

**ELECTRONIC TENDERING AND COMPETITIVENESS OF QUOTED OIL AND GAS FIRMS IN NIGERIA****ILOFULUNWA Charles Ejikeme<sup>1</sup> OKWANDU Gabriel A.<sup>2</sup>****OPARA Bright C.<sup>3</sup> DIDIA James U. D.<sup>4</sup>**<sup>1, 2, 3, 4</sup> Department of Marketing, Faculty of Administration and Management  
Rivers State University Nkpolu-Oroworukwo, Port Harcourt**Abstract**

The influence of electronic tendering (e-tendering) on competitiveness of quoted oil and gas companies in Nigeria was examined in this study. E-tendering was relied upon to explain variations in organizational competitiveness in terms of lead time, process cycle efficiency and supply chain integration. The study was guided by the positivist research paradigm; and adopted a survey research design. The population of the study consisted 10 quoted oil and gas companies. The entire population was surveyed. 32 management level employees were drawn from each of the companies to serve as respondents. Primary data was collected using semi-structured questionnaire designed in the 5-point Likert scale. Regression Analysis was employed to ascertain the influence of e-tendering on the measures of competitiveness, relying on the Statistical Package for Social Sciences version 25.0. The data analysis established that e-tendering has a moderate influence on lead time and process cycle time, and a weak influence on supply chain integration. Also, the analyses showed the influence of e-tendering on the indices of competitiveness is statistically significant. Thus, the study concludes that e-tendering has positive and statistically significant influence on competitiveness of quoted oil and gas companies in Nigeria. In specific terms, the use of e-tendering, will result in shorter lead times, higher process cycle efficiency and better supply chain integration. Thus, the study recommends that quoted oil and gas firms in Nigeria should make e-tendering an integral component of their procurement processes and build structures to facilitate and strengthen its use.

**Keywords:** Competitiveness, electronic tendering, lead time, process cycle efficiency, supply chain integration

**Introduction**

Nigeria's oil and gas sector a pivotal component of the nation's economy. The sector however, at the crossroads of technological advancement with the implementation of electronic procurement (e-procurement) practices. However, a careful examination reveals critical gaps and challenges that demand rigorous scholarly investigation. While there is a global trend towards the adoption of e-procurement practices (Chen et al., 2022; Kumar & Ozdamar, 2018), the specific impact of these practices on competitiveness of Nigeria's oil and gas companies remains inadequately explored.

Existing studies lack a sector-specific focus, and this hinders understanding of the nuances and challenges in the industry. The relationship between e-procurement practices, especially e-tendering and organisational competitiveness within Nigeria's oil and gas sector is not clearly delineated. Besides, current literature predominantly addresses generic business environments and lacks specificity in addressing industry-specific challenges of competitiveness (Lee et al., 2020; Waller et al., 2019).

So, there is a dearth of research specifically investigating the relationship between e-tendering and organisational competitiveness within Nigeria's oil and gas companies. The oil and gas industry is inherently susceptible to security risks and the implementation of e-tendering introduces new challenges in terms of data security and cyber threats (Goh et al., 2021). Understanding and mitigating these risks is critical to successful and secure integration of e-tendering in the industry.

Despite the distinct characteristics of the oil and gas sector, there is also a notable absence of industry-specific guidelines and best practices for the implementation of e-tendering. Generic insights from existing literature may not fully address the intricacies and challenges unique to the oil and gas industry (Tan et al., 2020).

Considering the identified gaps, this research sought to provide nuanced understanding of the relationship between e-tendering and competitiveness of oil and gas companies in Nigeria. The study tested the direction and magnitude of relationship e-tendering and lead time process cycle efficiency and supply chain integration of oil and gas companies in Nigeria.

### **Baseline Theory: Resource-Based View (RBV)**

RBV (Barney, 1991, as cited in Barney, 2001) has its foundation in Penrose (1959, as cited in Barney, 2001). The theory posits that a firm's sustained competitive advantage stems from its unique bundle of internal resources and capabilities rather than external factors alone. Barney (1991) emphasized that firms achieve sustainable competitive advantage by acquiring and deploying valuable, rare, inimitable, and non-substitutable (VRIN) resources. These resources include tangible assets, intangible capabilities, knowledge and organisational routines.

Wernerfelt (1984) contributed to RBV by introducing the concept of resource heterogeneity and immobility, suggesting that firms differ in their resource endowments and the ease with which they can acquire or transfer resources. Prahalad and Hamel (1990) further expanded RBV by emphasizing the role of core competencies – unique sets of skills and technologies that underpin a firm's competitive advantage.

