

Influence of E-Tendering on Supply Chain Efficiency in Manufacturing Firms in Nakuru West Sub-County, Kenya

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Abstract

E-tendering integrates communication and information technology to handle various tasks throughout the tendering process. The main objective of this study was to ascertain the influence of e-tendering systems on the supply chain efficiency in Kenyan industrial companies situated in the Nakuru West Sub County. This study used descriptive survey design and the data came from 120 respondents who included procurement officers, information and communications departments as well as business owners and employees from various manufacturing organizations. The researcher sampled 12 manufacturing companies in Nakuru West Sub County. The study used simple random sampling in getting a representative sample; this gave an opportunity for each company to be represented. This project utilized questionnaires as research instruments. This study employed qualitative and quantitative models in analyzing the data which was collected from the manufacturing companies, which was subsequently presented in tables. Correlation, regression analysis and descriptive methods were used for data analysis and data comparison. The collected data was presented using charts and tables as required by the study. The response proportion was 90%, with only 10% of the sample unable to provide feedback. Correlation tests discovered a positive impact of e-tendering on supply chain efficiency in manufacturing companies. The study concluded that e-tendering processes improve the tendering process by increasing efficiency, transparency, accountability and brings in a broader pool of competitors which leads to better quality. The study suggests that managers adopt e-tendering practices while ensuring they are well-matched with the current structures and resources. Additionally, it commends that the administration capitalizes in user-friendly systems and technologies that integrate seamlessly into their current infrastructure.

Keywords: E-tendering, Manufacturing, Nakuru West Sub-county, technology

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1. Introduction

Companies' efficiency hinges on its adept management when working in its supply chain (Njenga, 2019). Effective supply chain management is crucial for an organization's survival. A supply chain performance metrics system's primary constituents include delivery time, quality, cost, flexibility, inventory levels, resource utilization and delivery performance (Quesada et al., 2010). It is necessary to switch to e-procurement services from traditional modes of procurement (Mutangili et al., 2020). E-procurement streamlines operations and saves both time and money by harnessing communication and information technologies. It incorporates various phases of the procurement procedures which includes ordering, negotiating, receiving, sourcing, and post-procurement review, all seamlessly integrated for efficiency (Nyangah & Patrick, 2015).

Ongore and K'Obonyo (2011), along with other scholars, have emphasized that when organizations integrate their internal activities effectively, their economic performance tends to improve. One of the strategies increasingly adopted to support this kind of integration is e-tendering, a digital approach that streamlines and connects procurement processes across departments (Mose, Njihia, & Magutu, 2013). Similarly, Malela (2010) suggested that e-tendering has a positive influence on firm performance. However, this claim still lacks robust empirical backing to fully validate the connection.

The advent of the internet has brought transformative change to how businesses operate, particularly in the tendering function. According to Gardenal (2010), information technologies have fundamentally reshaped how both organizations and governments conduct their operations. Given that a significant portion of public and private funds is spent on procuring goods and services, many institutions have turned to e-tendering as a cost-cutting and efficiency-enhancing tool. Despite the growing opportunities and benefits associated with e-tendering, its adoption across the public and private sectors has been cautious and uneven (Malela, 2010).

Even with their widespread use, the connection amongst eBusiness technology and supply chain performance is still unclear. Procurement requisitioning, tender/quotation analysis, sourcing, planning, sending and receiving, order processing, order transmission to suppliers, and supply chain initiatives are the capabilities that eBusiness technologies most commonly transform (D'Avanzo et al., 2003). Furthermore, despite much academic research and heated debate, there has been no definitive conclusion reached regarding the reoccurrence on investment

from data technology practice. It is still difficult to establish a strong connection among supply chain performance and eBusiness technologies. This study seeks to explore how e-procurement systems affect supply chain efficiency in manufacturing organizations, leading us to our primary research concern.

