Effect of E-Procurement Practice on Performance of Manufacturing Industry

[1]Fatimah Anthony Yaro, [2]Shomoye Maryam Adeyinka (Ms) & [3]Hammed Sarafa Olalekan

[1&2]SIWES Unit, Federal College of Education (Tech), Gombe
faithyaro@yahoo.com, 07037711183
Caleb Business School, Magodo, Lagos State
amshomoye@gmail.com, 08029648850
Registry Unit, Lens Polytechnic Offa, Kwara State.
hammedsarafaolalekan@gmail.com, 08069031606

Abstract
E-procurement is gaining popularity in recent time as it reduces the problems of lack of accountability and transparency in procurement activities. However, the procurement operations within manufacturing companies have been marred with lack of proper direction, poor coordination, slow with a lot of bureaucracy, lack of competition and transparency, wastages, delay in delivery, poor quality, high levels of corruption and instances of glaring incompetence in managing the procurement function. This study therefore examines the impact of e-procurement practice on performance of manufacturing industry in Nigeria. The study adopted cross-sectional survey approach and employs census method on all the 74 respondents. In addition, questionnaire instrument was used for the data collection. PLS-SEM path modeling was employed to analyze the data collected. The result revealed that e-procurement practice has impact on performance of manufacturing industry in Nigeria. The study concluded that, e-procurement (E-sourcing. E-tendering, E-ordering and E-payment) have significant impact on performance of manufacturing industry in Nigeria. Recommendations were proffered in line with findings of the study.

Keywords: *E-procurement, performance, manufacturing industry*

1.0 Introduction

Electronic procurement (E-procurement) is considered one of the major reforms in purchasing. The rationale behind adoption of e-procurement in many organizations is to enhance efficiency, effectiveness, transparency and accountability in purchasing activities. Uddin (2015) stressed that, e-procurement has gained popularity especially with the advent of technology. Thus, the role of E-procurement in achieving organizational aims and objectives cannot be over emphasized. Traditionally, most procurement operations were done manually, this was deemed to lack transparency, accountability and fair competition (Matunga, Nyanamba & Okibo, 2013).

Companies have adopted E-procurement systems to purchase indirect materials for operations, sales, maintenance and administration, including things like office supplies, computer equipment, cleaning solvents, and office furniture. E-procurement systems facilitate direct links with suppliers of goods, thereby reducing the paperwork and over- head associated with the buying process and shortening the purchasing cycle. With the advent of e-procurement, a lot of time hitherto spent on paper invoicing in terms of writing, filing and postal communication have drastically reduced (Muhammad, 2013). Therefore, e-procurement result in reduction in paperwork and this leads to lower administration costs.

According to Sijaona (2010), e-procurement is gaining popularity in recent time as it reduces the problems of lack of accountability and transparency in procurement activities. E-procurement platforms have scored highly towards influencing efficiency in procurement services (Munyao & Moronge, 2017). A number of authors have suggested e-procurement as having capacity to provide transparency, efficiency and control thereby increasing procurement performance (Chesang, 2013). It has contributes to improved order tracking and tracing, for it is much easier to trace the orders and make necessary corrections in case an error is observed in the previous order (Cusumano & Selby, 2014). E-procurement is capable of integrating multiple supplier catalogs into a single buyer-managed view of the catalog. This system will enable

purchasing personnel to review product purchase profiles and in turn facilitate supplier negotiations (Gunasekaran, McGaughey, Ngai & Rai, 2009). Electronic procurement is one of the technological solutions to facilitate corporate buying. The electronic acquisition of goods and services including all processes from the identification of a need to purchase of products, to the payment for these purchases, including post-contract/payment activities such as contract management, supplier management and development (Shukla, Khan & Shan, 2016). Researchers and practitioners opined that, e-procurement is an antecedent of so many variables, prominent among includes; e-sourcing, e-tendering, e-ordering, e-payments (Munyao & Moronge, 2016). It is claimed that a company engaging in E- procurement can cut cost by 8 to 15% (Ghazaly, 2005). E-procurement is driven by automated procurement process, integrating the functional processes and purchase management. Manufacturing firm utilize e-procurement for acquiring materials to attain several advantages, such as, productivity efficiencies among their employees and to reduce expenditures by receiving fast services and less expensive products. Furthermore, it likewise enhances transparency and prevents corruption in procurement processes among the employees in the organizations. Thus, the objective of this paper is to examine the impact of e-procurement practice on performance of manufacturing industry in Nigeria.