RBV has been extensively studied in manufacturing and technology sectors; yet its relevance to service industries, such as healthcare or hospitality, remains a subject of debate (Ateke & Nwulu, 2021). Additionally, scholars highlight the need to consider dynamic capabilities – a firm's ability to adapt and innovate over time – in conjunction with RBV to capture the complexities of modern business environments (Teece et al., 1997).

In the context of Nigeria's oil and gas sector, RBV offer valuable insights into understanding firms' competitive advantage and strategic positioning. Oil and gas companies operate in a resource-intensive industry characterized by high capital investments, technological expertise and complex value chains. The possession of valuable resources such as oil reserves, advanced drilling technologies and skilled workforce can provide firms with a competitive edge (Opara & Didia, 2018).

This study adopted RBV as a baseline theory because it underscore the importance of resource heterogeneity and immobility. In Nigeria, factors such as government regulations, geopolitical risks and infrastructure challenges influence firms' access to, and utilization of resources. Companies that effectively leverage their unique resource endowments, such as local knowledge, strategic partnerships, and operational efficiencies, are better positioned to thrive (Nwokah & Ngirika, 2018). Moreover, RBV elucidate strategic decisions of oil and gas companies, such as investment priorities, portfolio diversification and technology adoption.

### **Concept of Electronic Tendering**

Electronic tendering (e-tendering) is a crucial aspect of modern procurement that has evolved over time with advances in technology. Initially, Hartmann and Fischer (1995) defined it as the process of conducting tendering activities electronically, including bid submission and evaluation. Loh and

Venkatraman (2008) elaborate this by emphasizing the utilization of internet-based technologies to automate and streamline tendering processes, as well as enhance efficiency and transparency.

Teichmann and Fischer (2013) highlight the importance of standardization in e-tendering, focusing on electronic exchange of procurement documents. Moving to contemporary perspectives, Khan et al. (2020) framed e-tendering within the context of e-procurement systems, emphasizing features like digital signatures and secure online platforms.

Wang and Fang (2019) underscore the benefits of e-tendering, noting that e-tendering reduce transaction costs and promote fair competition. Zhang et al. (2021) synthesized definitions of e-tendering, and portrayed it as the comprehensive digitization of the tendering process, from notice publication to bid evaluation and contract award, facilitated by integrated e-procurement platforms.

### **Organisational Competitiveness**

Competitiveness is the performance rating of a firm in terms of operational, financial and market effectiveness. Prahalad and Doz (1986) characterized it as the ability of a firm to establish a unique market position by leveraging its resources and capabilities. Building on this, Barney (2001) emphasized adaptability and innovation as key components of competitiveness, highlighting the need for firms to continuously evolve to maintain market relevance. Porter (1998) provided an external perspective, defining competitiveness in terms of a firm's ability to outperform industry rivals through differentiation or cost leadership strategies.

Organisational competitiveness is a firm's ability to create and sustain differential advantage over competitors; and encompass efficiency, innovation, strategic positioning and adaptability. Competitiveness guarantee renewed or entirely new approaches to achieving objectives, hence, has been a recurring subject of discourse in business parlance as business environments become increasingly complex and turbulent (Ateke & Nwiepe, 2017).

Competitiveness is not only about markets or product development and improved business models, but also include macroeconomic, strategic, institutional and behavioural factors that complement firm's potentials (Rao, 2001). Thus, organisational competitiveness is a dynamic and multidimensional concept that plays a pivotal role in the success and sustainability of businesses. Measures adopted by firms to represent competitiveness include profitability, productivity, cost minimization, increased market share, sales growth, customer satisfaction (Cameron, 1980, as cited in Ateke & Nwiepe, 2017).

In this study, however, organizational competitiveness is measured using lead time process cycle efficiency and supply chain integration. These metrics are adopted because, as opposed to earlier studies that focus on manufacturing and service settings, hence adopt indices that are adequate to those sectors, the current study is focused procurement efficiency. Thus, lead time process cycle efficiency and supply chain integration are more appropriate to the context of the study.

Lead time, a crucial concept in supply chain management refers to the duration required to complete a process, from its initiation to its conclusion. It plays a critical role in the efficiency, responsiveness and competitiveness of organizations, particularly in industries that depend heavily on timely deliveries and high operational efficiency. Lead time can be divided into several components, such as order lead time, manufacturing lead time, and delivery lead time. Each of these phases contributes to the overall efficiency of the supply chain.

