Descriptive research can either be qualitative or quantitative and entails various variables under one study which makes it a unique design. This research design is considered appropriate for the research because it provides flexibility for the research to explore phenomena being explored both qualitatively and quantitatively and as such, the findings provide and in-depth understanding of phenomena being explored and as well, produce data that can be generalized to the wider banking sector in Nairobi. According to Mohajan & Mohajan (2018), the descriptive research design capitalizes on data reliability and has provisions for protection from partiality.

Target Population

In order to make or draw conclusions from a research, inferences are made from research findings so as to identify the characteristics of the bigger population from the sample that is chosen (Castillo, 2016). Population in research refers to a set of people or events that is hypothetical and which a study researcher draws information from to get study results. According to Central Bank of Kenya (2020), there were 43 licensed commercial banks in Kenya. The target population for this study was 43 commercial banks as shown on Appendix V. The researcher selected the ICT specialists of the commercial banks.

Sample size and Method

This is the selection of a section of the larger research population from whom the data was collected (Castillo, 2016). There are two broad approaches to sampling and these are the random and purposive sampling techniques. For this study, the purposive sampling approach was used. This form of sampling involves selective or subjective sampling (Castillo, 2016). It is a non-probability form of sampling that involves selection of cases to include in the research based on their idealness in addressing the objectives of the research. It is therefore an effective approach because the research sample selected is usually equipped with the knowledge and information required to effectively address the research objectives. Two ICT employees from each bank were selected to participate as respondents for the study, therefore the sample size was 86 respondents. Purposive sampling was used

because it has a major goal of focusing on specific characteristics of a population (Castillo, 2016).

Data Collection Instrument

Collection of Primary data was done using questionnaires. A questionnaire is a set of questions that are used to collect data (Mohajan & Mohajan, 2018). The set of questions are usually predetermined. It is related to the objectives of the research and records information on particular issues of interest. Survey method is one of the common methods of data collection in descriptive data design (Walliman, 2014). Through this method, the targeted population were administered with research questions captured in questionnaires.

The questions were both open and close ended in order to attain a variety of responses which corresponds to a variety of variables of the study. A 5-point Likert scale was implemented on the questionnaire where 1 stands for strongly disagree and 5 stands for strongly agree. It was also designed with different sections as illustrated in appendix 2. The questionnaires were electronically distributed to the respondents through their emails. They were then requested to fill and resend them to the researcher within a 1-week period.

Data Analysis and Presentation

Data analysis and presentation is the process whereby the data collected is reviewed, cleaned, converted and modelled with the purpose of drawing conclusions (Walliman, 2014). Data analysis was

conducted through descriptive data analysis and through the regression model analysis. Descriptive and inferential data analysis was conducted to identify the shapes and distributions that will show the relationships among the independent variables and dependent variable. Descriptive data analysis was done through data reduction method which is the simplification, summarizing and conversion of written data. Themes and categories were established and organized into understandable forms. Conclusions on the research issues were drawn by the researcher in this step.

Regression data analysis is a relational statistical technique that shows the relationship between a dependent variable which is the target and independent variables which is the predictor (Mohajan & Mohajan, 2018). It finds the causal effect relationship between variables and is used in forecasting. It will be presented by linear regression equations and their corresponding graphs. Apart from showing how the independent and dependent variables relate, regression analysis is also used to indicate the strength or the impact that multiple independent variables have on a dependent variable. This technique channeled the study towards evaluating the best variable mix that will create best performing predictive model. This is achieved through the development of a regression equation models as shown below.

Multiple Regression Analysis

The regression analysis results were as in Tables 4.20 4.21 and 4.22.

Model Fitness

R	R Square	Adjusted R Square	Std. Error of the Estimate		
.855a	0.731	0.716	0.28489		
	Sum of Squares	Df	Mean Square	F	Sig.
Regression	15.888	4	3.972	48.94	.000b
Residual	5.844	72	0.081		
Total	21.732	76			

Source: Survey Data (2021)

The model of fitness results showed that the adjusted r square for the relationship between management information system agility and performance of commercial banks in Nairobi county Kenya was 0.716. This indicated that the variables service quality ICT Knowledge system security and

information storage explain 71.6% of the variation in the variable performance of banks.