Due to the challenges of manual procurement, poor quality goods are procured, tender awards made to unsuccessful bidders, value for money not obtained and huge amounts of resources which could be used to improve the economy and consequently the lives goes to waste. This shows that there are indeed loop-holes in the procurement of manufacturing firms using manual procurement which needs to be addressed appropriately. Consequently, a number of manufacturing industries have embraced e-procurement in their operations in an effort to increase performance (Orina, 2013). However, there are few empirical studies on the contribution of e-procurement on performance of manufacturing industry in Nigeria (Afolabi, Ibem, Aduwo, Olayemi & Oluwunmi, 2019). Most of the existing literatures are conducted in the developed world in which their findings cannot be beneficial in developing countries due to socio-cultural differences between developed and developing nations. Li and Liu (2014) suggested that differences in economies are a significant gap in the literature. Also, according to Aminu (2015) conducting a similar study in turbulence environments as the case was in Nigeria is another significant contribution to the body of knowledge. Thus, examine the impact of e-procurement practice on performance of manufacturing companies in Nigeria demand an investigation. Precisely, the present study has been designed to fill the aforementioned gaps by conducting an empirical study on the impact of e-procurement practice on performance of manufacturing companies in Nigeria. To the best of our knowledge, no study have been found in the literature which had been conducted with e-procurement and performance of manufacturing industry using these four proxies of e-procurement (e-sourcing, e-tendering, e-ordering and e-payments) as an integrative approach in relation to manufacturing firm in Abuja as a domain. Thus, the literature stream also remains fragmented. In view of the above mentioned, this study seeks to examine the impact of e-procurement practice on performance of manufacturing industry in Nigeria. Also, this dimension in the context of manufacturing industry has notably been neglected and there is need to conduct this study. The specific objectives are to:

i. Investigate the impact of e-sourcing practice on performance of manufacturing industry.
ii. Examine the impact of e-tendering practice on performance of manufacturing industry.
iii. Determine the impact of e-ordering practice on performance of manufacturing industry.
iv. Assess the impact of e-payments practice on performance of manufacturing industry.

The hypotheses of the study are stated below in null forms:

Ho_1: E-sourcing practice has no significant impact on the performance of manufacturing industry.

Ho_2: E-tendering practice has no significant impact on the performance of manufacturing industry.

Ho_3: E-ordering practice has no significant impact on the performance of manufacturing industry.

Ho_4: E-payment practice has no significant impact on the performance of manufacturing industry.

2.0 Literature Review

2.1 Concept of Performance

Performance is one of the most important factors and it has been studied for a long decade both at industry and national levels. Long, Kowang, Ping and Muthuveloo (2014) described job performance as the level of productivity of an individual employee, relative to his or her peers, on several job-related behaviors and outcomes. Tang and Chang (2010) defined performance as behaviors engaged in by employees at work that are in keeping with the organizational goals. According to Khuong and Yen (2016), performance is seen as an activity that individual is able to complete the assigned task successfully, the total output that employees recognized contribute to the organization is another definition of job performance.

2.2 Concept of E-Procurement

Procurement simply means a company's requisitioning and in-bound receiving processes of materials. According to Croom and Brandon (2004), E-Procurement is an application of internet-based integrated information and communication technologies to hold out individual or all stages of the procurement method together with negotiation, search, sourcing, receipt, ordering, and post-purchase review. Gunasekaran, McGaughey, Ngai and Rai (2009) established that, E-Procurement provides an opportunity to suppliers to enlarge the selection of merchandise, and makes information easily procurable. They stressed further that, traditional procurement process is replaced (e-procurement process) follows e-sourcing, e-tendering, e-ordering and e-payment.

