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ADRI JOURNALS ([www.adri.org](http://www.adri.org))E-ISSN: 2343-6891 VOL. 19, No. 3 (7), July, 2022- September, 2022**Barriers and Drivers of Electronic Procurement adoption and Firm Performance: The case of Universal Banks in Ghana**Isaac Opoku-Fofie<sup>1</sup>, Emmanuel Asare-Bediako<sup>2</sup> and Kwame Asamoah<sup>3</sup>

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E-mail: [worldatlarge@rocketmail.com](mailto:worldatlarge@rocketmail.com)**<sup>3</sup>Correspondence:** [worldatlarge@rocketmail.com](mailto:worldatlarge@rocketmail.com)**Available Online:** 30<sup>th</sup> September, 2022**URL:** <https://journals.adri.org/index.php/home>**Abstract**

Electronic procurement is a relatively new practice in the developed world. Companies that have attempted to implement it have run into fierce internal and external opposition. Examining the drivers and barriers of e-procurement adoption in the banking industry was the study's main goal. The study was strictly descriptive. The data collection method used was a questionnaire. The population of this study was made up of all banking staff in Kumasi. With purposive sampling method, the study sampled 7 banks based on 2020 banking survey. Regression, mean score, standard deviation, and frequencies were among the statistical techniques used in the study. According to the report, e-procurement adoption was motivated by improving data quality, having reliable information, having good relationships with both buyers and suppliers, cutting administrative costs, and minimizing human participation to increase supplier and public confidence. According to the survey, other barriers to the adoption of e-procurement include a bad internet infrastructure, expensive IT infrastructure software, weak business procedures, and a lack of implementation capacity. It has been proven that adoption barriers to e-procurement hinder firm performance. The results of the study also showed a statistically significant positive association between the drivers e-procurement adoption and firm performance. The study also found e-procurement adoption as a moderating variable between the drivers and firm performance. It was recommended that firms train its procurement staff to improve on their procurement skills with e-procurement being the focus and with axillary motive of reducing resistance to change to internal or external customers in supply chain.

**Keywords:** barriers, drivers, electronic procurement, firm performance

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## INTRODUCTION

Improved processes in the Information Communication Technology space is a sine qua non for effective management of supply chains (Yu et al., 2020). As far as the current literature is concerned, a consistent pattern (Such as globalization, regulatory and policy compliance, transparency in the procurement process, employees productivity) has been identified in respect of the adoption of e-procurement systems, and which serve as an important guide for the integration of the procurement process within the entire supply chain (Wuni and Shen, 2020).

The term e-procurement refers to "the integration of procurement process, which includes operations such as negotiation, ordering, receipt, and post-purchase review" (Öhgren et al., 2019). European Commission (2015) define e-procurement as "a system that utilizes internet technologies and services to automate and streamline an organization's processes – from requisition to payment". Grimani et al. (2020) posit that the concept E-procurement has been a time-tested system or process that has been experimented over the years in view of the fact that several attempts have been made in the past to formulate an automated procurement technology for use by organisations such as electronic workflow system and EDI.

According to Toktaş-Palut et al. (2014), a detailed examination of the traditional procurement system reveals a procedure that is best carried out through "phone, fax, and other communication channels," which is a sign of how the procurement system has changed over time. Furthermore, as shown by a number of earlier studies, e-procurement, which has evolved into the cornerstone for the adoption of supply chain systems, is still in its infancy. According to Belisari et al. (2020), "the supply chain system of an organization cannot be properly integrated without the adoption of E-procurement technologies".

The performance of business is improved by the adoption of new technology and ideas (Shukla et al., 2016). This performance will have a lasting impact on the company's expansion. Information and communication technology advancements have significantly changed how business is conducted. According to Shukla et al. (2016), the implementation of an e-procurement system can facilitate this performance. E-procurement systems assist businesses in the purchase and sale of goods and services. E-procurement systems, according to Kunnapapdeelert and Thepmongkorn (2017), improve the relationship between suppliers and businesses. It promotes transaction transparency and backs the delivery relationship between sellers and buyers

E-procurement has made a significant impact on the bottom line costs of many organizations around the world, making it a tactical tool for many emerging

companies. According to Asif et al. (2021), companies that use e-procurement reduce costs by about 15%. Kim et al. (2015) state that e-procurement is anticipated to shorten order cycle times, increase stock levels, lower the administrative costs associated with purchasing and selling, and enhance supplier performance.

The current study, which is based on findings from the studies by the academics mentioned above, focuses on the drivers and barriers of e-procurement systems as well as how they affect the performance of the banking sector. In Ghana, procurement is a crucial issue for both the public and private sectors because it forms the basis of all other supply chain operations. Therefore, the effectiveness and efficiency of the existing procurement system play a key role in the adoption of any supply chain system. In this study, we focus on the banking industry, whose yearly procurement volume is roughly \$10 million USD. Currently, the majority of businesses, including some universal banks, continue to use traditional procurement techniques. Few businesses that have used e-procurement systems, meanwhile, are not free from adoption barriers. There are barriers in "moving to an electronic procurement system," as one might anticipate. Therefore, the purpose of this study is to investigate the drivers and barriers of electronic procurement of some universal banks.

