
**Inventory Control Management Practices on Procurement Performance of
Technical and Vocational Education and Training Institutions in Kisii County**

Article history: Revised format: 27th Jan 2025, Available online: 16th May 2025

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Abstract:

Purpose: The study aimed to determine the effect of inventory control management practices on procurement performance in Technical and Vocational Education and Training (TVET) institutions in Kisii County, Kenya. Specifically, it examined the impact of economic order quantity and safety stock ordering on procurement performance.

Material/methods: The study was grounded in the Transaction Cost Economics Theory and Stock Control Theory and adopted an explanatory research design. The target population comprised 64 employees working in the finance and procurement departments across four public TVET institutions in Kisii County. A census approach was applied. Data were collected using structured questionnaires. Content validity and Cronbach's Alpha coefficient were used to test the validity and reliability of the research instrument, respectively. Descriptive statistics (means, standard deviations, frequencies, and percentages) and inferential statistics (Pearson correlation and multiple regression analysis) were utilized for data analysis and hypothesis testing.

Findings: The regression analysis revealed that both economic order quantity and safety stock ordering practices had a statistically significant positive effect on procurement performance. The results indicate that proper implementation of inventory control mechanisms enhances efficiency and effectiveness in procurement functions within TVET institutions.

Conclusion: The study concludes that the adoption of sound inventory control management practices substantially contributes to improved procurement performance in public TVET institutions. Strengthening these practices is essential for achieving better resource utilization and service delivery.

Value: This research contributes to the understanding of inventory management's role in the public education sector's procurement systems. It offers practical recommendations for policymakers and institutional managers to enhance procurement efficiency through targeted training, supportive policy frameworks, and strategic investment in inventory control systems.

Keywords: Internal Control Systems, Revenue Collection, Control Environment, IT Integration, Public Hospitals

Paper Type: Research Article

Recommended citation: Barongo, M. O., & Moturi, D. (2025). Inventory control management practices on procurement performance of Technical and Vocational Education and Training institutions in Kisii County. *Journal of Economics, Management Sciences and Procurement*, 4(1), 107–121.

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1.1. Introduction

The procurement function has become a critical factor in determining organizational success in today's highly competitive business environment (David et al., 2024). As a fundamental aspect of Supply Chain Management (SCM), procurement plays a crucial role in shaping a company's strategic framework, directly influencing its overall performance and sustainability. Given its significance, assessing the efficiency and effectiveness of procurement processes is essential (Kusrini et al., 2024). Procurement performance is increasingly recognized as a key determinant of a firm's ability to compete in the global market, with inventory control management practices playing a central role in this dynamic (Anand et al., 2025). Inventory-related challenges such as stock-outs and overstocking frequently disrupt retail operations, hindering businesses from minimizing inventory costs while ensuring product availability. Insufficient stock negatively impacts customer satisfaction, a crucial driver of business success. To mitigate these issues, businesses must adopt effective inventory control techniques (Haibing, Zhou, Yang, & Shengjun, 2020).

Inventory management is a key determinant of procurement success in both private and public institutions, as it represents both an asset and a cost to the organization. Inventory control practices encompass various methods, strategies, and processes that businesses employ to optimize stock levels and enhance operational efficiency (Ekakitie, Kifordu & Nwaebuni., 2022). Effective inventory management ensures that businesses maintain the right stock levels to meet customer demand while minimizing carrying costs and avoiding stock-out or overstock situations (Biwott & Kwasira, 2024). Multiple inventory control techniques are available, each tailored to different cost structures and criticality factors, including ABC analysis, VED analysis, FSN analysis, and SDE analysis. These inventory control models assist organizations in determining optimal stock levels and storage quantities, ultimately improving operational efficiency (Ekakitie et al., 2023). This study will analyze four key inventory management models—Economic Order Quantity (EOQ), Just-In-Time (JIT), Material Requirement Planning (MRP), and Safety Stock—evaluating their strengths, weaknesses, and applicability to organizational procurement strategies.