2.3 Review of Empirical Studies

Muriuki, Guyo, Odhiambo and Kinoti (2019) investigated the effect of electronic procurement technical support staff on procurement performance in the energy sector state corporations in Kenya. The study adopted an exploratory approach using descriptive survey design and correlational design. The sample size consisted of 211 respondents who are drawn from the target population of 360 staff and 25 support staff from 9 Energy Sector state corporations in Kenya. Data were collected through questionnaire and analyzed using multiple regressions with the help of Statistical Package for the Social Sciences (SPSS). The study findings indicated that electronic procurement technical support staff contributes positively to procurement performance. Based on the findings, it can be concluded that Electronic procurement technical support staff was found to have the strongest effect on procurement performance. The electronic procurement technical support staffs have the required technical knowledge to deliver products and services that support procurement processes. They were also able to quickly respond to ICT related technicalities.

Tiwari, Chan, Ahmad and Zaman (2019) determined the extent of e-procurement implementation in Malaysia organization as well as identify the relationship between the e-procurement system and supply chain performance among organizations in Malaysia. The study used descriptive research design. The population of the study comprised of employees from selected manufacturing firms in Malaysia. Questionnaire was used to collect data. Data collected was analyzed quantitatively through the SPSS. The findings indicated that the firms had implemented E-procurement to a moderate extent. The results also identified that the e-procurement system was positively associated with the supply chain performance of the organization. The study provided insights into manufacturing firms regarding the importance of E-procurement technologies.

Bartai and Kimutai (2018) examined the role of e-requisition on procurement performance of North Rift County Assemblies in Kenya. The research used descriptive survey design. The study targeted a population was 468 respondents. The researcher used stratified method in sampling the data. The SPSS version 24 was used in the analysis. The study analyzed data using both descriptive statistics and inferential statistics (multiple regressions). The result revealed that, there was a significant role of e-requisition on procurement performance of North Rift County Assemblies in Kenya. The study recommended that county assemblies

should improve rate of adoption of e-procurement in order to improve their procurement performance.

Candra and Gunawan (2016) examined the impact of e-procurement practice in Indonesia Government: a preliminary study (the case of electronic procurement service at Bekasi District). The population of the study is 60 users of e-procurement Bekasi District. Structural Equation Modelling (SEM) was used as methods of data analysis using Partial Least Square (PLS) to examine the relationship between variables. From data analysis, the result indicated that, the implementation of e-procurement and e-marketplace participation giving impact to procurement performance.

Addison (2016) identified the status of e-procurement implementation and adoption in Ghanian public sector. The study adopted a cross-sectional survey design, using purposive sampling for selecting respondents and administering questionnaire. A total of forty-eight (48) procurement practitioners were received for the study. The collected data were examined using frequencies, percentages, standard deviation and mean score ranking which was aided by Statistical Package for Social Sciences (SPSS). Results indicated that the Ghanaian public sector was well informed of the e-procurement process, though it was poorly patronized. It was also found that various challenges such as lack of human resource capacity and poor supplier relationship are more capable of hindering the e-Procurement process. Also, factors such as evolutionary approach to implementation and availability of IT infrastructure were found to positively influence the adoption and implementation of the process. The study recommended that public sector institutions in Ghana need to incorporate the e-Procurement activities into their systems of operations so as to help address the challenges associated with the traditional method of procurement.

2.4 Theoretical Framework

Resource Based View Theory (RBV) developed by Wernerfelt (1984) is the underpinning theory of this study. The RBV theory is with the assumption that, firm's resources is the essential determinants of competitive advantage and performance of any organization. Bartai and Kimutai (2018) posits that, resources of the organization go beyond finances and materials to encompass methods and processes. RBV theory identifies firm's internal operational processes as critical components of the organizations resources such as integrating electronic platforms in executing firm's such as procurement of materials. Peteraf and Barney (2003) established that, it will be suitable for business to adopt an electronic means of purchasing process in other to have edge over competitors. Therefore, e-procurement practice in an organization is a means of having competitive advantage on the efficiency of the process.

