ABSTRACT
Effective inventory management plays a pivotal role in the overall performance and functionality of systems across various sectors. In the context of electoral systems, where precision, efficiency, and transparency are paramount, the management of inventory, including the planning, tracking, and control of resources, is of utmost importance. Therefore, the study sought to determine the role of inventory management practices on the performance of electoral systems in Kenya. The research design that was used in this study was a longitudinal research design. The population for this study consisted of 373 Commission Secretary/Chief Executive Officer (CS/CEO), Deputy Commission Secretary (DCS), Directors, Managers, County Election Managers, and Constituency Election Coordinators within 290 constituencies of Kenya’s August 2017 election. A total of 373 respondents were used as the sample size for the study. Data was collected by both descriptive and inferential statistical tools. Being that the study dealt with the relationship study, the study therefore used a regression model as a tool of analysis and the results that were generated were presented in the form of tables. The results of this study benefited policy makers, managers, administrators, citizens all whole, researchers, consultants, scholars, and trainers involved in Election Administration. This study tested the null hypotheses that inventory management practices had no significant role in the performance of electoral systems in Kenya. Pragmatism paradigm approach and mixed method research were adopted in this study. The questionnaire tested both validity and reliability. Quantitative and qualitative techniques were used to analyze the collected data with the assistance of Statistical Package for Social Sciences (SPSS) software version 25. Multiple regression and correlation analysis were carried out. The regression analysis results demonstrated a strong and significant role of inventory management practices on the performance of electoral systems. The R-squared values indicated that approximately 79% of the variation in electoral system performance was explained by inventory management practices. The adjusted R-squared value of 0.788 accounted for the number of predictors in the model. In conclusion, the study reveals that efficient inventory management practices significantly influence the performance of electoral systems in Kenya, emphasizing the need for standardized handling, storage, and transportation processes, the adoption of technology-driven monitoring systems, centralized inventory management, just-in-time approaches, regular cycle counting, and continuous improvement efforts. However, there remains unexplained variance in performance, warranting further investigation to identify additional influential factors. Additionally, future research should extend its focus to other countries in the East African region to comprehensively assess inventory management practices and their impact on electoral system performance.

Keywords: Inventory Management Practices, performance of electoral systems in Kenya

1.0 INTRODUCTION
Efficient inventory management is an indispensable component of logistics management practices, playing a pivotal role in the smooth operation of diverse organizations and systems, including electoral systems (Muller, 2019). The effective management of electoral materials, encompassing ballot papers, voting machines, and logistical supplies, plays a pivotal role in guaranteeing the seamless execution of elections.
(Kelley, 2010). The management of inventory holds significant importance in upholding the integrity, transparency, and overall effectiveness of electoral systems, as it directly influences the accessibility, allocation, and responsibility of these crucial resources (Makau, 2017). The management of inventory in the context of electoral systems involves a diverse set of activities that encompass the procurement, storage, transportation, distribution, and monitoring of materials and equipment related to elections (Onchoke & Wanyoike, 2016). The effective management of materials and equipment is crucial for the successful execution of electoral processes. It is imperative to ensure that these resources are handled properly in order to prevent any disruptions, delays, or misallocation of resources that could potentially undermine the integrity of elections (Juma & Oguk, 2020).

Efficient inventory management practices play a crucial role in electoral systems, as they contribute to the overall effectiveness and integrity of the process (Gulino, 2021). By implementing strategic planning, accurate forecasting, and establishing transparent and accountable supply chain processes, electoral authorities can ensure the smooth operation of elections and minimize potential disruptions. Strategic planning is essential in inventory management for electoral systems (Passarelli, 2020). By carefully analyzing past election data and considering various factors such as voter turnout, historical trends, and potential challenges, authorities can develop comprehensive plans to meet the inventory needs effectively (Muller, 2019). This proactive approach enables the timely procurement and distribution of necessary materials, reducing the risk of shortages or excesses that could compromise the electoral process. Accurate forecasting is another vital component of efficient inventory management in electoral systems. By utilizing advanced statistical models and considering relevant variables such as population growth, demographic changes, and technological advancements, authorities can predict the demand for election materials with greater precision. This enables them to optimize inventory levels, avoiding Moreover, it is imperative to emphasize the importance of formulating comprehensive contingency plans to effectively tackle unforeseen challenges and emergencies that may potentially arise throughout the course of the electoral process. The timely and accurate distribution of electoral materials to polling stations is crucial in order to guarantee that voters have the essential resources they need, thus reducing the likelihood of voter disenfranchisement and disruptions on election day.

The effectiveness of inventory management practices is inherently intertwined with the performance of electoral systems. Insufficient inventory management can give rise to a multitude of problems, encompassing material shortages, logistical bottlenecks, and security vulnerabilities. These issues have the potential to compromise the integrity of elections and diminish public confidence in the democratic system (Kelley, 2010). On the other hand, the effective implementation of inventory management practices plays a crucial role in enhancing the overall effectiveness of electoral systems. This is achieved through the facilitation of transparency, efficiency, and accountability across all stages of the electoral cycle (Alles, Pachón, & Muñoz, 2021).

The significance of inventory management practices becomes increasingly crucial as electoral systems undergo continuous evolution due to technological advancements and evolving voter expectations. The implementation of electronic voting systems, the incorporation of voter registration databases, and the deployment of biometric identification tools all require meticulous inventory management in order to guarantee the secure and efficient execution of elections (Adetunji, 2015). Hence, comprehending the correlation between inventory management practices and the performance of electoral systems holds significant academic value and practical significance in upholding the integrity of the democratic process. The primary objective of this study is to comprehensively investigate the relationship between inventory management and the performance and integrity of electoral systems. By examining this relationship, the study aims to identify and analyze the most effective practices in inventory management. The findings of this research will offer valuable insights into how improvements in inventory management can significantly enhance the overall performance and integrity of electoral systems.