Despite the advantages of effective inventory control, institutions—particularly in the Technical and Vocational Education and Training (TVET) —continue to face significant challenges in maintaining optimal stock levels. Rather than accumulating excessive inventory to meet all potential demands or reducing costs at the expense of availability, organizations must strike a balance that aligns with their competitive priorities (Ilori & Majiyagbe, 2024). Complexities in inventory control systems have been cited as major barriers to optimizing storage capacities and ensuring the availability of necessary stock for employees (Mbugi & Lutego, 2022). Previous research suggests that inadequate inventory management leads to efficiency losses ranging from 25% to 40% in organizations worldwide (Makombe, 2015). To enhance operational effectiveness in institutions, including universities, proper inventory control systems must be integrated into their overall organizational framework (Mohamed & Kibet, 2019; Ondyeki, 2019). Therefore, this study aims to examine the effects of inventory control management practices on procurement performance in TVET institutions in Kisii County, addressing gaps in inventory management and procurement efficiency.

Public procurement in Kenyan Technical and Vocational Education and Training (TVET) institutions had been the focus of major legislative and policy reforms since the 1960s, yet by 2025 concerns remained over weak strategic planning, endemic corruption, conflicts of interest, and frequent non-compliance with procurement rules (Wang et al., 2025). Assessments of procurement performance were hampered by low professionalism, lack of autonomy for procurement bodies, poorly defined performance indicators, and fragmented data management—exacerbated by weak ICT systems and haphazard record-keeping (Jackinda, 2007). These systemic flaws led to stalled development projects, budget shortfalls, and misalignment between contract awards and actual procurements in more than half of public TVET institutions (PPOA, 2023), with goods and services sometimes procured at prices up to 60% above market rates (PPOA, 2019). Even in Kisii County’s TVET colleges, where reliable supply of textbooks, laboratory apparatus, and computers depended on sound procurement planning (Edokpolor & Dumbiri, 2019), inventory control had emerged as a critical lever for improving procurement outcomes (Aborse, 2023; Odasco & Saong, 2023). Nonetheless, scant research had directly linked inventory-management practices to procurement performance in TVET settings: most local studies—such as Saro’s (2022) work in Nakuru County universities—examined audits, replenishment schedules, cycle counts, and stock verification without addressing TVET. To fill this gap, the present study investigated how four core inventory-control techniques (economic order quantity and safety-stock ordering) shaped procurement performance in Kisii County’s TVET institutions.

1.2. Theoretical and Conceptual Framework

The Transaction Cost Economics (TCE) theory, first articulated by Coase (1937) and later refined by Williamson (1975, 1985), contended that organizations structured their transactions so as to minimize the combined costs of searching for information, negotiating contracts, monitoring performance, and enforcing agreements. TCE attributed these transaction costs to bounded rationality, opportunism, and asset specificity, thereby guiding firms in deciding whether to internalize or outsource activities. Within inventory management and procurement, TCE framed Economic Order Quantity (EOQ) as a mechanism for balancing the trade-off between ordering frequency and holding costs. Empirical studies reinforced this linkage: Patil et al. (2025) argued that EOQ within a TCE framework reduced unnecessary replenishment expenses while maintaining operational continuity; Ekakitie et al. (2022) demonstrated its power to lower holding costs and prevent stockouts; Rosihan et al. (2024) documented significant cost savings in public institutions through optimized ordering cycles; and Mbugi and Lutego (2022) highlighted EOQ’s role in mitigating procurement uncertainties via structured decision-making. Considering Kisii County’s TVET institutions operate under stringent budget ceilings and face periodic procurement delays (Edokpolor & Dumbiri, 2019; PPOA, 2023), applying TCE to guide EOQ practices offered a theoretically robust pathway to enhancing procurement efficiency, reducing transaction costs, and ensuring uninterrupted supply of critical teaching and learning materials.

Stock Control Theory—also termed Inventory Control Theory—originated in the mid-20th century (Arrow et al., 1958) as a prescriptive framework for maintaining optimal inventory levels that avoid both stockouts and excessive holding costs. Its core tenets—demand forecasting, lead-time variability management, reorder-point calculation, and

safety-stock provisioning—address the inherent uncertainties of supply and demand (Silver, Pyke, & Peterson, 1998). Scholars have explored its practical implications: Chopra and Meindl (2019) underscored safety stock’s importance in preventing service-level failures under fluctuating demand; Nahmias and Olsen (2015) cautioned that overreliance on safety buffers can inflate holding costs and tie up capital; and Cachon and Terwiesch (2019) linked inadequate safety-stock policies in public institutions to waste and shortage-driven inefficiencies. For Kisii County’s resource-constrained TVET institutions—where uninterrupted access to laboratory reagents, consumables, and equipment is vital for uninterrupted curriculum delivery—adopting data-driven Stock Control Theory measures promised to optimize stock availability, streamline procurement cycles, and improve service delivery, thereby translating theoretical principles into tangible institutional performance gains..