In view of the sheer size and complicated nature of public sector procurement which is estimated to account for something in the region of twenty to thirty percent of Gross Domestic Product, there is a compelling need for organisations to devise a much strategic way of deploying e-procurement in ways that inure to the forward march of the organization (Hanák et al., 2020). The underlying objective, under the circumstance, will be to satisfy varying social and political objectives (Aduwo *et al.*, 2017). Aduwo *et al.* (2017) affirm that firms appetite to procure goods with the view to securing accountability and transparent services make adoption of e-procurement public interest. The different drivers and barriers for e-procurement in general procurement in some public organizations have been comprehensively explored in prior research (Yu et al., 2020; Wuni and Shen, 2020; Öhgren et al., 2019; Grimani et al., 2020; Belisari et al., 2020; Shukla et al., 2016; Kumar and Ganguly, 2020; Akuh et al., 2022; Solaja et al., 2020; and Tamilmani et al., 2020). Akuh et al., 2022 conducted a study on the drivers and barriers of e-procurement. The drivers and barriers of using e-procurement by firms were also examined by Tamilmani et al. (2020). These researches were conducted outside of Ghana and Africa in general. Many of these research on the drivers and barriers were conducted utilizing businesses other than banking firms. Kumar and Ganguly (2020) identified some of the drivers behind e-procurement as better communication and lower administrative costs. They identified transaction security and uncertainty surrounding e-procurement's difficulties as some of the barriers. Although the study by Kumar and Ganguly (2020), Tamilmani et al. (2020) and Osmonbekov and Johnston (2018) highlighted some drivers of e-procurement without reference to the banking sector of Ghana. Moreover, much has not been seen on e-procurement in Ghana. Most of the studies examined did not also look at how the e-procurement adoption moderate the relationship between the drivers of e-procurement and firm performance. In view of the lack of scholarly study on e-procurement in the financial sector and for that matter Ghana banking industry, this study seeks to fill this research gap by exploring the drivers and barriers of e-

procurement adoption using universal banks in Ghana. This study is of essence, since it will provide information about how e-procurement is being managed at the banking industry in Ghana. The study will look at e-procurement and the performance of the universal banks in Ghana.

The findings of the study will serve as an important source of information to policy makers and stakeholders in the banking industry. By establishing the barriers and drivers of e-procurement, the findings of the study will serve as a critical tool for planning, designing and implementation of a sound e-procurement system that will have a good impact on the overall economic strategy. The study outcome will benefit all individuals who are involved in procurement.

The outcome of this study will again serve as a reference material for the academia and students of supply chain management as the findings of the study will fill major literature gap. It will also broaden the scope of the researchers on the drivers and barriers of e-procurement. Finally, the outcome of the study will offer both theoretical and practical insights on policy understanding on how e-procurement adoption can improve performance of firms.

## LITERATURE REVIEW

### *Technology and E-Procurement*

E-procurement cannot be carried out without companies investing in technology. Now, technology has become part and parcel of every household and businesses. Businesses are choosing to outsource non-core programmes like human resource, IT and engineering services. The evolution of digitization of procurement system has increased the efficiency of activities pertaining to procurement (Bienhaus & Haddud, 2018). This means that many firms are moving away from the traditional system of procurement. Technology has brought about different ways of collecting data which can be accessed, processed and shared among all supply chain members (Rejeb, 2018). Technology helps firms to have many communications. It allows firms to create a number of networks which incorporate the procurement process by integrating ICT systems at all stages of the firm's planning process (Nicoletti, 2017).

The supply process of firms comprises a number of complex, dependent procedures that involve acknowledgement of a need, advancement of technical description, supplier evaluation and final purchase decision (Rejeb, 2018). Procurement is no more straightforward process. With the advent of technology, businesses are being forced to be innovative in order to alleviate procurement risks. Procurement function of firms is fast becoming more strategic and procurement technology is the way to go by firms to improve on their procurement performance.

Alvarez-Rodríguez et al. (2014) explains electronic procurement (e-procurement) as the transacting of business between sellers and buyers through the use of electronic communication. E-procurement can be viewed as "a platform that links the government and suppliers in an online environment. E-procurement creates a framework in which government agencies as buyers procure goods/services by browsing catalogues advertised by suppliers hence a one-stop Portal for public sector procurement".

The ultimate objective of the e-procurement initiative is to utilise Internet technologies to rally government agencies in the country and suppliers around the world together into “a virtual trading environment” (Aguiar and Grilo, 2015). E-procurement is “a multi-buyer, multi-supplier electronic procurement domain, which allows government agencies to function as independent buying entities under a single buying organization” (Vaidya and Campbell, 2016). Organizational characteristics and organizational influences are useful incentives to the utilisation of e-procurement (Soong et al., 2020; Ahmad, 2015; AlKhatib, 2013; Rawashdeh and Al-Namlah; 2017). E-procurement facilitates the design of products and industrial innovation initiated by suppliers and end-users in an organisation (Yu et al., 2020). On the whole, e-procurement presents a unique opportunity to buyers to locate prospective suppliers through standard search engines or customized trading search portals.

The researcher believes that users’ intention to use and actual usage behaviour will be greatly improved since the new system yields greater productivity. Many researchers have argued that the “perceived usefulness is a best predictor of intention to use a new system in both voluntary and mandatory settings” (Shaikh and Karjaluoto, 2014; Fakhoury and Aubert, 2015; Li et al., 2015; Yusuf and Lee, 2015).

#### *Barriers of E-procurement Systems*

Literature is replete with compelling evidence that suggests that e-procurement, when properly deployed, could offer varying advantages to users. However, many a researcher also acknowledges the fact that users could encounter daunting challenges when they decide to embed e-procurement system in their operations. Some of the barriers include “bureaucratic dysfunctionalities in practice, external incompatibility, high investment cost of IT infrastructure, inadequate business processes to support e-procurement, inadequate IT infrastructure of suppliers, non-compliance with company culture, inter-operability concerns with other systems used and security, confidentiality and authentication concerns which brings difficulties with authentication and security into play” (Fakhoury and Aubert, 2015; Solaja et al., 2020; Ramkumar et al., 2019, Li et al., 2015; Brandon-Jones and Kauppi, 2018; Stoffregen and Pawlowski, 2018; Kabanda et al., 2019).