3. Methodology

This study utilized cross-sectional research design as data was collected at a point in time. The population of the study consisted of 74 staff that comprises top management, middle level/ supervisors and lower level/line employees in procurement department of the Royal Mills and Foods Limited Abuja, Nigeria. Due to the small population, the study adopted a census study. Questionnaire was administered to all the 74 procurement staff of the organization through their Human Resources Manager and retrieved through the same source after two weeks to allow them to fill it appropriately while 68 respondents representing 90.7% response rate duly filled the questionnaire and returned it. E-procurement was measured using four items (e-sourcing, e-tendering, e-ordering, e-payments). The questionnaire was adapted from studies of Muriuki et al., (2019) and Jani (2018). The questionnaire will be on a five-point Likert scale, ranging from strongly disagree (SD) to strongly agree (SA). The use of Likert scale is necessary because it is an interval scale that enables a researcher to analyzed questionnaire responses using parametric tools. Structural Equation Model (SEM) was used through SmartPLS2 software as a tool of analysis.

4.0 Result and Discussion

4.1 Response Rate

Table 1: *Summary of Response Rate*

Detail	Copies	Rate (%)
Questionnaire distributed	74	100
Questionnaire returned	68	90.7
Questionnaire not returned	6	9.3

Source: Field Survey, 2019

Table 1 shows the summary of the number of questionnaires distributed and the number of questionnaires returned. A total number of 74 questionnaires were distributed to respondents, while 68 respondents representing 90.7% response rate were returned which is suitable for further analysis (Tabachnick & Fidell, 2013).

4.2 Assessing Model Fit

Structural equation model was used to examine the reliability and validity of the instruments. The figure 1 presents the examined measurement of the model of the study.