Thus, the conceptual framework depicted in Figure 1 provides a diagrammatic representation of the hypothesized relations between the independent variables of inventory control management practices, including economic order quantity and safety stock ordering and the dependent variable, procurement performance, among TVET in Kisii County. This framework serves as a visual representation of the proposed interactions and associations between these key components, offering a structured approach to understanding how inventory control management practices may affect procurement performance in the context of TVET in Kisii County.

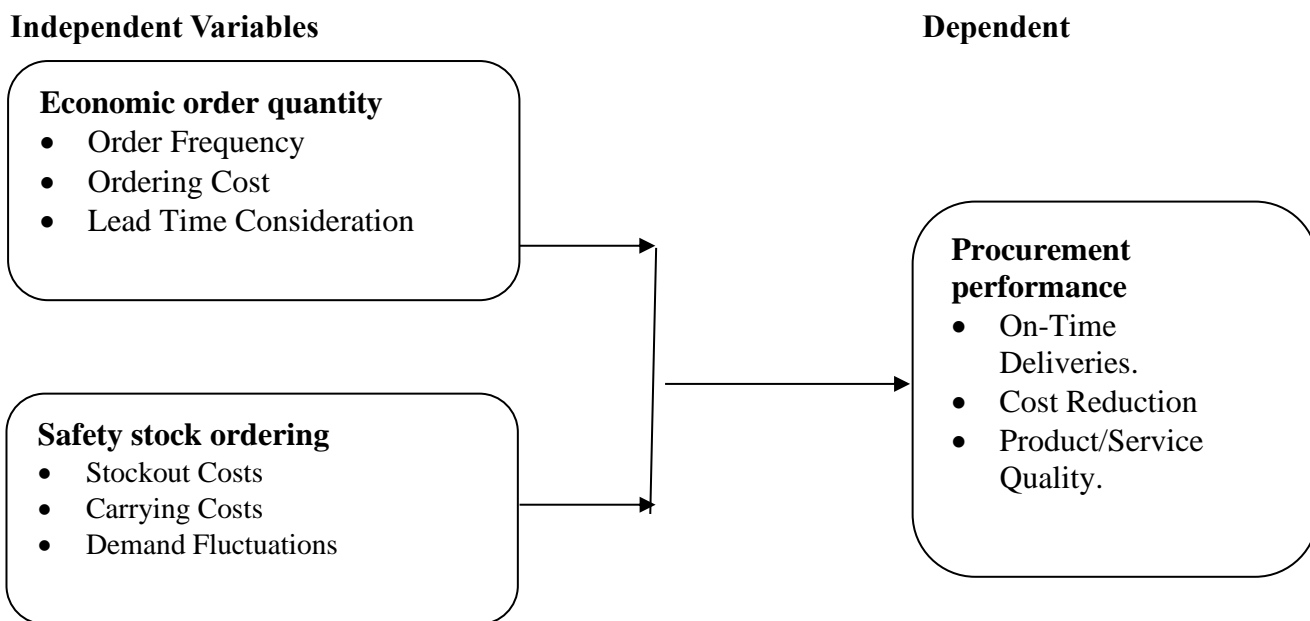


Figure 1: Conceptual framework

2.1. Empirical Review

2.1.1. Economic order quantity on Procurement Performance

Oboe, Kwendo, and Odera (2024) conducted a descriptive survey across procurement, stores, and quality–assurance departments in Kenyan county governments and found that Economic Order Quantity (EOQ) implementation had a positive and statistically significant effect on supply–chain performance. By streamlining procurement workflows, optimizing reorder points, and reducing stock–management inefficiencies, EOQ helped these public entities achieve smoother operations and lower carrying costs.