#### *Empirical Review*

Owusu (2014) conducted a study of e-procurement in public procurement entities in Ghana. The study revealed that “End-user uptake and training (User involvement, user support/communication, user training); Supplier Adoption (Supplier e-readiness); Lack of e-Procurement Implementation Strategy (documented and executable strategies prior to the deployment); costly technological solutions; and lack of top management support (Management involvement & investment in organizational change) are the most significant challenges of e-procurement in public procurement entities in Ghana”. According to him, the resolution to these difficulties is predictably critical to the successful implementation of e-procurement in public procurement entities in the road sector in Ghana. Quinnox (2012) concluded that when e-procurement system is properly implemented, it can connect firms and their business processes directly with suppliers while managing all interactions and this can lead to a better performance.

Kennedy (2015) examined the nexus between systems of e-procurement and procurement function performance in Kenya Commercial Banks using simple random sampling questionnaires to collect data. The study found out that “e-informing aids companies in decentralizing processes of operational procurement and also centralize processes of strategic procurement”. It was concluded that e-informing plays a key role in facilitating an organizations’ efficient communication which ultimately improves performance.

Zhang (2017), used a questionnaire to conduct a survey in order to appreciate the adoption process of e-procurement in equilibrium point for the optimum e-procurement system that should be adopted by firms which have different attitudes towards technology. Grimani et al. (2020) investigated the factors that affect the e-procurement adoption of SMEs located in the Southcoast of Massachusetts, and found out that e-procurement improves their performance.

Nancy (2017) investigated e-informing and e-ordering on performance of supply chain of State Corporations in County Government of Nairobi utilising explanatory research design. The results of the multiple regression showed that e-informing has a significant and positive impact on performance of supply chain. The study concluded that “e-informing that is the element of the dimensions of e-procurement improves the performance of supply chain”.

In their 2017 study, Kunnapapdeelert and Thepmongkorn concentrated on Thailand's e-procurement adoption scenario. The study examined important implementation success variables for e-procurement. The study used factor analysis to identify the variables influencing the adoption of e-procurement. The results of the survey showed that businesses were prepared to use electronic procurement in the future. However, several businesses are unaware of the advantages and challenges of adopting e-procurement. The reliability of information technology and supplier performance, user acceptability of e-procurement systems, financial and integration of e-procurement systems, and top management support were also determined to be the four primary elements influencing the adoption of e-procurement.

Osei Tutu et al. (2019) evaluated the critical factors for the implementation of e-procurement in Ghana. Their findings revealed that “availability of stable power, internet connectivity, building the capacity of procurement officers, availability of infrastructure were major critical factors when it comes to implementation of e-procurement while the mandatory use of e-procurement, technical interoperability budgetary control among others were of less importance”. The current study seeks to examine the drivers and barriers of e-procurement as well as its effect on the performance of the banking industry in Ghana which is obviously missing in the literature.

Belisari et al. (2020) looked into the adoption of e-procurement with a focus on the Italian market. They conducted an exploratory-inductive investigation. Semi-structured interviews, corporate internal documents, company websites, and other sources provided the study's data. They discovered that the deployment of e-procurement involves consultancy services. Additionally, it was discovered that advisory services assist businesses in overcoming e-procurement challenges and in achieving the anticipated benefits of e-procurement.

Singh et al. (2022) looked at the adoption of e-expansion procurement's and determined how it related to green procurement methods. The Technology Acceptance Model backs this research. Quantitative analysis of the survey data is done using SPSS and SmartPLS. The structural model demonstrates the considerable positive association between green procurement and the firms' E-procurement technology and accounts for 86% of the variance in green procurement. As a result, implementing E-procurement technology would increase business sustainability.

### METHODOLOGY

The study employed descriptive research design. The choice of descriptive design was based on its ability to help gather reliable and accurate data that best describe the drivers of e-procurement adoption, barriers of e-procurement adoption and the effect of e-procurement adoption on the performance of some universal banks in Ghana (Alkhatib, 2013). Alkhatib (2013) pinned that quantitative study is the best for a study of this nature. The population of the study were made up of all bank managers, operational directors and procurement officers of the banks. In all 23 universal banks in Kumasi with 200 bank branches form the population of the study. The study employed purposive sampling method. This method enables the researcher build up respondents that satisfy the specific needs under study. For purposive sampling technique, information-rich samples are selected since in-depth view of the phenomenon being studied is needed (Shaheen et al., 2016). The top seven banks based on their total operating assets and their involvement in digitization were selected. All the seven banks for this study were selected based on their position on the Bank of Ghana banking survey rating (2020). Table 3.1 depicts the name of the banks and the number of branches selected from each of the banks.

