INFLUENCE OF INVENTORY MANAGEMENT SYSTEMS ON PROCUREMENT PERFORMANCE IN RETAIL INDUSTRY IN KENYA: A CASE OF UCHUMI SUPERMARKETS IN NAIROBI COUNTY

Gerishom. K. Mjomba
College of Human Resource and Development,
Jomo Kenyatta University of Agriculture and Technology
P. O. Box 62000, 00200 Nairobi, Kenya
Corresponding Author email: gk_gerry@yahoo.com

Dr. Allan Kihara
College of Human Resource and Development,
Jomo Kenyatta University of Agriculture and Technology
P. O. Box 62000, 00200 Nairobi, Kenya.


ABSTRACT
Effective inventory management is the result of outstanding inventory control and inventory management within an organization. This study analyzed the influence of inventory management systems on procurement performance in retail industry in Kenya. The study therefore analyzed on how Enterprise Resource Planning systems, Electronic Data Interchange (EDI), Bar code and scanner and Vendor Managed Inventory (VMI) affect procurement performance in retail industry in Kenya. Descriptive research design was used in the study. The study was based in Nairobi County with the target population of all employees of Uchumi hyper outlet in Sarit center in Nairobi which has a total of 126 employees. A census of 126 was used. In collecting the data, open-ended and closed-ended questions were used. Questionnaires was adopted in collecting data which was analyzed qualitatively and quantitatively by use of descriptive statistics feature in SPSS version 21 to generate information which was presented using pie charts and tables. Pilot testing was carried out using four respondents who were selected randomly to establish the validity and reliability of the research instruments before the actual collection of data for the study was done. The multiple regression model was used to show the relationship between the dependent variable and the independent variables. The findings of the study indicated that there is positive relationship between inventory management tools and procurement management. The study recommended that retail industry should ensure reversing the current phenomenon of poor inventory management through maximum use and utilization of inventory management systems towards enabling a company to meet or exceed customers’ expectations of product availability with the amount of each item that will maximize net profits or minimize inventory investment.

Key words: Electronic data interchange (EDI), Enterprise resource planning systems, Barcode and scanner, Vendor managed inventory system, Procurement Performance
Background of the Study

Inventory management systems obtain and move supplies and equipment to places where they are needed in a timely manner and at an optimum cost (Peleg et al., 2012). Supplies and equipment usually cannot go directly from their source to the end user. They frequently must be held in the warehouse at some points along the way (Sunil & Meindl 2010). Effective inventory management is the result of outstanding inventory control and inventory management. Effective inventory management allows a distributor to meet or exceed customers’ expectations of product availability by maintaining the amount of each item that will also maximize their company’s net profit (Tullous & Utecht, 2012).

The main goal of inventory management research is to reduce the cost of healthcare without sacrificing service typically by improving the efficiency or productivity of the systems (Novak and Eppinger, 2011) Managing inventory in an effective manner has a positive impact on the business. This is why it is important to explore and analyze the following four methods of controlling inventory in order to reach an informed decision about which one best suits your business (Mukhopadhyay & Kekre, 2012).

Lysons and Gillingham, (2010) suggests that procurement is the process of obtaining goods or services in anyway, including borrowing, leasing and even force or pillage. According to (Treleven & Schweikhart, 2008) savings and cost reductions can be achieved by implementing advanced inventory management tools that would result in fewer inventories on hand while still fulfilling demand for items.

Specific objectives

i. To examine the influence of Electronic Data Interchange on procurement performance in retail industry in Kenya.

ii. To assess the influence of Enterprise Resource Planning systems on procurement performance in retail industry in Kenya.

iii. To determine the influence of Bar code and scanner on procurement performance in retail industry in Kenya.

iv. To establish the influence of Vendor Managed Inventory on procurement performance in retail industry in Kenya.

Literature Review

Innovation diffusion theory

The common length through which theorists study the adoption and development of new ideas is commonly known as Innovation Theory or Diffusion Theory. In its basic form, Diffusion is defined as the process by which an innovation is adopted and gains acceptance by individuals or members of a community (Baker & Hubbard, 2008). As with the implementation of other new technologies, EDI implementation can be seen either as an innovation/technological diffusion process (Benbasat et al., 2013).

Studies of technological diffusion tend to emphasize the initiation and diffusion of the technology, which occurs during the early stages of the implementation process (Arunachalam, 2005). These studies emphasize the spreading of the ‘new’ technology to other parts of the organization which, in the case of EDI diffusion, can be divided into internal diffusion into the organization and external diffusion outside the organization (Baker & Hubbard, 2004).