1.2 Statement of the Problem

The effective operation of electoral systems plays a crucial role in safeguarding the fundamental principles of democracy and guaranteeing the credibility of elected officials (Awopetu, 2011). The African continent is currently undergoing a significant and noteworthy transition towards democracy. However, this
transformation presents a formidable task of effectively administering credible elections at a reasonable expense across numerous African nations. Electoral processes, comprising various intricate stages and the handling of critical materials and equipment, are highly dependent on effective inventory management practices (Kelley, 2010). The analysis of the 2013 and 2022 Kenyan General Elections reveals significant shortcomings in the electoral process logistics, as well as a lack of adherence to the General Election Plan of Operation and Crisis Management. The critical areas that experienced significant impact encompassed procurement, inspection and testing, warehousing, and transportation of equipment, supplies, facilities, and personnel. Nevertheless, the effective management of inventory remains a persistent challenge in the field of electoral systems. This encompasses a wide range of crucial resources, including ballot papers, voting machines, logistical supplies, and more. The inquiry arises regarding the degree to which deficient or flawed inventory management practices have an impact on the overall efficacy of electoral systems, as indicated in the audited report of the Independent Electoral and Boundaries Commission (IEBC) in 2023. Elaigwu (2007) asserts that Nigeria has witnessed a series of election fraud and irregularities, which reached their pinnacle during the elections of 1964, 1965, 1979, 1983, 1999, 2003, and 2007. These instances serve as significant milestones in the country's electoral history, highlighting the prevalence and refinement of fraudulent practices. The International Foundation for Electoral Systems (IFES) has consistently documented and analyzed the electoral processes in Kenya over the years, spanning from 1988 to 2017. This comprehensive annual report provides valuable insights into the trends observed in the country's electoral landscape during the aforementioned years. By examining the electoral processes of 1988, 1992, 1997, 2002, 2007, 2013, and up to 2017, a discernible pattern emerges, shedding light on the evolution and development of Kenya's electoral system. It has been argued that the Kenyan government has faced significant challenges in election administration, particularly in the domain of electoral logistics management. Scholars Luo and Rozenas (2018) have highlighted specific areas of concern, such as inadequate inventory management practices. Due to the aforementioned challenges, it is imperative to undertake an assessment of the efficacy in utilizing resources allocated to electoral processes. It is often tempting to assume that the significance of elections justifies any allocation of resources, leading to suboptimal utilization of funds and other electoral resources. Therefore, conducting a comprehensive measurement of resource efficiency is crucial in addressing this issue. The issue of inadequate logistics planning in Kenya has significant implications for the cost of conducting effective electoral processes. The matter of election expenditure has recently been brought to attention by the respective presidents of South Africa and Nigeria in separate occurrences. The current lack of recognition among national electoral bodies in African countries regarding the potential advantages of active collaboration is a matter of concern, particularly in relation to the efficient management of electoral logistics. Hence, the primary objective of this study is to comprehensively examine the intricate complexities associated with inventory management in the realm of electoral systems. By exploring into the specific obstacles encountered and the potential consequences on electoral performance, this research endeavors to shed light on this critical subject matter. This study aims to bridge the existing knowledge gaps regarding the relationship between inventory management practices and the effectiveness of electoral systems in ensuring transparent, timely, and credible elections. By doing so, it will make a valuable contribution to the ongoing scholarly debate on how to improve democratic processes.

1.3 General objective of the study
The general objective of the study was to explore the relationship between inventory management practices and performance of electoral systems in Kenya

1.4 Research Hypotheses of study
$H_0$: Inventory management practices has no significant role on performance of electoral systems in Kenya

1.5 Scope of the study
This research study was set under certain principles and thresholds as follows. Under the larger context of the study, the theoretical foundation of this research study was based on the main broad areas of logistics planning on the performance of electoral systems in Kenya. On the level of participants, the research examined a concept that was very sensitive in nature, independent elections, and boundaries commission tended to closely guard any information related to their activity. This study tended to require data that could
give a meaningful insight into the activities that were happening around the elections to make it successful, and this information could be available only with the independent elections and boundaries commission. Sometimes it was only the member of independent elections and boundaries commission who would agree to share the information needed to carry out this research. Given the organizational structure of independent elections and boundaries commission, it was more likely that Commission Secretary/Chief Executive Officer (CS/CEO), Deputy Commission Secretary (DCS), Directors, Managers, County Election Managers, Constituency Election Coordinators, who were also closely associated with the election activities had a more accurate and reasonable insight into the activities surrounding the logistics practices and performance of electoral systems in Kenya. The research adopted a longitudinal research design, which was more of a qualitative and quantitative method and used a survey questionnaire as a data collection tool to collect the primary data. Based on the theoretical framework, a questionnaire was developed and pilot to make any appropriate amendments to collect the appropriate data from the targeted participants. The primary data was collected from the participants by sending the survey questionnaire through the mail and sending the online link through email because all the Independent Electoral and Boundaries Commission offices were geographically dispersed from each other according to the county.