ANOVA results revealed that the whole model used to describe the relationship between management information system agility and performance of commercial banks in Nairobi city county Kenya was significant (p=0.000).

Regression Coefficients Results

	Unstandardized Coefficients		Standardized Coefficients FOR EQ	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.377	0.34		-1.108	0.271
Service quality	0.242	0.093	0.215	2.598	0.011
ICT Knowledge	0.267	0.108	0.224	2.466	0.016
System Security	0.346	0.096	0.328	3.602	0.001
Information Storage	0.242	0.104	0.234	2.321	0.023
a Dependent Variable: Performance of Banks					

Source: Survey Data (2021)

Regression of coefficients results showed that there is a positive and significant relationship between service quality and banks performance ($\beta=0.215$ $p=0.011$). Results further showed that there exist positive and significant relationship between ICT Knowledge and banks' performance ($\beta=0.224$ $p=0.016$). Further results revealed that there's a positive and significant relationship between System Security and banks' performance ($\beta=0.328$ $p=0.001$). Finally results revealed that there's a positive and significant relationship between information storage and banks' performance ($\beta=0.234$ $p=0.023$). Findings were in agreement with those by Jonathan (2018) who found that the service quality impacts information system and performance both directly and indirectly whereby indirect is through individual level and directly is through the organizational level. More so results concurred with those of Makau *et al.*, (2017) who established that in order to achieve performance through agile information systems IT capability has to be highly implemented and sensitized throughout an organization and its employees. The findings were also in line with Bahari and Mahmud (2018) who asserted that an organization can maintain competitiveness and long term effectiveness by constantly realizing and implementing initiatives for security and product quality improvements. The linear regression equation was confirmed as;

$$\text{Performance of Commercial Banks} = -0.377 + 0.215 \text{ Service Quality} + 0.224 \text{ ICT Literacy} + 0.328 \text{ System Security} + 0.234 \text{ Information Storage}$$

CONCLUSION

Findings indicated that commercial banks have reliable systems equipment which help in proper communication and also for access of information systems by customers. More so the relationship between service quality and performance of banks is positive and significant which implied that a positive change in service quality would result in a positive change in the performance of banks.

The study therefore concludes that an increase in the quality of information systems service will result into an increase in the performance of commercial banks. With the enhancement of service quality of the information systems of banks customers will feel satisfied and hence increase the use of the banks services. This in turn will increase the performance of commercial banks. Systems that have equipment the communication materials and personnel that are always available will attract more customers. More so system reliability is an aspect of encouraging more customers in the use of information system. This will in turn lead to increased performance of commercial banks.

According to the findings it was established that ICT literacy has a positive and significant relationship with performance of commercial banks.

This implied that a positive change in ICT literacy would result in a positive change in performance of commercial banks. This study therefore concludes that an increase in the ICT literacy of the staff will result in an increase in performance of commercial banks. In keeping up with the improvements in the use of and the performance of ICT commercial banks employees will be more effective in their work and hence attract in improvement in the bank's performance. Banks with staff who are literate of ICT will have a higher performance than banks with staff who are poor in ICT skills. More so updating the skills of staff in line with the changing tools of ICT will improve the performances further.

The study established that System Security has a positive and significant relationship with performance of commercial banks and hence a positive change in System Security will lead to a positive change in the performance of commercial banks. The study hence concludes that increased security system will result in increased performance of commercial banks. Commercial banks with secure information systems will attract satisfaction from customers which will consequently lead to an improvement in the performance of commercial banks. Making the information systems available to specific individuals who are entitled to whenever they require it providing confidentiality in terms of logging in credentials and making the systems reliable will lead to increased banks performances.

According to the study findings information storage has positive and significant relationship with performance of the commercial banks and hence a positive change in information storage will lead to a positive change in performance of commercial banks. Commercial banks with an information storage system that will enable easy retrieval and access of databases will have a high performance. Proper collection processing and storage of database for commercial banks will make the data easily accessed and retrieved by system users whenever needed hence an increased banks performance.

