



TOWARDS SUSTAINABLE ECONOMY: THE ROLE OF E-PROCUREMENT IMPLEMENTATION IN THE DELIVERY OF PUBLIC PROJECTS IN NIGERIA

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ABSTRACT

Contracting firms spend significant resources in an attempt to participate in public project contracts in Nigeria. As such, their working capital and liquidity ratio have always been condensed. The aim of the study was to explore factors influencing the successful implementation of E-procurement for sustainable economy. To attain this goal, the quantitative approach design method was adopted. Forty-five (45) questionnaires were administered to the respondents using random sampling techniques in Lagos, South West Nigeria. Data were collected from the respondent and analyzed using a descriptive statistic in the form of mean item score (MIS), resulting in the various statistical outputs that were used to justify the research questions. The result from the analyses has shown factors such as lack of management support, I.T infrastructure, expertise and business benefit were among the first three that affect e-procurement implementation in the study area. The study concludes that integrating technology approaches into the procurement policies relating to public procurement will enhance sustainable procurement and economy through legislative and government support in the area. The study therefore recommends that Construction industry professionals should be computer specialist on how the concern security of submitted tender bid and usually virus attack can be addressed. Lack of upper management support the major hindering should be considered in other to make proper implementation of e-procurement, most importantly, incorporation of educational programs for professionals (workshops, seminars, and conferences).

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1.0 Introduction

The construction industry is one of the sectors in any nation that contributed towards the economy. The sector as any kind of other sectors is faced with complex challenges despite to its contribution, which call for the most efficient use of available resources. Consequently, the organizations involved in the procurement of building services, products and materials are constantly seeking ways of improving efficiency and effectiveness in their procurement activities so as to have a sustainable economy. Among the different strategies considered to offer fresh opportunities for those organizations in the construction sector to improve communication and integration of task from different project team members and encourage teamwork in their procurement endeavours is the adoption of information and communication technology (ICT), such as the Internet procurement system (Ajibike, 2019; Marana, et al. 2019).

Nigeria for instance can be exemplified as a country with low socio-economic performance over a decades and unimpressive (Fayomi, 2013, Williams-egbe, 2011). This was largely attributed to high level of corruption or mismanagement of public resources closely linked up with the public sector procurement systems (Fayomi,

2013). The current economic downturn in Nigeria due to fuel sub-sidy removal and other ant-people policies has necessitated the adoption of more prudent methods of delivering construction projects. Thus, procuring entities of the government are faced with the challenge of effectively procuring projects within the meagre budget of the government (Osanyinro and Aghimien, 2017).

The traditional procurement system widely practiced in the Nigerian public sector, which involves the normal procedures as stated in the public procurement Act 2007 (PPA, 2007) section 19(a-e), 24, 29, 31 and section 33 (a)-(c) is heavily challenged with so many setbacks, including limited and ineffective public bidding, among others. These setbacks necessitated procurement reforms in Nigeria through the implementation of the e-procurement systems (Oniyangi & Ibrahim, 2024; Afolabi, 2022; Ajibike, 2019). Over past few decades, e-procurement had been widely believed to be an avenue for integrating communities and countries into a global market economy. Thus, governments around the world set very ambitious goals and also running programmes with considerable financial volume for the implementation of electronic service delivery in the public sector (Oniyangi, & Ibrahim, 2024).

A large number of Electronic Procurement (EP) forms have received much research attention. Some EP forms are quite well defined and relatively well developed; others have still not reached the maturity stage; some will mature, while others will never reach that stage. This section focuses on one of six EP forms that are quite well defined and relatively well developed, namely: E-MRO, Web-Based ERP, E-Sourcing, E-Informing, E-Reverse Auctioning and E-Tendering (Moath & Kriengsak 2017). The core elements of conventional procurement are kept in E-Procurement, according to the Royal Institute of Chartered Surveyors (RICS 2007), while improving the means of communication by finding an alternate medium via which the tender document and information are communicated. (Amarapathy *et al.* 2013) define this medium as "secure dedicated websites, specifically set up for the exchange of information and tender papers electronically via the internet." E-Procurement is a concept/process that incorporates a variety of activities that occur before a contract is awarded. It primarily entails e-notification, e-access, e-submission, e-evaluation, and, on rare occasions, e-awarding. In addition, E-Procurement has an advantage of gaining through improved work processes, efficient information sharing and reuse, better returns on investment, strategic partnerships, availability of project information management strategy, improving "build ability" and whole life costs with the supply chain, as well as public and private initiatives, is the main driver behind the e-Procurement environment. Furthermore, competitive organizational advantage promotes efficiency, speed, data correctness, and effectiveness in everyday company processes and management by utilizing the benefits of e-Procurement environments (Lou & Alshawi, 2009; Moath and Kriengsak 2017). However, findings and recommendations by various scholars on e-procurement are mostly focused on benefits and challenges during implementation by different sector (Caniato *et al.*, 2011; Caniato *et al.*, 2013; Croom and Brandon-Jones, 2007). Furthermore, are mostly concentrated in the developed countries with a sustainable economy. As such these findings or recommendation become inapplicable in country like Nigeria due difference in location, standard of living and economic strength. Another reason is that researchers ignore a key aspect of the e-procurement which is implementation and its challenges when adopting it by organizations. Even with the few studies on implementation and challenges there exist of divergence opinions among scholars which needs a very in-depth empirical research to arrive at an acceptable conclusions. Therefore, this study seeks to address this gap identified by exploring the implementation and potential benefits of e-procurement in the delivery of public projects in Nigeria. The objectives of this paper are to identify the key factors influencing the successful implementation of e-procurement in Nigeria and to examine the most significant factors that affect the successful implementation of e-procurement in public project delivery.