Similarly, Korir, Kaitany, and Sang (2021) employed a correlational design in Level-Five hospitals of Kenya's South Rift region and reported a strong positive correlation between EOQ usage and hospital performance. Respondents involved in procurement, stock control, and record-keeping consistently indicated that EOQ led to better stock visibility, minimized wastage, and enhanced service delivery metrics.

Magaji, Suleiman, and Hassan (2024) extended EOQ analysis into the manufacturing sector at Nina Plastic Ltd., using a combination of literature review, preliminary surveys, and field research. They demonstrated that EOQ adoption sharply reduced storage problems, improved procurement planning accuracy, and cut unnecessary ordering expenses by ensuring replenishments were precisely timed. Riza, Purba, and Mukhlisin (2018) similarly highlighted EOQ's role in mitigating operational bottlenecks—such as material-issuance delays and chaotic stock systems—by balancing order and holding costs to maintain timely material availability and prevent overstocking. Collectively, these empirical studies affirmed that EOQ significantly bolstered procurement performance across public administration, healthcare, and manufacturing contexts. By optimizing order quantities, lowering total inventory costs, and tightening control over stock levels, EOQ consistently delivered efficiency gains and alignment between procurement activities and organizational objectives. This body of evidence underscores EOQ's versatility as a critical tool for achieving sustainable, cost-effective supply-chain management.

2.1.2. Safety Stock Ordering on Procurement Performance

Demiray Kırmızı, Ceylan, and Bulkan (2024) evaluated five safety-stock strategies—including their firm's existing method, the Theory of Constraints replenishment model, a service-level approach, and two novel hybrids incorporating ABC-XYZ classifications—by simulating month-end inventory levels and calculating total holding and shortage costs. They found that the second hybrid model, which merged the service-level approach with ABC-XYZ segmentation, delivered the greatest cost savings, substantially undercutting the company's traditional safety-stock policy and demonstrating that coupling service-level targets with item-classification techniques can markedly reduce overall inventory expenditures.

Mohamud and Mwangi (2021) surveyed 106 supermarkets in Nairobi County to assess how stock-control practices influenced supply-chain performance. While their correlation analysis revealed an overall negative association between generic stock control and supply-chain metrics—suggesting that rigid or poorly aligned controls impeded responsiveness—they also showed that continuous stock replenishment protocols had a clear positive impact by enhancing procurement speed and minimizing stock-out incidents. Consequently, they concluded that well-designed safety-stock strategies, especially those emphasizing regular replenishment, were critical for maintaining retail agility amid fluctuating consumer demand.

Building on these practical studies, Li (2019) collaborated with a drilling-tools manufacturer to develop a distribution-based safety-stock model that classified items into three probability distributions and set tailored safety levels according to service-level objectives and lead-time variability. He introduced a recursive algorithm to optimize complex production chains, demonstrating that precise statistical grouping yields both storage-cost reductions and maintained operational efficacy. Similarly,

Chung, Talluri, and Kovács (2018) highlighted that dynamic demand and uncertain lead times required flexible inventory policies; they showed that excessive buffers inflated holding costs, whereas inadequate safety stocks risked supply interruptions, ultimately recommending real-time demand forecasting and supplier-reliability assessments to adjust safety-stock levels strategically.

3.1. Research Methodology

The study adopted a descriptive survey research design to systematically collect and analyze data on inventory control management practices and their impact on procurement performance in Kisii County's TVET institutions, without manipulating the natural environment (Creswell & Creswell, 2018). The target population comprised all 64 finance and procurement staff across five public TVET colleges—Keroka TTI, Orogare TVC, Riamo TVC, Kisii National Polytechnic, and Riatirimba TVC—and a census approach was used so that every qualified employee participated (Israel, 2012). Primary data were gathered via structured questionnaires—each containing demographic items and seven Likert-scale sections on independent and dependent variables—which were self-administered with accompanying cover letters assuring confidentiality, followed by reminders to maximize response rates (Sekaran & Bougie, 2013; Denscombe, 2017). A pilot test with 6 staff at Kitutu Chache TVC enabled refinement of the instrument and assessment of clarity, reliability, and validity, with Cronbach's alpha coefficients above 0.70 confirming internal consistency (Cooper & Schindler, 2014; Tavakol & Dennick, 2011). Content and face validity had been ensured through expert review and alignment with theoretical frameworks (Shrotryia & Dhanda, 2019), and methodological triangulation—combining quantitative surveys with document reviews and informal observations—enhanced construct validity (Flick, 2007). Collected data were thoroughly coded, cleaned, and entered into SPSS v.22, where descriptive statistics (frequencies, percentages, means, standard deviations) characterized variables and inferential analyses (normality tests, regression models at a 5% significance level) tested hypotheses regarding the effects of EOQ and safety stock, on procurement performance, thus providing a robust empirical investigation of inventory control in the TVET sector..