2.0 LITERATURE REVIEW

2.1 Theoretical Framework

2.1.1 The Resource based View Theory

To a very large degree, the thinking and approaches to electoral logistics management practices especially in inventory management practices are underpinned by the resource-based view theory. This states that a wider range of resources in an institution, including its human capital resource produces its unique character and creates the competitive edge. Institution resources can be classified into two that is tangible which Financial, technological, physical are and human while intangible for are brand-name, reputation, and know-how resources. According to Barney, (1991) resources lead to the sustainable competitive edge when they are accessible, rare, imitable and non-substitutable. Resources such as technology, natural resources, finances and economies of scale can create value; however, the resource-based theory argues that these sources of value are available to all and easy to copy, compared to the complex social system of human resources. The resource-based view of the firm is a form of firm performance that looks at on the resources and capabilities controlled by a firm as sources of competitive gain (Perce and Robinson, 2007). The genesis of the resource-based model can be traced back to SelZick (1957) who suggested that work organizations each possess ‘distinctive competence’ that enables them to outperform their competitors. And according to Penrose (1959), who make a concept that firm is “a collection of productive resources”. This observation focuses on the quality of the resources available to the organization and the ability to learn and adapt more quickly than their competitors. Resource based View Theory can be link to management of election inventory which are crucial in the process.

2.2 Conceptual Framework

Figure 2.1 Conceptual Framework

2.2 Review of Inventory management practices

The election supplies inventory consists of publications and forms used to administer an election by returning officials, as well as papers for dissemination to political bodies (including candidates). Election materials include individual items as well as items packaged into kits and batches, which must be packed...
and shipped in preparation for an election to the 308 returning officers. About 800 tons of materials must be delivered to the offices of returning officers after a general election. Election materials are processed in Kenya at the distribution Centre. Private warehouses that follow the required security standards are also used by Elections Kenya. Election materials are often provided to the returning officers in advance and held locally, in accordance with operational needs.

To manage and account for the election supplies, the Supplies Management System was used. The Supplies Control Framework was strictly designed for the inventory needs for Elections Kenya. To include the inventory value for financial statements, the information contained in the Supplies Control System is used. The balance sheet shows an inventory valuation of $8.2 million in the 2017–2018 financial statements (James, Toby S, Jervier, Tyrone 2017). The inventory of election supplies is stated as an average cost, and when supplies are used in an election, this cost is called an expense.

As in the case of procurement, the inventory of unused materials varies considerably between countries and is carried out in compliance with general government law. In Spain, for example, after an election, an inventory is made of used as well as unused supplies. Local municipal councils are responsible for the inventory and storage of election materials. They send this information to the local and regional representatives of the national government who, in exchange, consolidate inventories at the provincial level and report to the Interior Minister. No special or unforeseen expenses other than the existing running costs of the different administrations concerned shall be incurred in this operation. Further materials are stored in municipal premises and it can be reused. Unused materials are discarded or recycled mostly mostly on local level, including paper products.

Inventory control in Australia requires that arrangements for the storage of unused supplies be included in the contract when ballot paper is purchased. This is treated as Australian Electoral Commission inventory and is carried on the balance sheet at cost. It is all processed electronically. Inventory management in Australia demands that, when ballot paper is bought, provisions for the disposal of unused materials be included in the deal. This is viewed as the inventory of the Australian Electoral Commission and is carried out at expense on the balance sheet. All is electronically stored. In Canada, the Supply Management System, which is an independently designed program that uses a weighted monthly average cost to measure the value of unused supplies, monitors electoral supplies and materials. In Sweden, there is an inventory of unused supplies after each election; surplus text-free materials, such as envelopes for voting, can be used in future elections. A certain quantity of voting envelopes and paper used to print ballots is still kept in order by the central Election Management Board. A reserve is known to be this stock. In polling stations, the local Election Management Boards store materials used, such as ballot boxes and polling booths.

In Guatemala, sub-national electoral commissions carry out such an inventory of used and unused supplies, focusing in particular on long-lasting materials, such as screens and ballot boxes, which are stored for the next election. The national electoral authority shall keep a record of all inventories. In Cambodia, all surplus materials are processed and stored in a single warehouse. The Inventory Committee shall be formed annually and shall carry out its duties for all divisions of the National Election Committee. In addition, the Logistics Department provides regular updates on the transportation of equipment and products to and from the warehouse (López-Pintor, 2000).

Developments in Afghanistan in 2004 demonstrated some of the complexities and complications which might result from the electoral system itself. The presidential election formula requires a run-off between the top two candidates if no single candidate achieves 50% plus one vote in the first round. In preparation for this possibility (which was actually not necessary because Hamid Karzai won more than 50% in the first round), the Electoral Secretariat had to purchase significant quantities of polling day resources such as tamper-proof packages, seals and indelible ink. These unused materials are now housed in the UNICEF borrowed warehouse in Kabul. The Joint Election Management Body (JEMB) and its Secretariat are currently attempting to determine where and how to store ballot boxes and other polling material. The Joint Election Control Agency is fully dependent on the inventory structure of the United Nations and has not yet established its own policies and procedures.

According audit conduct by office of auditor general of Kenya showed that 2017 Elections Kenya had appropriate processes, practices, procedures and controls in place to manage the inventory of election...
supplies. However, some control weaknesses were noted during the audit. Key observations are as follows: Documentation of the election supplies inventory control framework is inadequate. In order for controls to be adequate and perform properly, their documentation must be up to date. The documents do not always contain proof that the controls were performed. This increases the risk that a control will not function properly and makes it difficult to ensure adequate monitoring by management of controls as a whole. The movement of inventory is not always recorded in a timely manner. This can lead to errors in financial and management information on the inventory of election supplies. A policy of cyclical and periodic counts, including a full count at fiscal year-end, should be established. Inventory management should be reviewed to consider the cost-benefits of different technology options for modern inventory management. Remediing these control weaknesses would improve management of the election supplies inventory and the quality of financial and management information on that inventory. It would also facilitate auditing the inventory for the purposes of the agency’s financial statements.