**Table 3.1: Sample Distribution**

Name	Number of Branches selected	Number of respondents selected
Ecobank Ghana (EBG)	8	24
GCB	8	24
ABSA	8	24
Fidelity Bank Limited (FBL)	8	24
Stanbic Bank Ghana (SBG)	8	24
Standard Chartered Bank (SCB)	8	24
Consolidating Bank of Ghana (CBG)	8	24
<b>Total</b>	<b>56</b>	<b>168</b>

Source: field work, 2022

The study selected 8 branches of each of the 7 banks listed. For every branch, the top three management staff including the branch manager were purposively selected for the study making it 24 respondents from each bank. In all, 56 branches and 168 respondents were involved in the study. Purposive sampling technique was employed because it is less costly and less time consuming. The study used questionnaire as the main data collection instrument. Questionnaire facilitate collection of data for a study (Canals, 2017). The questionnaire was administered through google form. The contacts of the respondents were secured through human resource manager of each of the 7 banks. All the 168 respondents were contacted via phone and they were contacted to confirm their participation in the study. The questionnaire was sent to them through WhatsApp and email address. Table 3.2 depicts the summary of the variables used in the study.

**Table 3.2: Summary of the variables**

S.No	Variable	Constructs	No. of items	Source of the measure
1	Drivers of e-procurement	Depro.	10	Questionnaire
2	Barriers of e-procurement	Bepro.	10	Questionnaire
3	Adoption of e-procurement	Adop.	10	Questionnaire
4	Firm performance	FP	10	Questionnaire

*Source: Researcher's Construct, 2022*

The questions were coded and entered on SPSS version 22 for windows. Both descriptive statistics and inferential statistics were employed in the study. Some of the descriptive tools used were mean, standard deviation, tables, frequency and percentages. The study also employed regression analysis and correlation analysis to establish the relationship between the variables. The answered questionnaires were assessed for its validity and reliability.

#### *Data Analysis*

Out of 168 questionnaires sent to respondents, 164 was properly answered and sent to the researcher through google form. This represents approximately 98% response rate. Table 4.1 depicts gender distribution of the respondents. From the results, it could be seen that 118 representing 72.0% of the respondents were males with 28.0% being females. This means that more males responded to the questionnaire than females.

From table 4.1, 54 respondents, representing 32.9% were in the age group 18-30 years, 74 representing 45.1% were in the age group 31-40 years, 17.7% were in the age group 41-50 years and 7 representing 4.3% were in the age group 51-60 years. This means that majority of the respondents were in the active age group. The respondents' level of education was assessed to understand their behaviour in answering the questions. The analysis shows that, 17 respondents representing 10.4% held HND/Diploma certificates, and 27.4% had degree certificates. For masters, 86 respondents representing 52.4% and 9.8% had PHD. This means all the respondents have had formal education and they can comprehend the questions.



It could be seen that there were 54 branch managers, 56 operation managers and 54 operation officers. This shows that the study respondents were appropriate for the study. From the analysis, 6 representing 3.7% of the respondents were least experienced (0-5 years), 109 representing 66.4% had 6-10 years job experience, 36 representing 22.0% of the respondents had 11-15 years job experience with 13 representing 7.9% having 16-20 years' experience. This means that majority of the respondents have at least 6 years banking experience.

**Table 4.1: Respondents demographics**

Measure	Categories	Frequency	Percent
Respondents' Gender	Male	118	72.0
	Female	46	28.0
Respondents' Age	18-30yrs	54	32.9
	31-40yrs	74	45.1
	41-50yrs	29	17.7
	51-60yrs	7	4.3
Respondent's level Education	HND/ Diploma	17	10.4
	Degree	45	27.4
	Masters	86	52.4
	PhD	16	9.8
Respondent's Job description	Branch Manager	54	32.9
	Operation Manager	56	34.1
	Operation officer	54	32.9
Respondent's Job experience	0-5yrs	6	3.7
	6-10yrs	109	66.4
	11-15yrs	36	22.0
	16-20yrs	13	7.9

*Source: field work, 2022*

This subsection provides information about the firms being studied to assess their application of e-procurement. Information covered here were name of the firm, responses on adoption of e-procurement and how long the firm had applied e-procurement.

**Table 4.2: Background of firm**

Measure	Categories	Frequency	Percent
Firm's used	Ecobank Ghana (EBG)	24	14.6
	GCB	24	14.6
	ABSA	24	14.6
	Fidelity Bank Limited (FBL)	24	14.6
	Stanbic Bank Ghana (SBG)	24	14.6
	Standard Chartered Bank (SCB)	22	13.4

				Consolidating Bank of Ghana (CBG)	22	13.4
Years procurement	firm's adopted	e-	0 – 5yrs		31	18.9
			6 – 10yrs		49	29.9
			11- 15yrs		81	49.4
			Above 16 Years		3	1.8

Source: field work, 2022

Equal number of respondents were selected from each of the firms. However, the results show that two each of the respondents from Standard Chartered Bank (SCB) and Consolidating Bank of Ghana (CBG) did not complete their questionnaires so they were discarded. It could be observed that the respondents were selected from the banking institutions listed. On whether the firms have adopted e-procurement, all the respondents answered in the affirmative. This means that all the firms have adopted e-procurement. From table 4.2, 18.9% of the respondents said their firms have adopted e-procurement for between 0-5years, and 49 representing 29.9% chose 6-10 years. For 11-15 years, 81 representing 49.4% of the respondents chose it, 3 (1.8%) respondents chose above 16 years. This means that some of the firms' adoption of e-procurement have lasted for at least 11 years now.

Reliability test was conducted to establish the efficacy of the data. This test helps to establish whether the data collected can be used for further analysis after the descriptive explanation. Table 4.3 presents the Cronbach's Alpha test results.