Process cycle efficiency (PCE) is a significant operational performance metric that reflects how well organizations convert inputs into outputs by eliminating waste and optimizing value-added activities. In today's competitive environment, where efficiency and effectiveness directly impact profitability and customer satisfaction, PCE is essential for businesses aiming to enhance their operational workflows. PCE is especially important in industries with complex processes, such as oil and gas, where inefficiencies can lead to significant cost escalations and operational delays.

Supply chain integration (SCI) refers to the coordination and seamless flow of information, materials and products across an entire supply chain, from suppliers to end customers. Companies that successfully integrate their supply chains achieve improved performance, lower costs, increased flexibility and enhanced customer satisfaction. In industries such as oil and gas, where operations are complex and time-sensitive, the need for integrated supply chain is even more critical (Flynn et al., 2019). SCI involve coordinating activities, processes and information flows across organizational boundaries to enhance overall supply chain performance.

### **Electronic Tendering and Organisational Competitiveness**

E-tendering has been recognized for its transformative impact, enhancing transparency and fostering competition among suppliers (Chen et al., 2022). E-procurement practices like e-tendering has been associated with lower transaction costs, reduced errors and enhanced efficiency. Studies like Eyo et al. (2023) revealed that e-tendering and e-bidding are part of sustainable procurement practice that have significant effect on performance of institutions. This suggests that sustainable procurement practice should be inculcated in organisation to help them protect and preserve its environment, and also improve their competitiveness.

Kim and Lee (2017) explored the impact of e-tendering on competitiveness in South Korea's manufacturing sector. The study found that companies that adopt e-tendering reported significant improvements in cost efficiency and faster procurement processes. Additionally, firms using e-tendering tools saw increase in supplier competition, leading to more competitive prices for goods and services. Relatedly, Singh and Gupta (2019) studied adoption of e-tendering by public sector enterprises, focusing specifically on the Indian Railways. The findings indicate that e-tendering improved transparency of procurement process, thereby reduce corruption and favouritism.

Also, e-tendering is argued to streamline procurement processes and result in faster tender processing and significant cost savings. Singh et al. (2020) aver that e-tendering positively impact operational performance of firms, and lead to enhanced competitiveness. More so, Omoregbe et al. (2022) examined impact of e-procurement practices and sustainable competitive advantage of upstream oil and gas firms in Nigeria. The study found that e-tendering, e-invoicing and e-payment have positive significant relationship with sustainable competitive advantage of upstream oil and gas firms.

In addition, Jakwe and Mutambara (2023) explored e-tendering process and looked at current tender processes in terms of the challenges. The findings are that perceived usefulness of e-tendering and its ease of use significantly leads to its adoption. Furthermore, the use of e-tendering positively influence buyer/supplier relationships, procurement processes and operational efficiency.

Following from the above, the study hypothesize as follows:

H<sub>01</sub>: E-tendering has no significant influence on lead time of oil and gas companies in Nigeria.

Ho<sub>2</sub>: E-tendering has no significant influence on process cycle efficiency of oil and gas companies in Nigeria.

Ho<sub>3</sub>: E-tendering has no significant influence on supply chain integration of oil and gas companies in Nigeria.

### Methodology

This study on e-tendering and organisational competitiveness adopted a survey research design. The population of the study consisted 10 quoted oil and gas companies in Nigeria, whose authentic list was obtained from Nigerian Exchange Group official website at <https://www.ngxgroup.com> as at 30/05/2023. The study utilized the census method, that is, the entire population was surveyed. 3 management level employees were purposively chosen to provide data for the study. The study used structured questionnaire designed in the 5-point Likert scale to collect primary data. The questionnaire was checked for validity by subjecting it to the opinion of a jury of experts, while its reliability was determined using Cronbach's Alpha test, with a threshold of .70 established by Nunally (1978). Regression Analysis was employed to determine the influence of e-tendering on measures of competitiveness. The Statistical Package for Social Sciences, version 25.0, facilitated the analyses.