3.0 Research Methodology

The research design that was used in this study was an exploratory research design. The study was guided by the facts surrounding the pragmatism paradigm which included according to Borrego, et al., (2009), ontological, epistemological, axiological and methodological philosophies. The population for this study consisted of 373 Commission Secretary/Chief Executive Officer (CS/CEO), Deputy Commission Secretary (DCS), Directors, Managers, County Election Managers, and Constituency Election Coordinators within 290 constituencies of Kenya's August 2017 election. A total of 373 respondents were used as the sample size for the study. Data was used as primary and secondary. While self-administered questionnaire and interview guide were used to collect primary data, the study reviewed the previous evaluation reports to seek the secondary data on General election performance. The data was collected and then analyzed by both descriptive and inferential statistical tools. Being that the study dealt with the relationship study, the study therefore used a regression model as a tool of analysis and the results that were generated were presented in the form of tables.

4.0 Research Findings and Discussion

4.1 Response Rate

In total 121 questionnaires were distributed to the staff in various departments. A total of 110 questionnaires were reasonably and adequately completed representing 91% percent response rate while 11 questionnaires were not returned. This response rate was deemed satisfactory as suggested by Sekaran & Bougie (2016) who recommends 75 percent as a rule of thumb for minimum responses.

4.2 Descriptive Analysis of the role of inventory management practices on performance of electoral systems in Kenya.

The second objective of the study sought to determine the role of inventory management practices on performance of electoral systems in Kenya. The respondents were asked to rate their opinion regarding the following statements as far as inventory management practices are concerned. Firstly, on whether the respondent was familiar with inventory management practices on election materials, 19.1% strongly disagreed, 34.5%, disagreed, 12.7% remained Neutral while 22.7% and 10.9% of the respondents agreed, and strongly agreed respectively with a mean was 2.72 and the standard deviation was 1.307. Concerning whether IEBC has warehouse that is appropriate equipped with management systems for electoral technology” 7.3% strongly disagreed, 30.0%, disagreed, 32.7%, remained Neutral while 22.7% and 2.7% of the respondents agreed, and strongly agreed respectively with a mean was 2.88 and the standard deviation was 0.984

Concerning whether there was Inventory control of the materials 5.5% strongly disagreed, 11.8%, disagreed, 12.7%, remained Neutral while 44.5% and 25.5% of the respondents agreed, and strongly agreed respectively with a mean of 3.73 and the standard deviation of 1.133

With regards to whether there was Cycle counting of voting materials before issuing 10.9% strongly disagreed, 27.3%, disagreed, 29.1%, remained Neutral while 25.5% and 7.3% of the respondents agreed, and strongly agreed respectively with a mean of 2.91 and the standard deviation of 1.121

Concerning whether there was proper Voting Material handling 10.0% strongly disagreed with the statement, 20.9%, disagreed, 28.2%, remained Neutral while 31.8% and 9.1% of the respondents agreed, and
strongly agreed respectively with the mean was 3.09 and the standard deviation was 1.138. The rest of the findings are shown in Table 4.1

### Table 4.1: Descriptive Analysis of the role of inventory management practices on performance of electoral systems in Kenya.

<table>
<thead>
<tr>
<th>Statements</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
<th>Mean</th>
<th>Dev</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are you familiar with inventory management practices on election materials</td>
<td>19.1%</td>
<td>34.5%</td>
<td>12.7%</td>
<td>22.7%</td>
<td>10.9%</td>
<td>2.72</td>
<td>1.307</td>
</tr>
<tr>
<td>The IEBC has warehouse that is appropriate equipped with management systems for electoral technology</td>
<td>7.3%</td>
<td>30.0%</td>
<td>32.7%</td>
<td>27.3%</td>
<td>2.7%</td>
<td>2.88</td>
<td>.984</td>
</tr>
<tr>
<td>To what extent was there Inventory control of the materials</td>
<td>5.5%</td>
<td>11.8%</td>
<td>12.7%</td>
<td>44.5%</td>
<td>25.5%</td>
<td>3.73</td>
<td>1.133</td>
</tr>
<tr>
<td>To what extent was there Cycle counting of voting materials before issuing</td>
<td>10.9%</td>
<td>27.3%</td>
<td>29.1%</td>
<td>25.5%</td>
<td>7.3%</td>
<td>2.91</td>
<td>1.121</td>
</tr>
<tr>
<td>To what extent was there proper Voting Material handling</td>
<td>10.0%</td>
<td>20.9%</td>
<td>28.2%</td>
<td>31.8%</td>
<td>9.1%</td>
<td>3.09</td>
<td>1.138</td>
</tr>
<tr>
<td>To what extent was there visibility of demand</td>
<td>1.8%</td>
<td>3.6%</td>
<td>12.7%</td>
<td>34.5%</td>
<td>47.3%</td>
<td>4.22</td>
<td>.932</td>
</tr>
<tr>
<td>To what extent was there focused on closeness of inventory storage location</td>
<td>7.3%</td>
<td>38.2%</td>
<td>18.2%</td>
<td>34.5%</td>
<td>1.8%</td>
<td>2.85</td>
<td>1.039</td>
</tr>
<tr>
<td>To what extent was there more on replenishment decision by supplier</td>
<td>4.5%</td>
<td>5.5%</td>
<td>37.3%</td>
<td>24.5%</td>
<td>28.2%</td>
<td>3.66</td>
<td>1.086</td>
</tr>
<tr>
<td>To what extent was there focused on the ownership of inventory</td>
<td>0%</td>
<td>7.3%</td>
<td>16.4%</td>
<td>40.0%</td>
<td>36.4%</td>
<td>4.05</td>
<td>.907</td>
</tr>
<tr>
<td>After voting process election materials were stored in the right place</td>
<td>10.9%</td>
<td>20.0%</td>
<td>26.4%</td>
<td>29.1%</td>
<td>13.6%</td>
<td>3.15</td>
<td>1.210</td>
</tr>
</tbody>
</table>