**Table 4.3: Reliability Statistics**

Variable	N of items	Cronbach's Alpha
e-procurement adoption	10	0.920
Drivers of e-procurement	10	0.922
Barriers of e-procurement	10	0.871
Firm performance	10	0.918

Source: field work, 2022

From table 4.3, it could be seen that 10 items were used to test for the reliability of e-procurement adoption. The Cronbach's alpha of e-procurement adoption was 0.920 which signal that the items used to measure e-procurement adoption were reliable. Ten items each were also used to measure drivers of e-procurement, barriers of e-procurement and firm performance and their Cronbach's alpha test values were 0.922, 0.871 and 0.918. for each w 0.922. It could be said that there is consistency in the items used to measure drivers of e-procurement, barriers of e-procurement and firm performance.

*Descriptive Statistics*

Table 4.4 presents the descriptive statistics of the kinds of e-procurement the firms have adopted.

**Table 4.4: Descriptive Statistics of e-procurement adoption**

	N Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Std. Error
Our company has adopted E-Informing/E-notification	164	3.95	.694	-.595	.190
Our company frequently make use of E-Sourcing	164	3.76	.774	-.443	.190
Our company frequently make use of E-Tendering	164	3.91	.733	-.423	.190
Our company make use of E-Reverse auctioning	164	3.85	.764	-.903	.190
Our company has implemented E-Awarding	164	3.85	.788	-.484	.190
Our company frequently use E-Contract Management	164	3.80	.717	-.603	.190
Our company make use E-Ordering	164	3.82	.753	-.381	.190
Our company sometimes make use of E-Markets	164	3.80	.745	-.559	.190
Our company frequently make use E-Invoicing	164	3.88	.704	-1.008	.190
Our Company make use of E-Tracking and receiving	164	3.95	.725	-.905	.190
Valid N (listwise)	164				

*Source: field work, 2022*

From the table, all the items have negative values for the skewness. This means that all the items were negatively skewed and that majority of the respondents may have chosen either agreed or strongly agreed. The mean score for item 1 was 3.95 which is approximately 4 on the Likert scale. This means that majority of the respondents said their firms have adopted e-informing/e-notification. The mean score for item 2 was

3.76. This means that majority of the respondents agreed that their firms have adopted e-sourcing. For item 3, the mean score was 3.91 which is approximately 4 on the scale. It could be said that most of the firms have adopted e-tendering.

The mean score for items 4 and 5 were the same that was 3.85 meaning respondents agreed that their firms have adopted e-reverse auctioning and e-awarding. With the mean scores of 3.80, 3.82, 3.80, 3.88 and 3.95, it could be said that the respondents agreed to items 6, 7, 8, 9 and 10 respectively. This is an indication that the seven firms have adopted e-contract management, e-ordering, e-markets, e-invoicing, and e-tracking and receiving.

Table 4.5 depicts descriptive statistics on respondents' responses on the drivers of e-procurement.

From table 4.5, it could be recognized that all the items on the table have negative values for skewness. This shows that the tail of the skewness was at the left side meaning most of the observations were concentrated at the right side making all the items skewed to the right or negatively skewed. Items 1, 2, 3, 4, 7 and 8 were moderately negatively skewed. Items 5 and 6 were fairly negatively skewed. Items 9 and 10 were highly negatively skewed. It could be said that all the means were towards agreed or disagreed depending on whether the statement is negative or positive.

On the side of the mean distribution, the mean for item 1 was 3.85. This means that most of the respondents disagreed that the data quality of their firm has not been enhanced. The mean score for item 2 was 3.77 which is approximately 4 on the Likert scale. This means that majority of the respondents disagreed that their firms have not improved reliability of spending information. With the mean score of 3.86, it could be said that majority of the respondents disagreed that their firms have not improved relationship with buyer/supplier. The mean scores for items 4 and 5 were 3.82 and 3.84 respectively. This means that majority of the respondents disagreed that their firms' administrative cost has not reduced and that their firms has not improved on procurement lead time.

The analysis in table 4.5 also shows that the mean score for item 6 was 3.70. This means that majority of the respondents agreed that their firms have reduced human involvement. With mean score of 3.78 shows that majority of the respondents agreed that their firms have increased public and supplier confidence. The table also revealed the mean of items 8, 9 and 10 to be 3.80, 3.77 and 3.85 respectively. This is an indication that all the firms have improved on financial controls, strategic procurement practices and procurement planning practices.

**Table 4.5: Mean Distribution of Drivers of E-procurement**

	N Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Std. Error
Our Company data quality has not been enhanced	164	3.85	.816	-.891	.190
Our company has not improved reliability of spending information	164	3.77	.824	-.558	.190
Our company has not improved relationship with buyer/supplier	164	3.86	.782	-.760	.190
Our company has not reduced administrative cost	164	3.82	.843	-.711	.190
Our company has not improved procurement lead time	164	3.84	.793	-.518	.190
Our company has reduced human involvement	164	3.70	.761	-.452	.190
Our company has increase public and supplier confidence	164	3.78	.822	-.579	.190
Our company has improved financial controls	164	3.80	.792	-.822	.190
Our company has improved strategic procurement practices	164	3.77	.811	-1.018	.190
Our Company has improved procurement planning practices	164	3.85	.831	-1.019	.190
Valid N (listwise)	164				

Source: field work, 2022

This study also used mean distribution to assess e-procurement barriers in some selected banking firms in Ghana. Table 4.6 depicts the mean distribution of responses on barriers of adoption of e-procurement. To measure the mean distribution of the responses, skewness statistic was employed. From table 4.6, the skewness value of items 1 up to 10 respectively, were -0.770, -0.472, -0.164, -0.180, -0.581, -0.686, -0.598, -0.723, -0.895 and -0.745. It could be observed that items 1, 5, 6, 7, 8, 9 and 10 were

moderately negatively skewed. Items 2, 3, and 4 were approximately symmetric or normally distributed. This means that the items measuring barriers were likely to approaching 4 which is agreed on the Likert scale.