### Results and Interpretation

**Table 1: Summary of results of Analyses on influence of e-tendering measures of competitiveness (lead time, process cycle efficiency and supply chain integration)**

Hypothesis	R <sup>2</sup>	F-statistics	Sig	Standardized coefficient (β)	t-statistic	Sig
Ho <sub>1</sub>	0.354	16.408	0.000	0.595	4.051	0.000
Ho <sub>2</sub>	0.319	14.058	0.001	0.565	3.749	0.001
Ho <sub>3</sub>	0.142	4.981	0.033	0.377	2.232	0.033

Source: SPSS 23.0 output of data analyses on e-tendering and competitiveness (2024).

From Table 1, the coefficient of determination ( $R^2$ ) shows that e-tendering accounts for 35.4% of the change in lead time. The analysis of variance (ANOVA) result shows the F-statistic is 16.403 and is significant i.e.  $p = 0.000$  showing that there is a fit between the data obtained and the regression model. In other words, regression analysis can be used to analyse the data. The standardized regression coefficient ( $\beta$ ) which is 0.595 shows the strength of the impact of e-tendering on lead time and is significant ( $p = 0.000$ ).

Also in Table 1 is the coefficient of determination ( $R^2$ ) which shows that e-tendering accounts for 31.9% of change in process cycle efficiency. The analysis of variance (ANOVA) result shows the F-statistic is 14.058 and is significant i.e. ( $p < 0.05$ ) showing that there is a fit between the data obtained and the regression model. The standardized regression coefficient ( $\beta$ ) which is 0.565 shows the strength of the impact of e-tendering on process cycle efficiency and is significant ( $p < 0.05$ ).

Further, the coefficient of determination ( $R^2$ ) in Table 1 shows that e-tendering accounts for 14.2% of the change in supply chain integration. The analysis of variance (ANOVA) result shows that there is a good fit between the data obtained and a regression model i.e. F statistic (4.981) and is significant ( $p < 0.005$ ). The standardized regression coefficient, which is 0.377, shows the strength of the influence of e-tendering on supply chain integration and is significant ( $p < 0.005$ ).

**Discussion of Findings**

E-tendering has revolutionized procurement processes across industries globally. In Nigeria, particularly in the oil and gas sector, e-tendering is being increasingly adopted as part of the larger digital transformation efforts. In this analysis, we examined the influence of e-tendering on competitiveness of quoted oil and gas companies in Nigeria. The regression analyses conducted in the study shows that e-tendering has a moderate influence on lead time and process cycle efficiency and a weak influence on supply chain integration.

These findings align with the report of Omoregbe et al. (2022) whose study on e-procurement practices and sustainable competitive advantage in Nigeria's upstream oil and gas sector revealed that e-tendering has a significant positive effect on organisational competitiveness. This means that the adoption of e-tendering in the upstream sector contributes to cost savings, enhanced transparency and faster procurement processes, all of which strengthen firms' competitive positioning. Our findings also support the report of Singh et al. (2020) that e-tendering significantly improve transparency and operational performance, and leads to enhanced competitiveness of firms.

From a theoretical perspective, e-tendering's contribution to competitiveness can be understood through the lens of RBV of the firm which argue that firms can achieve competitive advantage by developing and leveraging valuable, rare, and inimitable resources. E-tendering platforms can be seen as a technological resource that enhance procurement efficiency, reduce costs and foster better supplier relationships. By integrating e-tendering into their operations, oil and gas companies in Nigeria can create a procurement system that is not easily replicated by competitors, thus securing a competitive edge in the marketplace.

**Conclusion and Recommendations**

E-tendering has become a critical driver of organisational competitiveness in industries where procurement plays a pivotal role. By digitizing the tendering process, firms can gain reduce costs, improve procurement efficiency, enhance transparency and foster stronger supplier relationships. This study examined the influence of e-tendering on competitiveness of quoted oil and gas companies in Nigeria. The statistical analyses conducted in the study revealed that e-tendering has a moderate influence on lead time and process cycle efficiency and a weak influence on supply chain integration.

Therefore, the study concluded that e-tendering is a strong determinant of competitiveness of quoted oil and gas companies in Nigeria; and that quoted oil and gas companies in Nigeria can improve their competitiveness through the adoption of e-tendering. The study recommends that quoted oil and gas companies in Nigeria that seek to enhance the competitiveness should make e-tendering an integral component of the procurement processes and build structures to facilitate and strengthen its use.