$$Y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \varepsilon_1$$

Where

Y is procurement performance in TVET institutions Bloc; β_0 = constant (coefficient of intercept);

X_1 = economic order quantity, X_2 = safety stock ordering; ε =Error Term;

B_1, B_2 = regression coefficient of four variables

4.1. Findings and Discussion

This section presents the findings and results of the use of variables using procedures mentioned in chapter three of the methodology. In line with specific objectives, data was analyzed, interpreted, and inferences drawn on them. The study targeted 64 employees working in the finance and supply/procurement departments across five public Technical and Vocational Education and Training (TVET) institutions in Kisii County. These institutions included: Keroka Technical Training Institute, Orogare Technical and Vocational College, Riamo Technical and Vocational College, The Kisii National Polytechnic, and Riatirimba Technical and Vocational College. Out of the 64 distributed questionnaires, 62 were correctly filled and returned, resulting in a high response rate of 96.9%. The data collected was coded and analyzed using SPSS Version

25. According to Mugenda and Mugenda (2013), a response rate of 50% is considered adequate, 60% is good, and 70% or more is very good. Similarly, Cooper and Schindler (2014) assert that a response rate above 60% is sufficient for meaningful data analysis. Therefore, the 96.9% response rate achieved in this study is highly satisfactory and contributes to the credibility and reliability of the research findings.

4.1.1. Descriptive Statistics

This section presents the descriptive statistics related to the procurement performance of Technical and Vocational Education and Training (TVET) institutions in Kisii County. The analysis, as outlined in Table 1, provides insights into employees' perceptions regarding various aspects of procurement performance.

Table 1: Descriptive Statistics for Procurement performance of TVET

	Mean	Std. Dev
Our hospital has achieved increased efficiency in service delivery,	2.71	1.34
We have seen a decrease in operational risks	3.61	1.36
There has been a marked increase in our service offering coverage,	3.76	1.52
We have expanded our operation in geographical coverage	3.77	1.06
We have streamlined the efficiency of records retrieval, enabling quick access to vital patient information when it is needed most.	3.55	1.46
Procurement performance	3.15	0.91

Findings from Table 1 revealed that over one third of respondents disagreed (Mean = 2.71, SD = 1.34) that their institutions had achieved greater efficiency in service delivery, reflecting moderate dissatisfaction and divergent views. In contrast, nearly half of the participants expressed strong agreement that operational risks had been reduced (Mean = 3.61, SD = 1.36), indicating a generally positive—but still somewhat varied—perception of risk control improvements. More than half of those surveyed strongly agreed that service offerings had expanded markedly (Mean = 3.76, SD = 1.52), suggesting broad consensus on enhanced coverage despite noticeable variability in responses. Regarding geographical expansion, roughly one third strongly agreed and nearly one quarter agreed (Mean = 3.77, SD = 1.06), marking this dimension as the most uniformly endorsed. Nearly half of the respondents also strongly agreed that access to key records had improved (Mean = 3.55, SD = 1.46), although mixed views point to lingering challenges in information retrieval. Taken together, these findings yielded an overall procurement performance score that was moderately positive (Mean = 3.15, SD = 0.91), highlighting particular strengths in expansion and service coverage alongside areas—efficiency in delivery and records management—ripe for improvement.

Table 2 presents descriptive statistics reflecting employees' perceptions regarding these EOQ practices among TVET institutions in Kisii County.