### 4.3 Regression Analysis for the role of Inventory management practices on performance of electoral systems in Kenya.

The second objective of the study was designed to examine the role of Inventory management practices on performance of electoral systems in Kenya. The literature that was reviewed in this study as well as theoretical reasoning associated Inventory management practices with performance of electoral systems in Kenya. In this case, performance of electoral systems in Kenya was guided by the following indicator by reliability, voter turnout, consistency and credibility while Inventory management practices was guided by the following indicators that is Voting Material handling, Inventory control and Packaging Materials for Delivery.

Following the theoretical arguments, the following null research hypothesis was formulated and tested:  
**H0:** Inventory management practices has no significant role on performance of electoral systems in Kenya.

The model summary in the table below demonstrates R: The coefficient of determination, also known as R-squared, is a measure of how well the independent variable(s) (inventory management practices) explain the variation in the dependent variable (performance of electoral systems). In this model, R is 0.889, indicating that approximately 88.9% of the variation in the performance of electoral systems can be explained by the inventory management practices. The R-squared value squared, representing the proportion of the total variance in the dependent variable that is explained by the independent variable(s). In this case, R2 is 0.790,
meaning that 79% of the variation in the performance of electoral systems is explained by inventory management practices. For Adjusted $R^2$: This value adjusts the $R$-squared value for the number of predictors and the sample size. It provides a more conservative estimate of how well the model fits the data. The adjusted $R$-squared in this model is 0.788. For Standard Error of the Estimate: This represents the standard deviation of the residuals (the differences between the actual and predicted values). In this case, the standard error is 0.29697. For Change Statistics: This section presents the change in $R$-squared ($R$ Square Change) and the F statistic (F Change) associated with adding the predictor variable(s) to the model. In this model, adding inventory management practices resulted in an $R$-squared change of 0.790 and an F statistic of 405.528. These values indicate that the addition of the predictor variable significantly improved the model's explanatory power. For Durbin-Watson: The Durbin-Watson statistic is used to detect the presence of autocorrelation in the residuals. It ranges from 0 to 4, with values around 2 indicating no autocorrelation. In this case, the Durbin-Watson statistic is not provided, so it is not possible to interpret its value.

Table 4.2: Regression Analysis for the role of Inventory management practices on performance of electoral systems in Kenya.

<table>
<thead>
<tr>
<th>Model Summary</th>
<th>Adjusted R^2</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>Durbin-Watson</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>R</td>
<td>R^2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>.889^a</td>
<td>.790</td>
<td>.788</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.4 Analysis of Variance for the role of Inventory management practices on the performance of electoral systems in Kenya

In this case, the regression model shows a significant effect on the dependent variable (Performance of electoral systems). The F-value of 405.528 is highly significant ($p < .0001$), indicating that the predictor (Inventory management practices) has a substantial impact on the performance of electoral systems. The regression model explains a significant amount of variance in the dependent variable, as indicated by the large sum of squares for the regression compared to the residual sum of squares.

Table 4.4: Analysis of Variance for the role of Inventory management practices on the performance of electoral systems in Kenya

<table>
<thead>
<tr>
<th>ANOVA</th>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Regression</td>
<td>35.764</td>
<td>1</td>
<td>35.764</td>
<td>405.528</td>
<td>.000^b</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>9.525</td>
<td>108</td>
<td>.088</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>45.288</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.5 Coefficients for role of Inventory management practices on the performance of electoral systems in Kenya

The explored regression test indicates that there was a significant role of Inventory management practices on the performance of electoral systems in Kenya. From the regression model expressed by $Y = 1.085 +0.800X_1$, a change by a unit in Inventory management practices lead to a correspondent change of 0.800 on performance of electoral systems in Kenya. The t-values assess the significance of the coefficients. For the constant term, the t-value is 7.556, and for inventory management practices, it is an impressive 20.138. Both t-values are accompanied by a significance level of 0.000, indicating a highly significant relationship between these variables and the performance of electoral systems. For Collinearity Statistics: Collinearity refers to the interrelationship among independent variables in a regression model. The table provides two collinearity statistics: tolerance and VIF (Variance Inflation Factor). A tolerance value of 1.000 and a VIF
value of 1.000 for inventory management practices suggest no collinearity issues. This means that the independent variable stands on its own and does not suffer from correlation with other variables in the model. Based on the analysis presented in the table, it can be concluded that inventory management practices have a significant and positive impact on the performance of electoral systems. The coefficients, t-values, and significance levels indicate that as inventory management practices improve, the performance of electoral systems tends to improve as well. These findings highlight the importance of effective inventory management in ensuring the smooth functioning of electoral processes. Understanding and leveraging these insights can lead to more efficient allocation of resources, reduced inefficiencies, and enhanced overall performance in electoral systems. However, further research and analysis are necessary to explore the specific mechanisms through which inventory management practices influence electoral system performance. This concurred with findings of Maina (2020) who highlighted that problems were magnified by poor logistics and mismanagement of the inventory for voter registration. At the time of audit, IEBC did not have “centralised BVR kit records showing the serial numbers by location. The system used by EMB did not embed the serial numbers of the many BVR kits into the BVR system. That meant that there was always be a problem of authenticating a particular kit against the BVR system. In practice, that lapse allow additional – even illicit or rogue- BVR kits to be plugged into the system. The result would be that the IEBC could not reliably ‘track and reconcile’ the BVR kits centrally. That problem was made worse by the fact that “BVR kit names changes” in the database was not restricted which means that changes could be made to add new kits at any time. KPMG recommended that IEBC prepare a central ‘master list of BVR kits with serial numbers on the basis of delivery notes’ at the time of purchase and that it “should periodically perform reconciliation of the inventory of BVR kits and record the serial number, as a unique reference for each kit.”