2. Statement of the Problem

E-tendering and other automated procurement technologies are believed to improve efficiency and transparency in supply chain operations. In manufacturing firms across Nakuru West Sub-County, these systems are expected to make procurement faster, cheaper, and more reliable. However, there's still a noticeable gap between what these technologies promise and what they actually deliver on the ground. Even though the tools are available, many firms haven't fully embraced or implemented them. A study by Kibicho and Waiganjo (2018) found that only about 40% of manufacturing companies had fully integrated e-procurement into their operations. This means a majority are not making full use of these systems. As a result, many are missing out on the benefits they could bring. This gap between potential and reality raises an important question: why aren't more firms using these technologies effectively? Understanding what's getting in the way is key to helping more businesses improve their supply chains through e-tendering.

3. Literature review

3.1 Empirical Literature

E-tendering automates the tendering process online, facilitating a more streamlined and controlled procurement process (Qusef et al, 2019). It benefits both procurers and suppliers by eliminating geographical barriers, saving time by reducing the communication traffic between the manufacture and supplier and also the need to reduce buyer tender documentation. E-tendering also enhances the certainty of procurement deals by providing real-time feedback and addressing concerns about the timely arrival of application forms or receipts. It includes all the electronic procurement processes of e-tendering, such as including, e-selecting, e-awarding, e-noticing, e-response and e-mailing practices, Jayawardhena & Jayaratne (2019) examined the implementation and presentation of e procurement.

The issue of online content for e-commerce is said to fall within the category of information quality. Web content must be safe, user-friendly, comprehensive, pertinent, and customized for e-procurement to meet suppliers' and buyers' expectations and for it to be successful. This is because the involved parties will be required to visit the website frequently and do business online. Three constructs proposed by this are perceived ease of use and trust, service quality dimension and supposed risk (Cho & Adali,2015). Giving the right information and trust plays a very crucial part in e-commerce, this is due to the high level of risks involved in the transactions conducted online.

According to Mayers & Hardin (2006), the most commonly used definition of trust is the confidence and reliability that exists between parties engaging in business transaction. The willingness taken by one part in order to endure the actions of the other involved partner, with the hope that their partner will fulfill their agreed-upon transaction or duty. Implementing e-tendering in a manufacturing company can significantly enhance supply chain efficiency by streamlining the procurement process, reducing costs, and improving transparency (Osir, 2016). E-tendering enables faster communication between buyers and suppliers. Instead of traditional paper-based processes, all tendering activities can be conducted online, thereby diminishing the time needed for document preparation, submission, and evaluation. Consequently, this leads to cost reduction by eliminating the necessity for physical documentation and manual processing.

E-tendering significantly decreases administrative costs linked with procurement. Additionally, e-tendering has led to increased competition which has brought about better pricing from suppliers in order to fit in the competitive market And get customers who are looking for affordable products, further reducing overall procurement costs thus Improved Supplier Management in E-tendering which allows for a centralized repository of supplier information, hence it becomes very easy for the business to gauge and pick the most appropriate dealer looking into the following factors: delivery, value of their money and capability. According to Amarapathy et al. (2013), this centralized approach also facilitates better supplier relationship management leading to Enhanced Transparency and Compliance in E-tendering platforms which provide transparency throughout the procurement process, ensuring fairness and integrity. All activities, from bid submission to contract award, are documented electronically, reducing the likelihood of disputes and improving compliance with regulatory requirements hence a company is flexible to all the changes which might occur during the e-tendering process. Whether the company is expanding its operations, entering new markets, or diversifying its product range, e-tendering can accommodate these changes without significant disruptions to the procurement process (Samoei & Ndede, 2018).

3.2 Theoretical Literature

This study is anchored in the Dynamic Capability Theory, which emphasizes an organization's ability to purposefully adapt, reconfigure, and deploy its internal and external resources in response to changing environments (Chien & Tsai, 2012). In the context of manufacturing firms in Nakuru West Sub-County, the adoption and effective use of e-tendering can be seen as a dynamic capability that allows organizations to improve supply chain efficiency by embracing technological change.