Table 4.6 depicts the mean distribution of barriers of e-procurement.

**Table 4.6: Mean distribution of barriers of e-procurement**

	N Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Std. Error
Our Company has bureaucratic dysfunctionalities in practice	164	3.84	.694	-.770	.190
Our company unreliable energy supply	164	3.91	.716	-.472	.190
Our Company has incurred high investment cost of IT infrastructure/software	164	3.87	.688	-.164	.190
Our company has inadequate business processes to support e-procurement	164	3.77	.731	-.180	.190
Our company has technology incompatibility to external platforms	164	3.80	.742	-.581	.190
Our company has inter-operability concerns with other systems used	164	3.90	.685	-.686	.190
Our resistance to change of internal/external customers in supply chain	164	3.84	.775	-.598	.190
Our company lack e-procurement experts	164	3.85	.823	-.723	.190
Our company has unreliable internet services/ internet jam	164	3.81	.876	-.895	.190
Our company lack e-procurement implementation capacity	164	3.78	.829	-.745	.190
Valid N (listwise)	164				

Source: field work, 2022

From table 4.6, the mean score for item 1 was 3.84 with standard deviation of 0.694. This means that the firms selected have bureaucratic dysfunctionalities in practice. For

item 2, the mean and the standard deviation were 3.91 and 0.716 respectively. This means that the firms selected have unreliable energy supply. With mean score and standard deviation of 3.87 and 0.688 respectively, it could be said that the selected firms incurred high investment cost of IT infrastructure software.

Additionally, from the table, with mean score and standard deviation of 3.77 and 0.731 respectively, it could be said that the respondents agreed that their firms have inadequate business processes to support e-procurement. It was also agreed with mean score of 3.80 and standard deviation of 0.762, that the firms have technology incompatibility to some external platforms. The mean scores (standard deviations) for items 6, 7, 8, 9 and 10 were 3.90 (0.685), 3.84 (0.775), 3.85 (0.823), 3.81 (0.876), and 3.78 (0.829) respectively. This means that the respondents agreed that their firms have inter-operability concerns with other systems used, resist change of internal/external customers in supply chain, lack e-procurement experts, have unreliable internet services/ internet jam, and lack e-procurement implementation capacity.

From the analysis it has been established that all the firms have adopted e-procurement. However, it could be said that bureaucratic dysfunctionalities, high investment cost of IT infrastructure software, inadequate business processes, technology incompatibility to some external platforms, inter-operability concerns with other systems used, resistance to change of internal/external customers in supply chain, lack of e-procurement experts, unreliable internet services, and lack of e-procurement implementation capacity were some of the barriers of full adoption of e-procurement.

Assessing the items based on their skewness, items 2 and 9 with skewness value of -1.012 and -1.085 respectively, meaning they were highly negatively skewed. The skewness for items 1, 3, 4, 5, 8, and 10 were -0.998, -0.849, -0.708, -0.663, -0.643 and -0.812 respectively.

This means that all those items were moderately negatively skewed. The skewness for items 6 and 7 were -0.518 and -0.447 which means the two items were fairly negatively skewed. It could be observed that all the items on table 4.7 had mean approximately 4. This means that the respondents agreed that the firms coordinate inter-organizational information; the firms adhere to processes and procedures set by itself; the firms' efficiency level had gone up due to e-procurement adoption; the firm is highly competitive due to adoption of e-procurement; and the firms' overall performance has generally improved.

Table 4.7 presents the descriptive statistics of firm performance. Mean scores as well as skewness were the statistical tools used in analyzing the performance indicators. The means scores of all the construct items were approximately 4. This means that most of the respondents agreed with all the items in table 4.7 as the measure of performance of the selected banks in terms of procurement. All the items were negatively skewed. This means that majority of the respondents opted for options 3, 4 and 5.

**Table 4.7: Descriptive Statistics of Firm Performance Factors**

	N Statistic	Mean Statistic	Std. Deviation Statistic	Skewness Statistic	Std. Error
Our company does not deliver better and quality services	164	3.78	.907	-.998	.190
Our company does not meet our clients' expectations	164	3.76	.985	-1.012	.190
Our company's Procurement planning has not significantly improved	164	3.82	.893	-.849	.190
Our company coordinates inter-organizational information	164	3.73	.839	-.708	.190
There is increased adherence to processes and procedures in our company	164	3.79	.854	-.663	.190
Our Company's E-procurement adoption has improved the efficiency level	164	3.73	.839	-.518	.190
Our company's staff competence level has not seen improvement due to adoption of e-procurement	164	3.73	.844	-.447	.190
Customers complaint about our company customer care level has not gone down drastically due to adoption of e-procurement	164	3.74	.848	-.643	.190
Our company is highly competitive due to adoption of e-procurement	164	3.82	.874	-1.085	.190
The overall performance has generally improved	164	3.79	.919	-.812	.190
Valid N (listwise)	164				

Source: field work, 2022

With the mean scores, they also disagreed with the following: the firms do not deliver better and quality services; the firms do not meet their clients' expectations; the firms' procurement planning has not significantly improved; the staff competence level has not seen improvement due to adoption of e-procurement; and customers complaint about customer care level has not gone down drastically.



*Correlation Analysis*

The correlation analysis was carried out to find out the relationship that existed between the factors or the variables of the study. Table 4.8 depicts the outcome of the correlation analysis. The significance level chosen for this study was 0.05 or 5%. This was the level of acceptance of alternative hypothesis.