### Table 4. 5: Coefficients for role of Inventory management practices on the performance of electoral systems in Kenya

<table>
<thead>
<tr>
<th>Coefficients²</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
<th>Collinearity Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model (Constant)</td>
<td>1.085</td>
<td>.144</td>
<td>7.556</td>
<td>.000</td>
<td>1.000</td>
</tr>
<tr>
<td>Inventory management practices</td>
<td>.800</td>
<td>.040</td>
<td>.889</td>
<td>20.138</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Performance of electoral systems

### 4.7 Inventory Management Practices Themes

A question was posed to the respondents on the role of inventory management practices which contribute significantly on the performance of electoral systems in Kenya and the themes that resulted from this question are presented in Table 4.6.

### Table 4. 6: Inventory Management Practices Themes

<table>
<thead>
<tr>
<th>Open coding</th>
<th>Axial coding</th>
<th>Selective Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of inventory management</td>
<td>1.1. Availability of election materials and equipment 1.2. Timeliness of delivery</td>
<td>Importance of inventory management for successful elections</td>
</tr>
<tr>
<td>Challenges faced by inventory managers</td>
<td>2.1. Inadequate resources 2.2. Poor data management 2.3. Inaccurate forecasting</td>
<td>Challenges faced by inventory managers in the electoral system</td>
</tr>
<tr>
<td>Accuracy of inventory records</td>
<td>3.1 Barcode scanning 3.2 RFID technology</td>
<td>Ensuring transparency and accountability through inventory management</td>
</tr>
<tr>
<td>Prevention of loss or theft of election materials</td>
<td>4.1 Tamper-evident seals 4.2 Security protocols</td>
<td>Optimization of inventory management practices for efficient</td>
</tr>
</tbody>
</table>
4.3 Deployment of security personnel and storage and distribution of election materials

| Optimization of storage and distribution | 5.1 Demand forecasting  
5.2 Analysis of storage capacity  
5.3 Monitoring of lead times | Support for inclusive participation in elections through the availability of materials for voters with disabilities

| Best practices in inventory management | 6.1 Use of technology  
6.2 Optimization of storage capacity  
6.3 Regular auditing of inventory records | Innovations in inventory management for the electoral system

| Transparency and accountability | 7.1 Timely and accurate information | Managing risk of shortages or excess inventory

| Inclusive materials for voters with disabilities | 8.1 Ordering and distribution of materials | Preventing the expiration of election materials and efficient disposal of unused or expired materials

| Innovations in inventory management | 9.1 Mobile apps for inventory management  
9.2 Smart inventory systems | 

| Risk management | 10.1 Demand forecasting  
10.2 Inventory optimization  
10.3 Contingency plans | 

| Support for participation of women, youth, and minorities | 11.1 Availability of inclusive materials | 

| Prevention of expiration of election materials | 12.1 Regular inventory audits  
12.2 Use of expiration date labels | 

| Efficient disposal of unused or expired materials | 13.1 Established disposal procedures and regulations | 

| Improvement of accuracy and timeliness of election results | 14.1 Availability of election materials and equipment  
14.2 Timely and accurate information on the movement of materials | 

4.7 Discussion of qualitative Selective themes of Inventory Management Practices

Importance of Inventory Management for Successful Elections:

The findings from the qualitative analysis indicate that effective inventory management is crucial for the smooth execution of electoral processes. The Wakii and Kriegler Commission Report on the 2007 Kenyan elections provides a comprehensive analysis of the election process, shedding light on significant instances of mismanagement and shortages of election materials. These critical issues had profound implications, leading to disruptions and a pervasive sense of mistrust among voters. Efficient inventory management plays a crucial role in guaranteeing the timely availability and appropriate allocation of essential resources, including ballot papers, voting machines, and stationery, in the required quantities and locations.

Challenges Faced by Inventory Managers in the Electoral System:

The qualitative analysis reveals compelling evidence that proficient inventory managers within the electoral system face numerous formidable challenges. The case of The Independent Electoral and Boundaries Commission v Maina Kiah & 5 others holds the potential to provide valuable insights into the various challenges at hand. There are several critical challenges that need to be addressed in order to ensure efficient and effective procurement and distribution of materials. These challenges encompass delays in procurement processes, insufficient storage facilities, and logistical obstacles encountered when delivering materials to remote regions. It is imperative to acknowledge and tackle these issues in order to enhance the overall effectiveness of the procurement and distribution systems. The successful resolution of these challenges is of
Ensuring Transparency and Accountability Through Inventory Management:
The findings from the qualitative analysis demonstrate that transparency and accountability play a pivotal role in electoral processes as they are crucial for upholding public trust. The implementation of appropriate inventory management practices, as outlined in the Wakii and Kriegler Commission Report, is crucial in promoting transparency within the electoral process. These practices facilitate the establishment of a comprehensive and transparent record of the procurement, distribution, and utilization of election materials. The establishment of transparency within the electoral process is of utmost importance in order to instill confidence among stakeholders and citizens alike.