‘New’ technology refers to the application of technology in an organization for the first time, regardless of whether it has been used by other organization or not (Bakos & Brynjolfsson, 2013). Based on this notion then, IS (including EDI) implementation refers to the organizational
effort to diffuse an appropriate information technology within the user community (Holland & Lockett, 2007). Although the emphases of innovation diffusion theory and change process theory differ slightly, both share a similar conception, which is the conception of change. Fulk and DeSanctis, (2005) point out that: “A theory of innovation is fundamentally a theory of change in a social system”. This theory link the research question one: how does electronic data interchange influence procurement performance retail industry in Kenya?

**Agency Theory Model**

According to Hennart, (2008) Agency theory describes the environment within a firm or between a set of firms in terms of sets of contracts in which one party (the principal) engages another party (the agent) to perform a service on the principal’s behalf which involves delegating part of the decision making authority to the agent. Several studies have applied agency theory to study both general project success and IS project success in principal-agent settings in which one group of people have delegated the responsibility of project implementation to another group (Hitt et al., 2009). Vendor relationship management is extremely important for the client to achieve both short- and long-term ERP project success. Agency theory is often used to explain the relationship between implementation consultants and client organizations deploying the ERP systems, and to consequently evaluate how the relationship affects the implementation success (Hennart, 2008). The increased popularity of enterprise resource planning (ERP) systems and of outsourcing services offered by ERP vendors has made ERP outsourcing an attractive option for many organizations (Elmagharby, 2010). Although an outsourcing contract offers attractive opportunities, vendor failure can result in serious adverse short and long-term results for the client. In extreme cases, clients have been forced into bankruptcy, unable to tackle the financial consequences generated from outsourcing failure. This is especially true in the case of ERP system implementation projects (Dedrick & Kraemer, 2005). Therefore this theory link the research question two: what is the influence of enterprise resource planning system on procurement performance in retail industry in Kenya?

**Bar code information theory**

Bar code technology theory is used to explain barcode which is an optical machine-readable representation of data relating to the object to which it is attached (Dai, & Kauffman, 2010). The theory states that communication over an unreliable channel can result in errors in the transmitted message. It is worthwhile noted that all communication channels have errors, and thus codes are widely used. In fact, they are not just used for network communication, USB channels, satellite communication and so on, but also in disks and other physical media which are also prone to errors (Clemons et al., 2008).

The bar code was intended to improve efficiencies in the retail space, but the bar code cannot uniquely identify the specific object such as when items are produced, the lot of the items was made and when will the items expire. RFID was able to take care of these issues (Benjamin et al., 2010). Both RFID and Bar codes are indeed, quite similar, both being auto-ID technologies, which are intended to provide item identification. The primary difference is the reading data from the items. In bar coding, the reading device scans a printed label with optical laser or imaging technology and in RFID; the reading device scans a tag by using radio frequency signals (Brynjolfsson et al., 2004).
Vendor-Managed Inventory (VMI) Model
Vendor-managed inventory (VMI) model employs the same principles as those of JIT inventory, however, the responsibilities of managing inventory is placed with the vendor in a vendor-customer relationship (Tullous & Utecht, 2012). Whether it’s a manufacturer managing inventory for a distributor, or a distributor managing inventory for their customers, the management influence goes to the vendor (Trochin, 2005). An advantage of this business model is that the vendor may have industry experience and expertise that lets them better anticipates demand and inventory needs.

The inventory planning and controlling is facilitated by applications that allow vendors access to their customer's inventory data (Mühge, et al., 2004). Another advantage to the customer is that inventory cost usually remains on the vendor's books until used by the customer, even if parts or materials are on the customer's site (Baker & Hubbard, 2004). This model link the research question four: how does vendor managed inventory influence procurement performance in retail industry in Kenya?

Conceptual Framework

**Electronic data interchange (EDI)**
- Timely, accurate and efficient information
- Speed of transactions
- Customer supplier relationship management

**Enterprise resource planning systems**
- Total cost control
- Inventory control
- Speed and accuracy in inventory management

**Barcode and scanner**
- Identification and tracking goods
- Storage location
- Demand forecasting

**Vendor managed inventory system**
- Inventory level
- Stock out number and frequency
- Flexibility in production planning and distribution

**Procurement Performance**
- Effectiveness
- Efficiency
- Customer satisfaction
Research Methodology

Research design
The study used descriptive design in order to clearly analyze the influence of inventory management systems on procurement performance. Descriptive research design is a method of collecting information by interviewing or administering a questionnaire to a sample of individuals (Mugenda & Mugenda, 2003). This method of research is preferred because a researcher is able to collect data to answer questions concerning the current status of the subject of the study (Kisilu & Tromp, 2006).