**Table 4.8: Results of Correlation analysis**

		Firm performance	e- procurement adoption	Drivers	Barriers
Firm performance	Pearson	1	.268	.623	-.794
	Correlation				
	Sig. (2-tailed)		.001	.000	.000
	N		164	164	164
E-procurement adoption	Pearson		1	.562	-.357
	Correlation				
	Sig. (2-tailed)			.000	.000
	N			164	164
Drivers	Pearson			1	-.808
	Correlation				
	Sig. (2-tailed)				.000
	N				164
Barriers	Pearson				1
	Correlation				
	Sig. (2-tailed)				

Source: field work, 2022

The analysis in table 4.8 depicts that the correlation coefficient between firm performance and e-procurement adoption was 0.268 which was statistically significant at 5% significance level. This means that firm performance has positive relationship with e-procurement adoption. This is an indication that as firms adopt e-procurement practices, their performance also improves. The correlation coefficient between firm performance and drivers of e-procurement was 0.623 with p-value of 0.0000. It could be said that there is a significant positive correlation between firm performance and drivers of e-procurement adoption. This implies that drivers of e-procurement improve firm performance. There is also a statistically significant negative correlation between firm performance and barriers of e-procurement. This implies that the barriers of e-procurement have adverse effect on firm performance.

The correlation coefficient between e-procurement adoption and drivers of e-procurement is 0.562, and that of e-procurement and barriers of e-procurement is -0.357. They were all significant at 5% significance level. However, as drivers of e-procurement improves e-procurement adoption, the barriers were opposing the adoption of e-procurement. Also, the coefficient of correlation between drivers of e-

procurement adoption and barriers of the adoption was -0.808. This means that the barriers of e-procurement oppose the drivers of e-procurement and vice versa.

### Results of Regression analysis

The study establishes the effect of e-procurement adoption on the performance of some universal banks in Ghana. This study followed the footsteps of Nancy (2017) who employed multiple regression analysis to investigate e-informing and e-ordering on performance of supply chain of state corporation in county government of Nairobi. The regression analysis was carried out to identify the effect of drivers, e-procurement adoption, barriers which are independent variables, on firm performance which is the dependent variable. Table 4.9 depicts the regression analysis results. Four models were formed. The first model is between drivers of e-procurement and firm performance (FP). The second model is between barriers of e-procurement and firm performance and the third is between e-procurement adoption (E-pro. Adopt.) and the firm performance. The last model which is the fourth one is between drivers, E-procurement adoption and firm performance.

**Table 4.9: Regression Results**

Model	Variable	B	t-stat	p-value	R-Square	F-stat	p-value
1	Drivers and FP	0.673	10.132	0.000	0.388	102.658	0.000
2	Barriers and FP	-1.145	-16.607	0.000	0.630	275.780	0.000
3	E-pro. Adopt. And FP	0.317	3.534	0.001	0.072	12.486	0.001
4	Drivers, E-pro Adopt. And FP	0.747 0.143	9.382 1.637	0.000 0.104	0.398	53.201	0.000

Source: field work, 2022

The F-stat of model 1 was 102.658 with p-value of 0.000. This is an indication that model one is a good model to predict firm performance. The coefficient of drivers was 0.673 with t-stat of 10.132 (p-value = 0.000). This means that there is a statistically significant positive relationship between drivers of e-procurement and firm performance. This implies that drivers improve the performance of the firms positively. The R-square value was 0.388 which means that approximately 39% of the variations in firm performance was explained by drivers of e-procurement.

The F-stat of the model 2 was 275.780 with p-value of 0.000. It means that model 2 is a good model. With R-square value of 0.630, it could be said that barriers of e-procurement explain about 63% of the variations in firm performance. The t-stat of the coefficient of barriers (-1.1145) was -16.607 and its p-value was 0.000. This means that there is a statistically significant negative effect of barriers of e-procurement on firm

performance. This implies that barriers of e-procurement derail firm performance. The third model was between the e-procurement adoption and firm performance. The F-stat of the model 3 was 12.486 with 0.001 as its p-value. This model is good and can be used for predictions. The coefficient of e-procurement adoption was 0.317 with t-stat of 3.534 and p-value of 0.001. It means that there is a positive relationship between e-procurement adoption and firm performance and the e-procurement improves firm performance. However, with R-square value of 0.072, it could be said that approximately 7% of the variations in firm performance has to do with e-procurement adoption.

The final model was among drivers, e-procurement adoption and firm performance. The model 4 was a good model with F-stat of 53.201 and p-value of 0.000. The coefficient of drivers in the fourth model was 0.747 and that of e-procurement was 0.143. The t-stat of drivers and e-procurement adoption were 9.382 and 1.637 respectively. With p-value of 0.000, it could be said that the coefficient of drivers in the model is statistically significant at 5% significance level. This means that a unit change in drivers of e-procurement will increase firm performance by 0.747. However, with p-value of 1.637 which is greater than 0.05, it could be said that e-procurement adoption in the fourth model is not statistically significant at 5% significance level. This implies that e-procurement adoption variable in model 4 does not contribute significantly to firm performance at the presence of the drivers. This could be attributed to the high positive correlation between drivers and e-procurement adoption.

## DISCUSSION AND CONCLUSION

Alvarez-Rodríguez et al. (2014) said that electronic procurement is a transacting of business between sellers and buyers through the use of electronic communication. Soong et al. (2020) held the view that organizational characteristics and organizational influences are significant motivators to the use of e-procurement. According to GEP report (2020), banks are gradually moving towards digital transformation in the last decade. Based on the Alvarez-Rodríguez et al. and Soong et al. (2020) assertions, the respondents were asked to name their firm and tell whether they have adopted e-procurement or not. They were also asked to provide some of the e-procurement services their firms render.