RECOMMENDATIONS

For commercial banks to improve on their systems security they are recommended to formulate policies and strategies that will enable confidential and reliable use of information system for the banks. They should formulate policies that will ensure that the information systems security does not give access of information systems data to unintended persons. The security systems should also be reliable hence does not allow for any alteration of the data.

Commercial banks are recommended to have techniques for data collection data processing and storage that will ensure proper storage and retrieval of data when required. This can be achieved by adopting

the recent data collection processing and storage tools which will make the banks to be up to date with the recent technology. The data collection processing and storage techniques should also be free of errors which will make the data to be reliable.

REFERENCES

- Akter, S., Ray, P., & D'Ambra, J. (2011). Viewing systems as services: The role of service quality. *International Conference on Information Systems 2011, ICIS 2011*, 3, 2501–2518.
- AL-Adwan, M. M. (2016). Management Information Systems & Their Impact on Improving the Quality of Service at the Commercial Bank Customers. *International Journal of Business and Social Science*.
- Al Maryani, M., Sadik, H.H. (2012). Strategic Management Accounting Techniques in Romanian Companies: Some Survey Evidence, *Procedia Economics and Finance*, 3 387-396
- Bahari, A., & Mahmud, R. (2018). Impact of System Quality, Information Quality and Service Quality on Performance. 34th Annual Computer Security Applications Conference, 3(2), 1–6.
- Barney (1991).pdf. (n.d.).
- Benaben, F., & Vernadat, F. B. (2017). Information System agility to support collaborative organisations. *Enterprise Information Systems*, 11(4), 470–473. <https://doi.org/10.1080/17517575.2016.1269367>
- Castillo, R. C. (2016). Research Methodology (Chapter III). (June). <https://doi.org/10.13140/RG.2.1.4898.2646>
- Chowdhury, S., & Salahuddin, K. M. (2017). A Literature Review of Factors Influencing Implementation of Management Information Systems in Organizations. *International Journal of Business and Management*, 12(8), 72. <https://doi.org/10.5539/ijbm.v12n8p72>
- Clevon, A., & Winter, R. (2009). Regulatory Compliance in Information Systems Research – Literature Analysis and Research Agenda. 174–175.
- Cohen, W., & Levinthal, D. (1990). Technology, Organizations, and Innovation. *Administrative Science Quarterly*, 128-152.
- Dwivedi, Y. K., Wade, M. R., & Schneberger, S. L. (2012). *Informations Systems Theory: Vol.2*. Springer, 28(September), 461. <https://doi.org/10.1007/978-1-4419-6108-2>
- El-Telbany, O., & Elragal, A. (2014a). Business-information Systems Strategies: A Focus on Misalignment. *Procedia Technology*, 16, 250–262. <https://doi.org/10.1016/j.protcy.2014.10.090>
- Georgescu, M., Jeflea, V. (2015). The Particularity of the Banking Information System, *Procedia Economics and Finance* 20: 268-276
- Gikang, S. G. (2016). Role of Management Information Systems on Strategic Decision Making among Tea Factories in Kenya. *Jomo Kenyatta University of Agriculture and Technology*, 7(2), 415–432.
- Goodhue, D., & Thompson, R. (1995). Task-Technology Fit and Individual Performance. *MIS Quarterly*.
- Gorla, N., Somers, T. M., & Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. *Journal of Strategic Information Systems*, 19(3), 207–228. <https://doi.org/10.1016/j.jsis.2010.05.001>
- Hobbs, G. A. (2010). Enabling Agility in Existing Information Systems: A Capability Structure for the IT function. PhD Thesis, (July), 329.
- Joan, A. (2016). The Effect of Regulations on Financial Performance of Commercial Banks in Kenya by a research project presented in partial fulfillment of the requirements for the award of the degree of master of business administration, School of Business, University of Nairobi.
- Johansson, B., Sudzina, F., & Pucihar, A. (2014). Alignment of Business and Information Strategies and Its Impact on Business Performance. *Journal of Business Economics and Management*, 15(5), 886–898. <https://doi.org/10.3846/16111699.2012.749806>
- Jonathan, G. M. (2018). Influence of organizational structure on business-it alignment: What We Do (Not) know. *CEUR Workshop Proceedings*, 2218, 375–386.
- Kamau, J. G., Senaji, T. A., & Nzioki, S. C. (2019). Effect of information technology capability on competitive advantage of the Kenyan banking sector. *International Journal of Technology and Systems*, 4(1), 1–20.
- Kamau, J. M. (2015). Information Communication Technology and Performance of Commercial Banks in Kenya. University of Nairobi Repository.
- Karim, A. J. (2011). The Significance of Management Information Systems for Enhancing Strategic and Tactical Planning. *JISTEM Journal of Information Systems and Technology Management*, 8(2), 459–470. <https://doi.org/10.4301/S1807-17752011000200011>
- Kariuki, M., & Nzuki, D. (2019). Management information systems capabilities and organizational performance of supermarkets in Nairobi City County, Kenya. 7(6), 77–88.
- Kenya, C. B. (2020). Central Bank of Kenya. Retrieved from Central Bank of Kenya.
- Khoshnood, N. T., & Nematizadeh, S. (2017). Strategic Agility and Its Impact on the Competitive Capabilities in Iranian Private Banks. 12(2), 220–229. <https://doi.org/10.5539/ijbm.v12n2p220>
- Kipyegon, B. A., Obura, D. J., & Oginda, D. M. (2018). Analysis of Information Systems Capabilities and Performance of Firms in Telecommunications Industry, Kenya. *International*