Target population
Luhmann, (2010) defined a population as a group of objects which provide the sample that is studied. The objects usually have same characteristics. A research population is generally a large collection of individuals or objects that is the main focus of a scientific query. The target population for this study consisted of 126 employees playing various roles in purchasing in Uchumi hyper supermarket located in Sarit centre in Nairobi County. The unit of observation was hence all departments of Uchumi Hyper supermarket in Sarit centre concerned with supplies and purchasing.

<table>
<thead>
<tr>
<th>Strata</th>
<th>Population (Frequency)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Management</td>
<td>71</td>
<td>56.35</td>
</tr>
<tr>
<td>Middle Management</td>
<td>42</td>
<td>33.33</td>
</tr>
<tr>
<td>Top Management</td>
<td>13</td>
<td>10.32</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>126</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

Sampling Frame
Sampling frame is a comprehensive list of all sampling units from which a sample can be selected (Kinyua, 2011). The sampling frame of the study was respondents from the top, middle and low management positions. The unit of analysis was 126 respondents from all departments of Uchumi Hyper supermarket in Sarit centre concerned with supplies and purchasing. This is justified on the argument that the management staffs are involved in decision making and strategy setting in inventory management systems.

Sample Size
Mugenda (2008) describes a sample as a subset of the population under study. The study conducted a census on all the respondents. The sample size was hence 126 respondents. The census approach was used because the sample size was not big enough for sampling. Census is a collection of information from all units in the population or a ‘complete enumeration’ of the population (Kothari, 2004). The study used census so as to collect accurate information because it takes the entire population into account. Furthermore, there is a need to have an in-depth opinion from each of the respondents involved. Israel (2012) argues that a census approach can be adopted for a population less than 200.
Data Collection Instruments
The study used quantitative primary data. The data collection instrument to be used was a structured questionnaire. Cooper and Schindler (2007) state that a questionnaire is cheaper and quicker to administer. The questionnaire contained closed ended questions to collect quantitative data. It was arranged as per the study objectives and was divided into six sections.

Data Collection Procedure
Data collection refers to the precise, systematic gathering of information relevant to the research problems, using methods such as interviews, participant observations, focus group discussion, narratives and case histories (Burns & Grove, 2010). The researcher used self-introduction letters. Questionnaires were administered by the researcher by drop and pick method after they been filled by the respondents.

Pilot test
Pilot testing was carried out to help find out if the questions were able to measure what they were supposed to measure, appropriateness and practicality, the clarity of the wording and whether the respondents interpreted the questions in the same way (Kothari, 2008). A pilot study was conducted using the questionnaires on two respondents working in the different job levels (top, middle and lower level of management) in Uchumi hyper supermarket in Sarit centre making a total of six respondents. According to Kothari, (2008) one percent (1%) of the population is adequate for pilot testing. The six respondents were selected randomly to establish the validity and reliability of the research instruments before the actual collection of data for the study. Mugenda and Mugenda, (2003) notes the main objective of pilot testing is to assist the study check the research instruments in terms of validity and reliability.

Validity of the Instrument
According to Kinyua, (2011), validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon. The pilot study instruments pre-test survey was carried out in a similar area of study. After the pre-test, pilot data analysis led to modification where necessary to ensure desired results were obtained from the actual study (Kothari, 2008).

Reliability of the Instrument
Reliability is the degree to which an assessment tool produces stable and consistent results. Reliability of the questionnaire is very important in analyzing the appropriateness, meaningfulness and usefulness of a research study (Mugenda, 2008). Cronbach’s alpha was used to examine reliability by determining the internal consistency of a test, that is, how closely related a set of items are as a group or the average correlation of items (variables) within the test. According to (Kothari, 2008), a-score exceeding 0.7 indicates high internal reliability of the scale items. The attained alpha scores imply acceptable level of reliability of the measures.