Table 2: Descriptive Statistics for Economic order quantity

	Mean	Std. Dev
Our organization determines the optimal order frequency to minimize inventory costs.	3.26	1.40
Our procurement team considers ordering costs when determining the appropriate order quantity.	3.19	1.37
Our organization effectively manages lead times to ensure timely replenishment of stock.	3.05	1.42
Our organization uses data-driven approaches to balance order frequency and cost efficiency.	3.44	1.39
Our procurement process incorporates EOQ principles to optimize stock levels and reduce wastage.	2.63	1.24
Economic order quantity	2.99	0.70

Findings from Table 2 revealed that opinions on EOQ implementation were mixed across Kisii County's TVET institutions. While many respondents viewed the determination of optimal order frequency to minimize inventory costs positively (Mean = 3.26, SD = 1.40), the wide dispersion of responses suggests that some institutions apply this principle inconsistently. Attention to ordering costs when setting order quantities also divided staff (Mean = 3.19, SD = 1.37), implying that cost considerations may be overlooked in practice. Logistics and planning emerged as a weakness, with lead-time management receiving a lukewarm average rating (Mean = 3.05, SD = 1.42), pointing to timing gaps that can cause inefficiencies or stockouts. Conversely, data-driven strategies to balance order frequency and cost efficiency garnered the highest endorsement among EOQ items (Mean = 3.44, SD = 1.39), reflecting growing recognition of analytics-based procurement. However, practical application of EOQ to reduce wastage and optimize stock levels lagged substantially (Mean = 2.63, SD = 1.24), signaling a critical implementation gap—likely tied to limited technical capacity or systems support. Overall, the aggregate EOQ perception was neutral to slightly positive (Mean = 2.99, SD = 0.70), underscoring that while the theoretical benefits of EOQ are widely acknowledged, its full advantages depend on consistent application, informed decision-making, and alignment with organizational capabilities and infrastructure.

The findings from Table 3 present the descriptive statistics on safety stock ordering practices among finance and procurement employees within TVET institutions in Kisii County. The specific practices assessed include the maintenance of safety stock levels to reduce stockouts, consideration of carrying costs, ability to manage demand fluctuations, balance between availability and cost efficiency, and routine review of stock levels based on demand.

Table 3: Descriptive Statistics for Safety Stock Ordering

	Mean	Std. Dev
Our organization maintains safety stock levels to minimize stockout costs.	3.55	1.42
Our procurement team considers carrying costs when determining safety stock levels.	4.23	1.25
Our organization effectively manages safety stock to accommodate demand fluctuations.	3.65	1.13
Our inventory management system ensures a balance between stock availability and cost efficiency.	3.52	1.52
Our organization regularly reviews and adjusts safety stock levels based on demand patterns.	3.18	1.08
Safety stock ordering	2.71	0.86

Overall, staff perceptions of safety-stock ordering practices were mixed. A strong majority viewed carrying costs as a key factor in setting safety-stock levels (Mean = 4.23, SD = 1.25), reflecting high financial prudence in their procurement decisions. Likewise, over two-thirds agreed that safety stock effectively absorbed demand fluctuations (Mean = 3.65, SD = 1.13), indicating proactive inventory management. However, opinions diverged sharply on the regular review of safety-stock levels: roughly half remained neutral and none strongly endorsed routine evaluations (Mean = 3.18, SD = 1.08), revealing inconsistencies in adjusting stocks to shifting needs. With an overall average of 2.71 (SD = 0.86), these findings suggest that while cost awareness and fluctuation management were strong, practices around periodic review and holistic cost-efficiency balancing require further strengthening—echoing Waters’s (2019) call for continuous stock reassessment and Lysons and Farrington’s (2020) emphasis on timely, cost-informed safety-stock decisions in public procurement.

4.1.2. Correlation Analysis

The correlation analysis presented in Table 4 examines the relationships between procurement performance (PP) in TVET institutions within Kisii County and several key procurement-related variables: economic order quantity and safety stock ordering.