- Journal of Scientific Research and Management, 6(04), 319–327. <https://doi.org/10.18535/ijstrm/v6i4.em11>
- Koech, D. C., Gichunge, E. M., & Thuo, A. (2016). Factors Influencing Strategic Information Systems Implementation in Government Parastatals: A Case of Kenya Forest Service, Mau Forest Conservancy. *European Scientific Journal, ESJ*, 12(15), 263. <https://doi.org/10.19044/esj.2016.v12n15p263>
 - Kuo, K. M., Liu, C. F., Talley, P. C., & Pan, S. Y. (2018). Strategic improvement for quality and satisfaction of hospital information systems. *Journal of Healthcare Engineering*, 2018. <https://doi.org/10.1155/2018/3689618>
 - Lilly, J., & Juma, D. (2014). Influence of Strategic Innovation on Performance of Commercial Banks in Kenya: The Case of Kenya Commercial Bank in Nairobi County. *European Journal of Business Management*, 2(1), 1–19.
 - Madhani, P. (2010). Resource Based View (RBV) of Competitive Advantage: An Overview. ... Based View: Concepts and Practices, Pankaj ..., (March 2010). Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1578704
 - Makau, S., Lagat, C., & Bonuke, R. (2017). Information Quality, Information Systems Support Capability and Performance of Hotels in Nairobi, Kenya. *European Scientific Journal, ESJ*, 13(23), 275. <https://doi.org/10.19044/esj.2017.v13n23p275>
 - Mathiassen, L., & Pries-Heje, J. (2006). Business agility and diffusion of information technology. *European Journal of Information Systems*, 15(2), 116–119. <https://doi.org/10.1057/palgrave.ejis.3000610>
 - Mbogo, E. (2017). The influence of Information Technology Innovation on the Operational Performance of Commercial Banks in Kenya. United States International University- Africa.
 - Mohajan, H., & Mohajan, H. K. (2018). M P RA Munich Personal RePEc Archive Qualitative Research Methodology in Social Sciences and Related Subjects Qualitative Research Methodology in Social Sciences and Related Subjects. *UTC Journal of Economic Development, Environment and People*, 85654(85654), 1. Retrieved from
 - Mohammed, A.N., Wang, H. (2015). Using Management Information Systems to Boost Corporate Performance, *International Journal of Management Science and Business Administration*, Vol 1 (11) pp 51-61
 - Mwangi, B. M. (2012). The Impact of Information Communication Technology Development on Financial Performance of commercial banks in Kenya. University of Nairobi.
 - Ngelechei, P., Olweny, T. (2016). Management Information System and Achievement of Sustainable Competitive Advantage in Kenyan Banking Sector: A Case of Kenya Commercial Bank, *Strategic Journal of Business Change and Management*, Vol 3 (3) pp 60-72
 - Ongore, V. O. (2013). Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*, 237-252.
 - Petter, S., DeLone, W., & McLean, E. (2008). Measuring information systems success: Models, dimensions, measures, and interrelationships. *European Journal of Information Systems*, 17(3), 236–263. <https://doi.org/10.1057/ejis.2008.15>