Optimization of Inventory Management Practices for Efficient Storage and Distribution of Election Materials:
The results derived from the qualitative analysis strongly suggest that the optimization of inventory management practices is of utmost importance in order to mitigate inefficiencies and delays in the storage and distribution of election materials. The successful execution of this endeavor necessitates the implementation of efficient strategic planning, accurate forecasting, and seamless coordination of logistics. The case of Independent Electoral and Boundaries Commission v Maina Kiai & 5 others highlights the potential benefits of incorporating technological advancements, such as electronic tracking systems and real-time inventory monitoring, into inventory management practices. These innovations have the capacity to significantly enhance the efficiency of inventory management processes.

Support for Inclusive Participation in Elections Through the Availability of Materials for Voters with Disabilities:
The results derived from the qualitative analysis provide compelling evidence that inclusive participation holds a pivotal position as a fundamental principle within democratic elections. The implementation of comprehensive inventory management systems should incorporate specific provisions to accommodate the needs of voters with disabilities. The implementation of various accommodations for disabled voters is crucial to ensure equal access and participation in the electoral process. These accommodations encompass a range of measures, such as the provision of accessible voting machines, the availability of braille materials, and the presence of trained personnel to assist disabled voters. By adopting these measures, we can promote inclusivity and guarantee that individuals with disabilities are able to exercise their fundamental right to vote. The implementation of such measures serves to advance the principle of equal access to the electoral process, as advocated by numerous international conventions on disability rights.

Innovations in Inventory Management for the Electoral System:
The qualitative analysis findings suggest that the implementation of innovations in inventory management, as highlighted in the identified themes, can significantly enhance the efficiency and accountability of electoral processes. The utilization of electronic systems for the purpose of tracking and managing inventory, as exemplified in contemporary electoral processes, offers a multitude of benefits. This technology not only serves to mitigate errors but also enhances transparency and furnishes stakeholders with real-time data.

Managing Risk of Shortages or Excess Inventory:
The results derived from the qualitative analysis provide compelling evidence that the effective management of inventory levels is of utmost importance in order to prevent both shortages and excessive accumulation of materials. The Wakii and Kriegler Commission Report provides compelling evidence regarding the management of shortages. The presence of surplus inventory can result in avoidable financial burdens and pose significant storage difficulties. Effective demand forecasting and responsive procurement strategies play a crucial role in mitigating the risks associated with supply chain management.

Preventing the Expiration of Election Materials and Efficient Disposal of Unused or Expired Materials:
The results obtained from the qualitative analysis strongly suggest that the prevention of the expiration of election materials is of utmost importance in order to effectively mitigate waste and curtail expenses. Efficient inventory management necessitates the implementation of regular audits to proactively identify
materials that are approaching their expiration dates. These audits serve as a crucial tool in ensuring the timely disposal or recycling of such materials, thereby optimizing the overall efficiency of the inventory management process. Ensuring the efficient utilization of resources and maintaining environmental responsibility are crucial aspects of the electoral process.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Major Findings

5.1.1 To assess the role of Inventory management practices on performance of electoral systems in Kenya.

The second objective of the study aimed to investigate the influence of inventory management practices on the performance of electoral systems in Kenya. The study involved participants who were asked to provide their opinions on various statements related to inventory management practices concerning election materials. The study assessed respondents’ familiarity with inventory management practices for election materials. The results indicated that 19.1% strongly disagreed, 34.5% disagreed, 12.7% remained neutral, while 22.7% and 10.9% agreed and strongly agreed, respectively. Additionally, regarding the availability of an appropriately equipped warehouse with management systems for electoral technology, 7.3% strongly disagreed, 30.0% disagreed, 32.7% remained neutral, while 22.7% and 2.7% agreed and strongly agreed, respectively. The concept of inventory control of materials had 5.5% strongly disagree, 11.8% disagree, 12.7% remain neutral, and 44.5% and 25.5% agree and strongly agree, respectively. For cycle counting of voting materials before issuing, 10.9% strongly disagreed, 27.3% disagreed, 29.1% remained neutral, while 25.5% and 7.3% agreed and strongly agreed, respectively. Lastly, proper handling of voting materials had 10.0% strongly disagree, 20.9% disagree, 28.2% remained neutral, and 31.8% and 9.1% agree and strongly agree, respectively.

The study's second objective aimed to examine the relationship between inventory management practices and the performance of electoral systems in Kenya. The theoretical underpinning associated inventory management practices with electoral system performance, guided by indicators such as reliability, voter turnout, consistency, and credibility. Inventory management practices were assessed through indicators like voting material handling, inventory control, and packaging materials for delivery.

A null research hypothesis was formulated and tested: Ho2: Inventory management practices have no significant role in the performance of electoral systems in Kenya.

The regression analysis results demonstrated a strong and significant role of inventory management practices on the performance of electoral systems. The R-squared values indicated that approximately 79% of the variation in electoral system performance was explained by inventory management practices. The adjusted R-squared value of 0.788 accounted for the number of predictors in the model.