Table 4: Correlation Analysis

		Procurement performance	Economic order quantity	Safety stock ordering
Procurement performance	Pearson Correlation	1		
	Sig. (2-tailed)	1		
	N	62		
Economic order quantity	Pearson Correlation	.861**	1	
	Sig. (2-tailed)	0.000		
	N	62	62	
Safety stock ordering	Pearson Correlation	.665**	.679**	1
	Sig. (2-tailed)	0.000	0.000	
	N	62	62	62

** Correlation is significant at the 0.01 level (2-tailed).

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The results from the correlation analysis in Table 4 underscore the importance of safety stock ordering and just-in-time practices in enhancing procurement performance in Kisii County's TVET institutions. A significant positive relationship was observed between procurement performance and safety stock ordering ($r = 0.665$, $p < 0.01$), suggesting that efficient management of safety stock contributes substantially to improved procurement outcomes. The relationship between procurement performance and economic order quantity (EOQ) was also strong and significant ($r = 0.861$, $p < 0.01$), highlighting EOQ as a key driver of performance when optimized. These significant positive relationships provide a strong statistical basis for conducting regression analysis, as they indicate linear associations between the independent variables (EOQ, safety stock ordering) and the dependent variable (procurement performance). Such analysis will enable deeper insights into how these factors predict procurement performance, thereby offering evidence-based guidance for strategic improvement within TVET institutions in Kisii County.

4.1.3. Regression Analysis

Regression analysis encompasses a range of statistical techniques used to infer causal relationships among interrelated variables (Sarstedt & Mooi, 2014). Owing to its versatility and relevance in empirical research, it was selected as the primary method for hypothesis testing in this study. Specifically, multiple regression analysis was used to evaluate the effect of inventory control management practices Economic Order Quantity (EOQ) and Safety Stock Ordering—on procurement performance of TVET institutions in Kisii County.

The regression analysis involved three components: the model summary, ANOVA, and the coefficient estimates, as illustrated in Tables 5, 6, and 7. These components collectively assess the strength of the model, its significance, and the contribution of each independent variable to the dependent variable.

Table 5: Model Summary Statistics

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.921a	0.847	0.837	0.36788

a Predictors: (Constant), Safety stock ordering, Economic order quantity

The model summary in Table 5 shows that the regression model produced a strong correlation coefficient ($R = 0.921$), indicating a very strong linear relationship between the combined predictors and procurement performance. The R Square value of 0.847 implies that approximately 84.7% of the variance in procurement performance of TVET institutions in Kisii County is explained by the four independent variables: safety stock ordering and economic order quantity. The Adjusted R Square of 0.837 accounts for the number of predictors used, offering a more accurate measure of model fit. This strong explanatory power supports the relevance of the selected predictors and justifies further analysis using ANOVA and coefficient estimates to interpret individual contributions.

Multiple regression F-test was conducted using ANOVA to assess the goodness of fit of the regression model examining the influence of inventory control management practices Economic Order Quantity and Safety Stock Ordering on procurement

performance of TVET institutions in Kisii County among county governments. The summarized results are presented in Table 6.

Table 6: ANOVA for goodness of fit

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.813	4	10.703	79.086	.000
	Residual	7.714	57	0.135		
	Total	50.527	61			

a Dependent Variable: procurement performance of TVET in Kisii county

b Predictors: (Constant), economic order quantity and safety stock ordering

The ANOVA results in Table 7 reveal that the regression model was statistically significant, with $F(4, 57) = 79.086$, $p < 0.001$. This indicates that the combined influence of the two predictors significantly explains the variation in procurement performance of TVET institutions in Kisii County. The high F-value and low significance level provide strong evidence that the model offers a good fit, justifying the use of these variables in predicting procurement performance. Therefore, these digital financial service practices play a significant role in shaping procurement effectiveness within the county government setting.

Table 7: Coefficient of Estimates

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-	0.223		-2.355	0.022
Economic order quantity	0.524		0.432	4.578	0.000
Safety stock ordering	0.564	0.123	0.315	4.117	0.000

a Dependent Variable: Procurement performance of TVET in Kisii county

The first objective of the study was to determine the effect of economic order quantity (EOQ) on procurement performance of TVET institutions in Kisii County. The regression results show that EOQ had a positive and statistically significant effect on procurement performance, with an unstandardized coefficient (B) of 0.564, a standardized Beta of 0.432, and a p-value of 0.000. This indicates that EOQ contributes substantially to procurement performance, with a one-unit increase in EOQ practices associated with a 0.564-unit improvement in procurement outcomes. The strong Beta value implies that EOQ has a relatively high predictive power among the variables considered. This finding is consistent with Oboge, Kwendo, and Odero (2024), who found EOQ to significantly improve procurement planning and inventory efficiency in public institutions. Similarly, Korir, Kaitany, and Sang (2021) demonstrated a strong