## References

- Ateke, B. W., & Nwulu, C. S. (2021). Dynamic marketing capabilities and adaptability of hospitality firms in Rivers State. *Nigerian Journal of Management Sciences*, 22(1), 165-189.
- Ateke, B. W., & Nwuepe, N. M. (2017). Agile supply chain management practices and competitiveness of SMEs: A conceptualization. *International Journal of Social Sciences and Management Research*, 3(7), 1-10.
- Barney, J. (2001). Is the resource-based "view" a useful perspective for strategic management research? Yes. *Academy of Management Review*, 26(1), 41-56.
- Chen, C., & Liu, L. (2022). Digital Transformation in Procurement: A Case Study of Technological Adoption in Large Enterprises. *International Journal of Supply Chain Management*, 15(4), 321-340.
- Eyo, E. E., Otu, U. E., & Brambaifa, L. (2023). Procurement practices and organisational performance of tertiary institutions in Bayelsa State. *AKSU Journal of Management Sciences*, 8(1 & 2), 150-167.
- Goh, M., Lim, S., & Zhao, X. (2021). Dynamic Pricing Mechanism for Electronic Procurement Auctions: A Game-Theoretic Approach. *International Journal of Production Economics*, 232, 107983
- Jakwe, K., Mutambara, D., Jakwe, K. D., & Mutambara, E. (2023). Re-designing the tendering process within the Department of Transport: A case of procurement management. *Journal of Positive School Psychology*, 7(4), 1528-1550. <https://doi.org/10.47605/jpsp.v7n4a7>
- Khan, S. U., Qiao, L., & Kanwal, S. (2020). Toward sustainable operations in the oil and gas supply chain: A bibliometric analysis and future research directions. *Sustainability*, 12(16), 6526. <https://doi.org/10.3390/su12166526>
- Kim, J., & Lee, H. (2017). E-tendering adoption in the South Korean manufacturing sector. *International Journal of Supply Chain Management*, 10(1), 101-115.
- Kumar, V., & Ozdamar, L. (2018). E-procurement systems: An integrative framework and a comparative analysis. *International Journal of Production Research*, 56(18), 5903-5926. <https://doi.org/10.1080/00207543.2017.1372639>
- Lee, L. H., Chan, F. T., & Manzouri, M. L. (2020). Enhancing supply chain integration and firm performance through social mechanisms: Evidence from small and medium-sized enterprises in the oil and gas industry. *International Journal of Production Economics*, 221, 107486. <https://doi.org/10.1016/j.ijpe.2019.107486>
- Nwokah, N. G., & Ngirika, D. (2018). Online advertising and customer satisfaction of e-tailing firms in Nigeria. *Journal of Intelligent Information Management*, 10, 16-41.
- Omoregbe, O., Olufolahan, M., & Azage, J. (2022). Electronic procurement practices and sustainable organisational competitive advantage of the upstream sector of the oil and gas firms in Nigeria. *Journal of Academic Research in Economics*, 14(1), 72-94.
- Opara, B., & Didia, J. (2018). Global marketing strategies and multinational companies' involvement in developing economies. In *35th Euro Asia Management Studies Association Annual Conference* (pp. 1-18). Hankuk University of Foreign Studies.
- Porter, M. E. (1998). *Competitive strategy: Techniques for analyzing industries and competitors*. Free Press.
- Rao, S. L. (2001). Indian companies in an open economy. *Economic and Political Weekly*, 36 (5/6), 457-461.
- Singh, P. K., & Shiau Wei Chan, S. W. (2022). The impact of electronic procurement adoption on green procurement towards sustainable supply chain performance—Evidence from

- Malaysian ISO organisations. *Journal of Open Innovation: Technology, Market, and Complexity*, 8(2), 61-74.
- Tan, K. C., Kannan, V. R., & Handfield, R. B. (2020). Antecedents and consequences of e-sourcing capability development. *Journal of Business Research*, 109, 373-385.
- Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, 18(7), 509-533.
- Teichmann, T., & Fischer, S. (2013). The standardization of e-tendering processes. In *Proceedings of the European Conference on e-Government* (pp. 567-575). Reading, UK: Academic Conferences International Limited.
- Wang, H., & Fang, Y. (2019). E-government procurement adoption: A trust perspective. *International Journal of Information Management*, 45, 304-316.
- Waller, M. A., Johnson, M. E., & Davis, T. (2019). Measuring and managing process efficiency in a global supply chain. *Journal of Business Logistics*, 40(2), 101-113.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171-180.
- Zhang, M., Zhu, D., & Fu, J. (2021). Evaluating the performance of electronic government procurement: A China study. *Government Information Quarterly*, 38(1), 101518.