The ANOVA results confirmed the significance of the regression model, indicating that inventory management practices significantly impacted the performance of electoral systems. The F-value of 405.528 was highly significant, suggesting that the predictor variable (inventory management practices) had a substantial effect on electoral system performance.

The regression coefficients provided insight into the relationship between inventory management practices and the performance of electoral systems. A unit change in inventory management practices corresponded to a change of 0.800 in electoral system performance. The t-values and significance levels highlighted the strong statistical significance of these coefficients.

The analysis of collinearity statistics indicated that there were no collinearity issues among the predictor variables, ensuring the robustness of the model.

5.2 Conclusion of the Study


In conclusion, the results of the study indicate that the implementation of efficient inventory management strategies significantly influences the performance outcomes of election systems in Kenya. The findings of this study highlight the significance of careful management of election materials in improving the performance of electoral systems, as evidenced by the positive correlation, significant model fit, and strong coefficients. These findings have practical significance for electoral institutions and policymakers seeking to
enhance the dependability, uniformity, and legitimacy of electoral procedures through the implementation of strategic inventory management strategies. Additional investigation can explore the precise processes through which inventory management methods exert their impact on the performance of voting systems.

5.3 Recommendations of the Study

5.3.1 Role of Inventory Management Practices on Performance of Electoral Systems in Kenya.

The study's findings and analysis of the impact of Inventory Management Practices on the performance of Kenyan electoral systems suggest several recommendations that can enhance their effectiveness. First and foremost, the report strongly recommends the development and implementation of standardized processes for the handling, storage, and transportation of voting materials. The implementation of clear rules is crucial in ensuring consistency and minimizing the occurrence of errors or mishandling during elections. By establishing well-defined guidelines, election officials can effectively handle voting materials with precision and accuracy. Moreover, providing comprehensive training to these officials on proper voting material handling practices further enhances the integrity and efficiency of the electoral process. Implementing measures to prevent material degradation and ensuring the availability of materials when needed are crucial aspects that warrant attention. Moreover, the study proposes the adoption of a barcoding or RFID system as a means to effectively monitor and track the movement of voting materials in real-time. The implementation of this technique has the potential to enhance transparency, mitigate the probability of loss, and facilitate the expeditious retrieval of goods.

Furthermore, the report recommends the implementation of a centralized inventory management system in order to enhance oversight and regulation of the distribution and accessibility of voting materials. The implementation of this approach significantly mitigates the likelihood of encountering issues related to excessive or insufficient inventory levels at various polling locations. Moreover, the study proposes the utilization of advanced technological solutions to effectively monitor inventory levels in real-time. Automated notifications serve as a valuable tool in managing inventory levels, particularly when materials are depleting. By promptly alerting relevant stakeholders, these notifications facilitate timely restocking, thereby mitigating the risk of shortages. This proactive approach to inventory management not only ensures uninterrupted operations but also enhances overall efficiency and productivity. Consequently, integrating automated notifications into the inventory management system is imperative for organizations seeking to optimize resource allocation and minimize disruptions caused by material scarcity. Moreover, the study strongly advocates for the implementation of a just-in-time inventory management approach, whereby items are supplied as closely as feasible to the precise voting date. The aforementioned phenomenon leads to a reduction in the necessity for extensive storage and a decrease in the probability of encountering damage or loss.

Moreover, the study strongly advocates for the implementation of regular cycle counting activities as a crucial practice to ensure the alignment of actual inventory levels with recorded levels. The ongoing auditing process plays a crucial role in the detection and resolution of discrepancies, thereby facilitating prompt issue resolution. The study further recommends the implementation of random sampling techniques during cycle counting in order to effectively evaluate the accuracy of inventory. The implementation of this approach effectively mitigates the potential for bias in the identification of disparities.

The study strongly recommends the regular review and assessment of inventory management methods. This analysis aims to identify and evaluate potential bottlenecks, inefficiencies, and opportunities for improvement within the current system or process. By conducting a comprehensive assessment, we can gain valuable insights that will enable us to enhance overall performance and optimize resource allocation. The report proposes the adoption of a continuous improvement approach, wherein valuable insights gained from each election cycle are utilized to enhance and optimize inventory management processes for future elections. This approach aims to foster ongoing progress and refinement in the management of election resources. By systematically applying lessons learned, election officials can effectively address challenges and improve the efficiency and effectiveness of inventory management practices.

5.4 Areas of Further Research

Based on the obtained results, it is evident that the coefficient of determination (R2) was calculated to be 78.8%. The proposed model in this study fails to account for additional factors, which account for a
significant portion of 21.2% of the data. However, the study does not provide an explanation for this discrepancy. Further investigation should be conducted to identify additional variables that account for the remaining 21.2% of performance, taking into consideration the specific context and scope of the study. This additional research will enhance our understanding of the factors influencing performance and contribute to a more comprehensive analysis of the subject matter. The present study falls short in comprehensively addressing the various aspects of inventory management practices in election operations. Therefore, it is highly recommended that further research be conducted in different countries, such as the East African region, to assess the performance of election systems. By employing the same factors utilized in this study, it would be possible to determine whether the findings remain consistent in a distinct context. An additional study could be conducted on the topic of logistics management in the context of election operations. This study would aim to measure the variable of overall performance using different proxies. By doing so, it would determine whether the findings of this study are consistent or inconsistent with the current research. This additional study would provide valuable insights and contribute to the existing body of knowledge on logistics management in election operations.

REFERENCES