It is worth knowing the barriers of e-procurement as e-procurement has come to stay and ways must be found to make it work in all spheres of our life. Toktaş-Palut *et al.*, (2014) mentioned regulations and standards as key barrier to e-procurement adoption. Ramkumar et al. (2019) said that inefficient strategies and willingness of supplier's not sufficient to take on new technologies were some of the barriers of e-procurement adoption. It could be said that all the firms used in this study have adopted e-informing/e-notification, e-sourcing, e-tendering, e-reverse auctioning, e-awarding, e-contract management, e-ordering, e-markets, e-invoicing, and e-tracking and receiving. This discovery supports Rawashdeh and Al-Namlah (2017) who argue that compliance by internal users is critical to the achievement of cost and efficiency gains from electronic procurement. Nancy (2017) also found that e-informing and e-ordering help improve the performance of supply chain of State Corporations in Nairobi.

To Fakhoury and Aubert (2015), and Brandon-Jones and Kauppi (2018), lack of readiness by external parties to engage in electronic interaction impede e-procurement adoption. This is in line with the findings of this study. Siita (2014) whose study findings agreed with this study was of the view that technology is a barrier to e-procurement. This study findings support that of Owusu (2014) who found “end-user uptake and training (User involvement, user support/communication, user training); supplier adoption (Supplier e-readiness); lack of e-procurement implementation strategy (documented and executable strategies prior to the deployment), costly technological solutions, and lack of top management support (Management involvement & investment in organizational change) as the most significant barriers of e-procurement in public procurement entities in Ghana”.

Additionally, the study findings support Osei Tutu et al. (2019) who found availability of stable power, internet connectivity, building the capacity of procurement officers, availability of infrastructure as some of the barriers to implementation of e-procurement. This means that e-procurement can improve when firms take keen interest in the barriers. To Kennedy (2015), e-informing aids companies in decentralizing processes of operational procurement and also centralize processes of strategic procurement. He also found that e-informing plays a major role in ensuring an organizations' effective communication performance.

The goal of every firm is to grow to improve life of its customers by producing goods and services that satisfy them. It is also the goal to improve the life of the workers by bring more returns and giving workers bonus and improve condition of service. When proper channel of procurement is instituted well, the firm's performance will see improvement. To Grimani et al. (2020), e-procurement improves firm performance. The researcher sought to identify some of the firm performance indicators. The findings also revealed that there was a positive relationship between e-procurement adoption and firm performance and the e-procurement improves firm performance. It was also found that approximately 7% of the variations in firm performance has to do with e-procurement adoption. This means that about 93% of the variations in firm performance has nothing to do with e-procurement adoption. This is in line with Kennedy (2015) and Quinnox (2012). A number of studies (Fakhoury and Aubert, 2015; Brandon-Jones & Kauppi, 2018) have found that e-procurement adoption improves firm performance. This and many more literature explain that when e-procurement adoption is properly done, it could be beneficial to the firms. The study demonstrated that drivers improve the performance of the firms positively. It was clear that approximately 39% of the variations in firm performance was explained by drivers of e-procurement

The findings also revealed that a unit change in drivers of e-procurement will increase firm performance by 0.747. However, it was found that e-procurement adoption in the in the presence of drivers of e-procurement was not statistically significant at 5% significance level. This implies that e-procurement adoption variable does not contribute significantly to firm performance and it serves as moderating variable. This also accounted for the high positive correlation between drivers and e-procurement adoption. These findings support that of Alvarez-Rodriguez et al. (2014) who reported that e-procurement provide efficient management of major expenditure and better

manage supplier risks, which helps banks to achieve savings, innovation, agility and flexibility.

To Yusuf et al. (2015), perceived usefulness is the strongest predictor of intention to use a new system in both voluntary and mandatory settings. E-procurement can only surge in our firms when it is allowed by the people in authority. This study looks at what drives e-procurement using the banking firms in Kumasi. According to Soong et al. (2020) organizational characteristics and organizational influences are significant motivators to the use of e-procurement. It was concluded that many firms who have adopted e-procurement were driven by data quality enhancement, reliable information, having cordial relationship with its buyers as well as its suppliers, way to reduce administrative cost, means of reducing human involvement to boost public and suppliers' confidence. Many firms have however not arrived yet due to barriers like poor internet system, high cost of IT infrastructure software, inadequate business processes and lack of e-procurement implementation capacity. E-procurement adoption does not contribute significantly to firm performance at the instance of the drivers of e-procurement adoption. This therefore means that e-procurement adoption served as moderating variable. This also accounted for the high positive correlation between drivers and e-procurement adoption.

It was discovered that improving data quality was a driver for the banks' adoption of e-procurement. It is advised that the Bank of Ghana promote e-procurement adoption in order to improve the quality of bank data and guarantee the security of the banking information. It was also obvious that a lack of reliable internet access was the main barrier to e-procurement adoption. As a result, it is appropriate for the national communication authority (NCA) to take into account the country's internet connectivity, as high internet connectivity will encourage the use of e-procurement. The study discovered a favorable correlation between e-procurement adoption and e-procurement drivers. Reliable information, a decrease in administrative costs, and friendly ties between suppliers and the banks all contributed to this beneficial relationship's growth. It is advised that management implement an e-procurement system to avoid information mismanagement, cut costs associated with administration, and improve connections between banks and their suppliers. This will assist banks in reducing their operating expenses.

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