relationship between EOQ and hospital performance, attributing improvements to better stock management and reduced wastage. Magaji, Suleiman, and Hassan (2024) also emphasized that EOQ helps firms maintain optimal inventory levels while reducing storage problems. Riza, Purba, and Mukhlisin (2018) further identified EOQ as a critical component in achieving operational efficiency and reducing unnecessary holding costs. The alignment of this study's findings with existing literature confirms the relevance of EOQ in enhancing procurement functions in educational institutions.

The second objective was to examine the effect of safety stock ordering on procurement performance of TVET institutions in Kisii County. The analysis revealed that safety stock ordering had a positive and statistically significant effect on procurement performance, as indicated by a coefficient (B) of 0.376, a standardized Beta of 0.315, and a p-value of 0.000. These results suggest that implementing effective safety stock strategies is likely to improve procurement reliability and reduce the risk of stockouts, especially in educational institutions that rely on timely availability of learning materials and equipment. This result is in agreement with Demiray Kirmızı, Ceylan, and Bulkan (2024), who demonstrated that advanced safety stock models substantially reduced total inventory costs compared to traditional approaches. Mohamud and Mwangi (2021) also found that continuous stock replenishment strategies positively influenced procurement efficiency by mitigating disruptions caused by inventory shortages. Li (2019) emphasized the operational value of maintaining adequate safety stock levels while minimizing costs, and Chung, Talluri, and Kovács (2018) advocated for adaptive inventory policies that use safety stock to balance cost and service levels. The findings from this study reinforce the critical role of safety stock management in ensuring consistent procurement performance and operational stability.

5.1. Conclusion

Based on the study findings, it is evident that economic order quantity significantly contributes to the improvement of procurement performance in TVET institutions in Kisii County. In enabling efficient inventory planning and cost management, EOQ ensures that institutions can meet procurement demands while minimizing excess stock and associated costs. In addition, safety stock ordering has emerged as a critical factor in enhancing procurement performance. The ability to maintain an optimal buffer stock minimizes the risk of stockouts and operational disruptions, especially in environments with fluctuating demand, thereby supporting continuity in service delivery within TVET institutions.

6.1. Recommendations

Based on the significant effect of EOQ on procurement performance, TVET institutions in Kisii County should institutionalize EOQ practices across all procurement departments. This can be achieved by training procurement officers on inventory optimization models, automating inventory tracking systems, and ensuring data-driven forecasting to align order quantities with actual demand patterns. Such efforts will enable institutions to reduce storage costs, avoid overstocking, and maintain optimal stock levels for smooth operations. Given the strong influence of Safety Stock Ordering on procurement performance, it is recommended that county governments and TVET institutions establish robust frameworks for calculating and maintaining safety stock. This should include demand forecasting tools, supplier performance evaluations, and contingency planning for procurement disruptions. Establishing a structured safety stock

policy will not only mitigate the risk of stockouts but also ensure that institutions are prepared to handle demand fluctuations without compromising service delivery.

7.1. Further Research

This study has provided valuable insights into the influence of inventory management practices on the procurement performance of TVET institutions in Kisii County, focusing specifically on four key practices: economic order quantity and safety stock ordering) While these practices have shown significant impact, future research should consider examining additional inventory and supply chain strategies—such as vendor-managed inventory, demand forecasting, procurement automation, and e-procurement systems—to provide a more holistic understanding of factors influencing procurement performance in the public education sector. Furthermore, the study was geographically confined to TVET institutions within Kisii County. Although this focus provided in-depth localized findings, it may limit the generalizability of the results to other regions with differing procurement structures, supplier dynamics, and institutional capacities. As such, future studies should aim to replicate or expand this research across TVET institutions in other counties within the Lake Region Economic Bloc (LREB) and beyond. This would help determine whether the observed relationships hold true in different settings and improve the applicability of findings on a broader scale.

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