Figure 1: Measurement Model

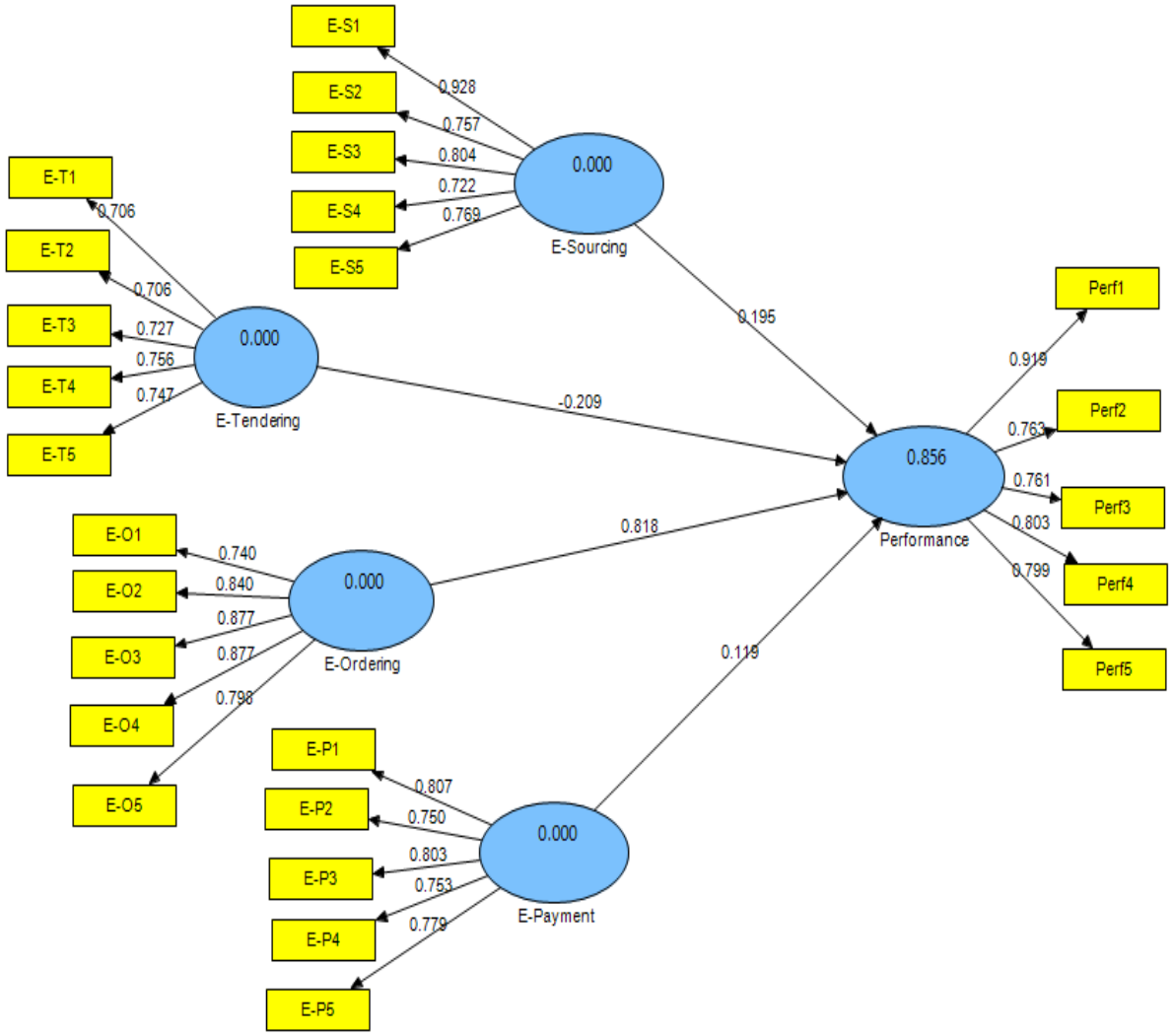

Table 2: *Overview of the Model*

	AVE	Composite Reliability	R Square	Cronbachs Alpha
E-Sourcing	0.638952	0.897737		0.856027
E-Tendering	0.531364	0.849956		0.780683
E-Ordering	0.685636	0.915694		0.885253
E-Payment	0.606291	0.884956		0.837480
Performance	0.657639	0.905265	0.855805	0.868772

From figure 1, all items measuring E-Sourcing, E-Tendering, E-Ordering, E-Payment and performance loaded well as they loaded above 0.7. As a result, all items were retained. On the other hand, all construct met the minimum benchmark for both composite reliability and AVE which is 0.7 and 0.5 respectively from Table 2. According to Hair, Black, Babin and Anderson (2014), loadings should not be below 0.7 while Average Variance Extracted (AVE) should not below 0.5.

4.3 Test of Hypotheses

Table 3 presents the path coefficient which indicates the Beta Value, Standard Error, Adjusted R Square and Decision Rule of hypotheses tested in the study.

Table 3: *Path Coefficient*

Hypotheses ($R^2$0.856)	B Value	Standard Error	T Statistics	P Value	Decision
E-Sourcing -> Performance	0.554942	0.208679	2.659303	0.000***	Rejected
E-Ordering -> Performance	0.259389	0.116409	2.228264	0.000***	Rejected
E-Tendering -> Performance	0.229251	0.114994	1.993591	0.013**	Rejected
E-Payment -> Performance	0.734175	0.144748	5.072099	0.003**	Rejected

P value*** < 0.01, P value**< 0.05

The path coefficient in Table 3 shows that E-Sourcing has a positive and significant impact on performance of manufacturing industry at P value of <.01%. This means a unit change in E-Sourcing will lead to 55% change in his performance of manufacturing industry. As a result, the null hypothesis which stated that E-sourcing practice has no significant impact on the performance of manufacturing industry in Nigeria is hereby rejected.

E-Ordering also has a significant effect on performance of manufacturing industry with P value of .000 < .01%. This implies that, a unit change in E-Ordering will lead to 25.9% increase in performance of manufacturing industry. Hence, Ho2which stated that E-Ordering has no significant impact on the performance of manufacturing industry in Nigeria is also rejected.

The results also revealed that E-Tendering has significant effect on performance of manufacturing industry with P value < .05%. This implies that a unit increase in E-Tendering will lead to a 22.9% increase in performance of manufacturing industry. Hence, Ho3 which stated that has E-Tendering no significant impact on the performance of manufacturing industry in Nigeria is rejected.