2. Materials and Methods

The study has basically adopted the use of field survey (quantitative design). This is because the study involves data collection with a view to identify the key factors influencing the successful implementation of e-procurement in Nigeria and to examine the benefits associated with the adoption of e-procurement in public project delivery. Indeed, field survey is the most appropriate statistical research method to be used in such kind of research as cited in Durdyev and Mbachu, (2011). The study population of interest that were considered in respect of this research work is the registered construction firms reside in Lagos, considering the city as a mega with high volume of construction activities. However, targeted individuals within the construction firms are the professionals in the contracting firms such as Architects, Quantity Surveyors, Civil Engineers, Builders, Service Engineers, as the sample frame for the study.

Randomly selection among construction firm lists was done by the researcher using non-replacement random selection. 45 respondents were sampled to represent the total population in the study area from the table of determining sample size from a given population by morgan and krejcie (1970). A questionnaire survey method was adopted to act as measuring tools for the purpose of data collection for the study.

Mean item score (MIS) analyses were carried out to show the levels of the factors that influenced the E-procurement implementation in the delivery of public project in the study area. The mean item scores were computed using the following mathematical equation:

$$MIS_j = \sum (R_{pjk} \times \%R_{jk}) \dots\dots\dots I$$

Where:

MIS_j = Mean item for major success of E-Procurements j;

R_{pjk} = Ranking point K (Ranking from 5-1);

%R_{jk} = Percentage response to ranking point K for E-Procurements j.

K= 1 to 5. (5-point likert scale i.e 1= strongly disagreed to 5= strongly agreed)

3. Result and Discussion

3.1 Factors Influencing the Successful Implementation of E-Procurement in contracting Firms

Table I shows the identified factors influencing the successful implementation of e-tendering in the contracting firms, The number one objectives of this research study are to identify the factors influencing the successful implementation of e-procurement this objective was achieved in this research study through the carryout of systematic literature review and these factors are identified and presented in the Table I.0 with the sources of the finding.

Table I: Factors Influencing the Successful Implementation of E-procurement in contracting firms

S/N	FACTOR	SOURCES
1	Security Challenge	Kajewski & Weippert, 2004, Olukayode & Adeyemi, 2011 and Amarapathy et al. 2013.
2	Low levels of computer literacy	Arcury et al., 2018, Ashaari et al., 2018, TanLi et al., 2019 and Kajendran, 2022.
3	Lack of upper management support	Sanyal & Samanta, 2004, Makarius, Mukherjee, Fox. and Fox, 2020 and Amoah & Steyn, 2022.
4	Costly and lack of IT infrastructure	Olukayode & Adeyemi, 2011, Gangwar et al. 2015, Ekezie et al. 2021 and Tawfik et al. 2022.
5	Lack of technical expertise	Dwivedi et al. (2017), Wimalasena & Gunatilake (2018) and Tegegne et al. 2023.
6	Employee Resistance	Dumbili (2013), Richardson et al. 2014 and Olayemi & Abolarinwa (2023).
7	Unrecognized business benefits	(Mangitung et al., 2015, Wimalasena, N. N., et al., 2018 and Sandanayake, Y. G., et al., 2022.
8	User acceptance	Rezgui et al., 2004, Mastor et al., 2006, and Olukayode & Adeyemi, 2011.