Given the rapidly evolving nature of today's business landscape driven by shifts in consumer preferences, technological innovation, and regulatory demands, firms must be flexible and proactive in their responses (Roberts, 2007). E-tendering presents a strategic tool for companies to streamline procurement processes, reduce costs, and enhance transparency. However, for firms to realize these benefits, they must be able to integrate this technology into their operations effectively. This requires not only technological readiness but also the capacity to realign internal processes, retrain staff, and adapt organizational structures.

In Nakuru West Sub-County, where the full integration of e-tendering remains limited, Dynamic Capability Theory provides a useful lens for understanding why some firms succeed while others lag behind. It highlights the importance of not just acquiring new technologies, but also developing the internal agility and strategic mindset necessary to use them effectively in a competitive environment.

4. Methodology

The study used a descriptive survey design where questionnaires were used as the primary tool for data collection. The targeted people consisted of 120 respondents including thirty (30) company managers, forty (40) IT specialists and fifty (50) procurement officers. The study employed simple random sampling technique in selecting the manufacturing plants for the sample. A sample of twelve (12) companies was chosen, with ten respondents (10) selected from each company using simple random sampling. Within each company, the respondents included three (3) from management, three (3) from the IT department, and four (4) from the procurement section. Both qualitative and quantitative methods were employed in the study. Data analysis was conducted using Microsoft Excel and SPSS Software Version 29. Quantitative data were subjected to simple linear regression analysis and frequency distribution. The findings were presented using graphs, tables, and charts to facilitate interpretation and analysis. The relationship between variables was determined at a 5% significance level using simple linear regression analysis. This model was deemed appropriate, as the study aimed to examine the relationship between a single independent variable (e-tendering) and a single dependent variable (supply chain efficiency). The simple linear regression model was suitable for assessing how changes in e-tendering influence the efficiency of supply chain operations within manufacturing firms.

The regression model used was:

$$Y = \beta_0 + \beta_1 X + \varepsilon$$

Where:

Y = Supply Chain Efficiency (Dependent Variable)

β_0 = Intercept (the expected value of Y when e-tendering is zero)

β_1 = Slope coefficient (the rate of change in supply chain efficiency for a unit change in e-tendering)

X = E-Tendering (Independent Variable)

ε = Error term (captures variability not explained by the model)

5. Results and Discussions

The findings of this study indicated that there is a significant effect of e-tendering on supply chain efficiency, affecting multiple aspects of manufacturing operations. By digitizing tendering processes, companies can achieve greater accuracy, reduce administrative burdens, and foster more competitive bidding environments. E-tendering platforms offer real-time access to tender information, automated workflows, and robust data analytics, which collectively contribute to enhanced decision-making and optimized supply chain management.

5.1 Use of E-Tendering in Manufacturing Companies in Nakuru West

The largest proportion of respondents (46%) reported a neutral stance on e-tendering (Table 5.1). This significant percentage suggests that while e-tendering is acknowledged, it may not have been fully integrated or its benefits fully realized in many manufacturing companies. The neutral response might also reflect uncertainty or lack of sufficient exposure to the system, indicating that these companies are still in the early stages of adoption or are using it intermittently.

Table 5.1 Use of e-tendering in manufacturing companies

Scale	Percentage
Strongly disagree	0%
Disagree	0%
Neutral	46%
Agree	18%
Strongly agree	36%

Source: *Author, 2025*

A combined 54% of respondents indicated a positive perception of e-tendering by either agreeing (18%) or strongly agreeing (36%) (Table 5.1). This indicates a strong inclination towards the benefits associated with e-tendering, such as increased efficiency, reduced costs, and better transparency in the procurement process. The high percentage of those who "strongly agree" highlights a notable enthusiasm and confidence in e-tendering's role in modernizing procurement practices within the manufacturing sector.