Results finally shows that E-Payment has significant on performance of manufacturing industry with P value < .05 which means that a unit change in E-Payment will lead to 73.4% increase in performance of manufacturing industry. Thus, the null hypothesis which stated

that E-Payment has no significant impact on performance of manufacturing industry is hereby rejected.

Adjusted R square is 0.86, meaning that 86% variance in performance of manufacturing company is accounted for by E-Sourcing, E-Ordering, E-Tendering and E-Payment. The remaining 14.4% accounted for the remaining variables that are not captured in this study.

4.4 Discussion of Major Findings

The study examined the impact of e-procurement practice on performance of manufacturing industry in Nigeria. The study particularly revealed the empirical evidence addressing the notion that the major problem of manufacturing industry in Nigeria is the procurement related issue which has adverse effect on their performance. Thus, using the findings of this study, manufacturing industry would be able to identify the ideal procurement methods that are prerequisite for successful running of manufacturing industry in Nigeria. More importantly, the empirical evidences of impact of e-procurement practice on performance of manufacturing industry in Nigeria revealed that manufacturing industry need effective and efficient e-procurement for them to perform excellently. However, constructs of e-procurement adopted in this study proof to account for a significant proportion for performance of manufacturing industry in Nigeria. Consequently, the current study revalidated and reaffirmed the findings of Muriuki et al., (2019) and Candra and Gunawan (2016) that established the significant relationship between e-procurement and performance of manufacturing industries.

5. Conclusion and Recommendations

The study examined the impact of e-procurement practice on performance of manufacturing industry in Nigeria. Manufacturing industry in Nigeria are faced with numerous procurement problem and to overcome this and to be more productive in their production activities, this study therefore concluded that, e-sourcing, e-ordering, e-tendering as well as e-payment affect the performance of manufacturing industry in Nigeria.

In line with the research findings, various recommendations were proffered:

34. Manufacturing industry should use online method in sourcing for their needed materials as it will enable them to get the right offer.
35. Manufacturing industry should carrying out the entire procurement cycle on internet, by transmitting requests electronically and execute procurement operations for them to receiving speedy and reliable feedback supplies.
36. It is expected from manufacturing industry to use formal electronic request of goods and services for them to integrating the functional processes and purchase management.
37. Payment should be made over the internet in other to have much more transparent and efficient financial transaction that will ensure security and audit trail.

References

Addison, D. (2016). *Implementation and Adoption of E-Procurement in Ghana Public Sector: The way forward*. Dissertation Submitted to the Department of Building Technology, College of Art and Built Environment, in partial fulfillment of the requirements for the degree of Master of Science, Kwame Nkrumah University of Science and Technology, Kumasi, Ghana.

Afolabi, A., Ibem, E., Aduwo, E., Olayemi, P. T. & Oluwunmi, O. (2019). Critical success factors (CSFs) adoption in the Nigerian construction Industry. *Buildings,* 9(47), 1-18.

Aminu, M. I. (2015). *Relationships between Organizational Memory, Intellectual Capital, Entrepreneurial Orientation, Dynamic Capabilities and Firm Performance in Nigeria*. Doctoral Thesis, Universiti Utara, Malaysia.

Bartai, D. K. & Kimutai, G. (2018). Role of E-Requisition on procurement performance of North Rift County assemblies in Kenya.*International Academic Journal of Procurement and Supply Chain Management,* 3(1), 44-57.

Croom, S. & Brandon-Jones, A. (2007). Impact of e-procurement: Experiences from implementation in the UK public

sector, *Journal of Purchasing & Supply Management*, 13(1), 294–303.

Candra, S. & Gunawan, F. E. (2016). The impact of e-Procurement practice in Indonesia government: A Preliminary Study (The case of Electronic Procurement Service at Bekasi District). *Journal of Physics: Conference Series 801,* 1-7.

Chesang, S. (2013). *Procurement challenges in public Universities in Kenya.* Doctoral Dissertation, University of Nairobi.