3.2 Evaluating Factors that significantly affect the Successful Implementation of E-procurement In Contracting Firms

This section presents and discusses the Mean Item Score (MIS) results of the identified factors affecting the successful implementation of e-procurement in the contracting firms in study area. The MIS results are presented in Table 2.0

Table 2: Factors affecting successful implementation of e-tendering in contracting firms

Factors affecting successful implementation	TR ^a	MIS ^b	OR ^c
Lack of upper management support	45	4.29	1
Costly and lack of IT infrastructure	45	3.98	2
Lack of technical expertise	45	3.98	2
Unrecognized business benefits	45	3.73	3
Low levels of computer literacy	45	3.71	4
Employee Resistance	45	3.69	5
User acceptance	45	3.62	6
Security Challenges	45	3.49	7
AVERAGE MEAN SCORE		3.81	

Notes: a) TR = Total responses; b) MIS= Mean Item Score; c) OR Overall Ranking;

Table 2 shows the factors affecting the successful implementation of e-procurement, According to the responses of the respondents the most rank factor influencing the successful implementation of E-procurement in contracting firms is lack of upper management support with highest MIS (4.28) which ranked 1st, follow by lack of IT infrastructure with MIS (3.98) which ranked 2nd, the lack of technical expertise ranked 3rd with MIS (3.98), unrecognized business benefits ranked 4th with MIS 3.73, low level of computer literacy ranked 5th with MIS (3.71), follow by employee resistance with MIS (3.69) ranking 6th while user acceptance ranked 7th with MIS (3.62), lastly security challenges with (3.49) MIS ranking 8th respectively. On the average, all the identified factors that affect successful implementation of e-procurement in the contracting firms with an average (MIS=3.81). The research carried out revealed that all the construction professionals in the construction field are aware of the electronic means of procurement but not all are implementing the use in their respective organization. Therefore, there is need for improvement in the implementation.

The findings of the factors influencing the successful implementation of e-procurement in contracting firms revealed that the most influencing factor for successful implementation of E-procurement is in contracting firms is lack of upper management support in (Table 2) this aligns with Amoah & Steyn, (2023), Costly and lack of IT infrastructure also affect the successful implementation of e-procurement, (Darlington, 2006; Olukayode & Adeyemi, 2011) says that the major risks factors relating to electronic transactions on the internet include hacking, viruses, pirating, illegal trading, fraud, money laundry, defamatory libel, trust, among several others. It required a huge amount of cost to prevent this factor which also makes the implementation of e-tendering difficult for some organizations. Regarding the challenge of insufficient technical expertise in most public organization is very imminent and visible, which has contributed much towards the adoption of technology in governance today (Dwivedi *et al.* 2017, Wimalasena & Gunatilake 2018). This challenge has leads to un-productive and less efficiency in the procurement system, and as such poor sustainable projects. Some studies believed that a capable expertise with a technical know-how in E-Procurement in an organization can reduce wastages and improved value for money to the end user if applied prudently, which may improve sustainability and reduce developmental degradation in our economy. The study further shows how unrecognized business benefit was identified as a factor that hindered E-Procurement implementation in Nigeria. These result has align with (Mangitung & Novitasari, 2015, Wimalasena, & Gunatilake, 2018) which stated that knowing and agreeing on the benefits for the adoption or used of technology make it compulsory by both individual and organization in order to attain their goals easily and be in competition among nation. Therefore, we can attributes the non-adoption of the E-Procurement in the delivery of public projects in Nigeria by most organization as a result of less or non-benefit attached to it used as perceived. As a result, sustainable developments were less achieved in the country and high risk in the procurement system

(Suleiman, Saidu, Adamu, S & Tsado, 2024). Among the factors that affect the E-Procurement implementation from the study is the issue of low level of computer literacy within the procurement officers in the public sector. Also, the few once among the various staff are not sure of their knowledge understanding in terms of the software used for procurement operation. Therefore, making it difficult for the government to see it important and benefit since officers to operate them has shown less concern and ignorance of how its operation (Arcury *et al.*, 2020, Ashaari *et al.*, 2018, Tan & Li *et al.*, 2019).

4. Conclusion

This study was undertaken to address the role of e-procurement implementation in the delivery of projects as a way of achieving sustainable economy. In other to achieve that, this study identifies the factors influencing the successful implementation of e-procurement first; evaluate the most significant factors affecting successful implementation of e-procurement in contracting firms in Nigerian construction industry. Results showed that a set of seven (7) factors were responsible for the constraining successful E-Procurement implementation in the delivery of public projects in Nigeria. Top three (3) from the list of these sets of factors are the lack of upper management support, lack of IT infrastructure, the lack of technical expertise, unrecognized business benefits and low level of computer literacy among employee. However, it could be deduced that due to socio-economic influences, their levels of influence and knowledge capability among organization, and by implication, risk levels, could differ between projects.

In conclusion, it is believed that by integrating technology approaches into the procurement policies relating to public procurement in the delivery of public projects will enhance sustainable procurement and economy. Furthermore, will strengthening the construction industry in terms of competition, implementation and sustainability of projects.

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