Notably, there were no responses in the "Strongly disagree" or "Disagree" categories. This absence of negative feedback suggests that e-tendering is not widely perceived as problematic or ineffective among the surveyed manufacturing companies. It implies that any challenges faced are likely to be minor or manageable, and overall sentiment towards e-tendering is positive or at least neutral. The findings align with Wanjala & Kimtai (2015), who discovered that most respondents believe there is an increasing trend toward using e-tendering. This indicates that the company's products and services are significantly benefiting from e-tendering. It also implies that the market is promising and potentially profitable for the organization when they make use of e tendering as an e procurement tool.

5.2 Effects of E-Tendering on Supply Chain Efficiency in Nakuru West

Study survey results reveal that most respondents (42%) view e-tendering as having a significant impact on supply chain efficiency (Figure 5.1). This suggests that e-tendering is generally viewed positively, with significant improvements in efficiency reported by a substantial portion of the population. This e-tendering often reduces opportunities for corruption and enhances transparency, which could streamline procurement processes and improve efficiency. The digital nature of e-tendering also accelerates the procurement cycle, leading to faster decision-making and less managerial problems. Furthermore, 33% of respondents rated the impact as moderate. This indicates that while there is a clear benefit observed by a significant portion of the respondents, there are still some who see the advantages as less pronounced or variable.



Figure 5.1 Effects of e-tendering on supply chain efficiency

Source: *Author, 2025*

On the lower end of the spectrum, 16% of respondents rated the impact of e-tendering as either low (8%) or not at all (8%). This minority viewpoint highlights that e-tendering might not be universally effective or that its benefits may not be fully experienced by all shareholders in the supply chain. This can be accredited to limited technological infrastructure or user expertise which might hinder the effective implementation of e-tendering systems. Additionally, E-tendering systems may not seamlessly integrate with existing supply chain processes, leading to inefficiencies or disruptions. Resistance to adopting new technologies can affect the overall

effectiveness of e-tendering. This is in line with McConnell (2009), who emphasized the importance of adopting e-procurement technologies within companies. Wanyonyi and Moturi (2015), did a study which supported that e-procurement can speed up ordering and follow-up processes. Furthermore, Panduranga (2016) found that evaluation, selection and electronic tender advertising made e-tendering process very smooth and improved information sharing between firms and traders. Similarly, Mafini et al. (2020) found out that electronic procurement practices, such as electronic sourcing was very crucial in determining the bond between a company and its supply chain, hence improved inventory control.

Table 5.2: Simple Linear Regression Results for E-Tendering and Supply Chain Efficiency

Model	Unstandardized Coefficients (B)	Std. Error	Standardized Coefficients (Beta)	t	Sig. (p-value)
(Constant)	3.421	1.591	-	1.647	.021
E-Tendering (X)	0.315	0.098	0.153	2.152	.003

***Dependent Variable:** Supply Chain Efficiency

The Regression Equation is;
 $Y = 3.421 + 0.315X$

The results indicate a statistically significant positive relationship between e-tendering and supply chain efficiency ($p = 0.003 < 0.05$). The unstandardized coefficient ($B = 0.315$) suggests that a one-unit increase in the level of e-tendering adoption leads to a 0.315-unit increase in supply chain efficiency, assuming other factors are held constant. Furthermore, the standardized beta coefficient ($\beta = 0.153$) indicates a modest but positive impact of e-tendering on supply chain efficiency. These results suggest that increased adoption of e-tendering contributes positively to enhancing the efficiency of supply chain operations.

6.0 Conclusions and Recommendations

The study concluded that E-tendering positive influence on supply chain highlights the benefits of digital tendering processes in optimizing procurement and reducing delays. E-tendering streamlines procurement processes, improves transparency, reduces transaction costs, and enhances coordination with suppliers. While e-tendering is moderately used, manufacturing companies should seek to increase its adoption by highlighting its benefits in terms of transparency and efficiency. Industry leaders should invest in robust digital infrastructure to support the seamless implementation of e-tendering systems across the manufacturing sector. There is a need for targeted training programs for procurement officers in the manufacturing sector to enhance their digital competencies and ensure effective use of e-tendering platforms. Managers should also advocate for and facilitate broader use of e-tendering within their teams.

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