 - Pilarczyk, K. (2016). Importance of Management Information System in Banking Sector. *Annales Universitatis Mariae Curie-Skłodowska, Sectio H, Oeconomia*, 50(2), 69. <https://doi.org/10.17951/h.2016.50.2.69>
 - Rdiouat, Y., Bahsani, S., Lakhdi, M., & Semma, A. (2015). Measuring and Improving Information Systems Agility Through the Balanced Scorecard Approach. *International Journal of Computer Science Issues*, 12(5), 58–71.
 - Samuel, W. (2016). The Influence of Strategic Information Systems on the Performance of Micro Finance Institutions in Nairobi County, Kenya.
 - Seo, D. B., Miranda, J., & La Paz, A. (2010). Role of information systems in organizational agility: The case of eClasSkeduler at Universidad de Chile. 16th Americas Conference on Information Systems 2010, AMCIS 2010, 6(February), 4533–4544.
 - Shahbazi, A., Heydarabadi, S., & Eradatifam, M. (2018). The impact of two information technology resources on organizational agility and competitive advantage by the moderating role of innovation capacity. (November), 0–12.
 - Steele, J. L., Murnane, R. J., Willett, J. B., Argwings, K., Goedhuys, M., Sleuwaegen, L., ... Sleuwaegen, L. (2010). Influence of Organizational Agility on Operational. *Small Business Economics*, 29(October), 31–51. <https://doi.org/10.1007/s11187-009-9193-7>
 - Tanane, F., Laval, J., Cheutet, V., Tanane, F., Laval, J., Cheutet, V., & Assessment, T. (2018). Towards Assessment of information system agility to cite this version: HAL Id: hal-01518662.
 - Van Oosterhout, M. (2010). Business agility and information technology in service organizations: Reactievermogen en informatietechnologie in serviceorganisaties. In Erasmus Research Institute of Management (ERIM). Retrieved from <http://repub.eur.nl/res/pub/19805/>
 - Wachinga, H. (2010). Challenges of information technology alignment to business strategy: a case of commercial banks in Kenya. (November).
 - Wageeh, N. A. (2016). Organizational Agility: The Key to Organizational Success. *International Journal of Business and Management*, 11(5), 296. <https://doi.org/10.5539/ijbm.v11n5p296>

- Walliman, N. (2014). Research Methods: The Basics. In *Research Methods: The Basics*. <https://doi.org/10.4324/9780203836071>
- Wangasa, C. N. (2018). Effect of strategic agility on the performance of commercial banks in Kenya
Carolyn N. Wangasa a research project submitted in partial fulfilment of the requirements for the award of Master of Business Administration, School of Business, University.
- Wasilwa, N., & Omwenga, J. (2016). Effects of ICT Strategies on Performance of Commercial Banks in Kenya: A Case of Equity Bank. *International Journal of Scientific and Research Publications*, 382-398.
- Zelenkov, Y. (2018). Agility of enterprise information systems: A conceptual model, design principles and quantitative measurement. *Business Informatics*, 2018(2), 30–44. <https://doi.org/10.17323/1998-0663.2018.2.30.44>

Cite This Article: Trezah Awuor Odindo (2021). An Investigation of Management Information System Agility and Performance of Commercial Banks in Nairobi Metropolitan. *EAS J Humanit Cult Stud*, 3(6), 266-273.