Daniel, B. (2016). *Assessment on practice and challenges of procurement case of Ovid construction PLC*. MBA Thesis, St.Mary's University, Addis Ababa, Ethiopia

Ghazaly, S. E. (2005). Benefits and barriers on B2B E-marketplaces [online]. *E-Market Services*

Gunasekaran, A., McGaughey, R. E., Ngai, E. W., & Rai, B. K. (2009). E-Procurement adoption in the Southcoast SMEs. *International Journal of Production Economics*, 122(1), 161-175.

Hair, J., Black, W., Babin, B., & Anderson, R. (2014). Multivariate Data Analysis. 7th ed. Pearson New International Edition: UK

Jani, S. (2018).E-procurement and SME involvementin public procurement of innovations: an exploratory study. *University of Eastern Finland's eRepository***.** https://erepo.uef.fi/handle/123456789/6978

Khuong, M. N. & Yen, V. H. (2016). Investigate the Effects of Job Stress on Employee Job Performance — A Case Study at Dong Xuyen Industrial Zone, Vietnam. *International Journal of Trade, Economics and Finance*, 7(2), 31-37.

Li, D. & Liu, J. (2014). Dynamic capabilities, environmental dynamism and competitive advantage: Evidence from China. *Journal of Business Research*, 67(1), 2793–2799. doi:10.1016/j.jbusres.2012.08.007

Long, C. S., Kowang, T. O., Ping, T. A. & Muthuveloo, R. (2014). Investigation on the Impact of Job Stressors on Nurses in Malaysia. *Asian Social Science*, 10(4), 66–77.

Matunga, D. A., Nyanamba, S. O. & Okibo, W. (2013). The effect of e-procurement practices on effective procurement in public hospitals: A case of Kisii level 5 hospital. *American International Journal of Contemporary Research*, 3(8), 103-111.

Mohamed, K. S. (2013). *Towards E-Procurement implementation in Tanzania: construction industry preparedness.* Department of Building Economics School of Construction Economics and Management Ardhi University Dar-es-salamm

Munyao, K. V. & Moronge, M. (2017). Effect of public procurement framework on disposal of obsolete stock in the public sector in Kenya: A Case of the Judiciary of Kenya. *The Strategic Journal of Business and Change Management*, *2*(37), 660 – 675.

Munyao, J. M. & Moronge, M. (2016). Influence of e-procurement practices on the performance of procurement in public Universities in Kenya. *The strategic Journal of Business and Change Management, 5*(2), 1623 – 1648.

Muriuki, J. I., Guyo, W., Odhiambo, R. & Kinoti, J. (2019). Effect of electronic procurement technical support staff on procurement performance in energy sector state corporations in Kenya. *International Journal of Supply Chain Management*, *4*(1), 20 – 38.

Peteraf, M. & Barney, J. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, *24*(4), 309-323.

Shukla, A., Khan, M. A. & Shah, M. (2016). Literature review of adoption of e procurement practices by construction industry. *AIMA Journal of Management & Research, 10*(2), 974 – 497.

Sijaona K, (2010). *E-procurement in Tanzania*, 3rd East African Procurement Forum, White Sands Hotel.

Suleiman, M. (2015). Adoption of E-procurement and Value Addition: Tanzanian context.

Tabanchnick, B. G., Fidell, L. S. (2014). Using multivariate statistic (6th ed). Boston: Pearson.

Tang, Y. & Chang, C. (2010). Impact of Role ambiguity and Role conflict on Employee Creativity. *African Journal of Business Management*, *4*(6), 869–881.

Tiwari, S. T. S., Chan, S. W., Ahmad, M. F. & Zaman, I. (2019). Application and Implementation of E-Procurement Technologies in Malaysian Manufacturing Firm. *International Journal of Supply Chain Management, 8*(2), 923.

Uddin, M. (2015). *Prospects and challenges of e-procurement in government purchases: a study on e-procurement in LGED, Narayanganj District* (Doctoral dissertation, BRAC University).

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic management journal*, *5*(2), 171-180.