Data Analysis and Presentation
Data analysis as the process of packaging the collected information, putting in order and structuring its main components in a way that the findings can be easily effectively communicated (Kothari, 2008). Data analysis was done for both qualitative and quantitative data that was collected. This commenced by editing and validating of the collected data. The volumes
of data were then classified into various classes on the basis of their common characteristics in order to reduce them into homogeneous group for easy analysis. The data was then coded by assigning symbols to the responses in order to put them in mutually exclusive limited classes or categories. Eventually, the data was tabulated for further statistical analysis. Consequently, Statistical Package for Social Sciences (SPSS) and Microsoft Excel was used to carry out the data analysis. Qualitative data was analyzed using salient response pattern. Alternatively, pie charts, bar graphs and tables were employed in data presentation. Descriptive statistics was used to describe the basis features of the data in a study. They include statistical procedures that are used to describe the population of the study. They provide simple summaries about the sample and the measures (Luhmann, 2010). Together with simple graphics analysis, they form the basis of virtually every quantitative analysis of data. The multiple regression model was used to show the relationship between the dependent variable and the independent variables (Kothari, 2008). The model is given as follows:

\[ Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon. \]

Where:
\[ Y = \text{Procurement performance} \]
\[ \beta_0 = \text{Constant of Regression} \]
\[ \beta_i = \text{Beta Coefficients} \]
\[ X_1 = \text{Electronic data interchange} \]
\[ X_2 = \text{Enterprise resource planning system} \]
\[ X_3 = \text{Bar code and scanner} \]
\[ X_4 = \text{Vendor managed inventory systems} \]
\[ \epsilon = \text{Error of Regression} \]

**Results**

**Response Rate**

Luhmann (2010) defines response rate as the extent to which the final data set includes all sample subjects and it is calculated as the number of the people with whom interviews are completed, divided by the total number of people in the entire sample, including those who refused to participate and those who were unavailable, multiplied by 100. A total of 126 questionnaires were administered to top level management, middle level management and lower level management in Uchumi supermarket in Sarit centre in Nairobi, with 101 questionnaires returned successfully which represent (80.2%) of the total questionnaires administered. Kothari (2004) observes that in the descriptive research, a response rate of above 50 per cent is adequate for analysis. A response rate of 80.2% in this study was considered very adequate to provide enough data that can be generalized to represent the opinion of respondents in the target population facilitate effective analysis of influence of inventory management systems on procurement performance in retail industry. According to the figure below, the response rate was 80.2% response and 19.8% non-response to the study instrument. From the analysis it was concluded that majority of respondents participated in the study. This indicated that this response rate was adequate for analysis.
Response Rate

Reliability test

Data reliability is the measure of the degree to which a research instrument yields consistent result or data after repeated trials (Mugenda & Mugenda, 2009). Cronbach alpha (α) is the basic formula for determining the reliability based on internal consistency (Luhmann, 2010). Constructs used in this study were tested for internal consistency reliability using Cronbach alpha (α) test as depicted in table below. Trochin (2010) accepted a Cronbach’s alpha of 0.8 and above, while Mugenda and Mugenda (2009) noted an alpha of 0.6 and below is considered to be poor.

The measurement scales for reliability were tested using Cronbach's alpha coefficient and for an alpha of 0.7 and above, the instrument was interpreted as reliable (Trochin 2010). The results in the table below show Cronbach’s alpha of well above 0.7 and most of it above 0.8 implying that the instruments were sufficiently reliable for measurement. The study accepted a Cronbach alpha of 0.7 and above. Since most items total correlations were reasonably high, the construct validity of the instrument was considered reasonable (Luhmann, 2010).

The result in table below indicated that all the variables used in this study met the threshold with a Cronbach’s alpha of above 0.7 and therefore was considered for subsequent further analysis and data collected could be generalized to reflect opinions of all respondents in the target population on influence of inventory management tools on procurement performance.

Cronbach Alpha Coefficient for the Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient Alpha Reliability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement performance</td>
<td>.864</td>
</tr>
<tr>
<td>Electronic Data Interchange</td>
<td>.803</td>
</tr>
<tr>
<td>Enterprise Resource Planning systems</td>
<td>.954</td>
</tr>
<tr>
<td>Bar code and scanner</td>
<td>.729</td>
</tr>
<tr>
<td>Vendor Managed Inventory</td>
<td>.736</td>
</tr>
</tbody>
</table>

Response rate

![Pie chart showing response rate with 80.20% response and 19.80% non-response]
Background Information
This section describes characteristics of the study population based on the data collected and analyzed. Every target population usually has its own characteristics. The respondents who participated in the study were asked to indicate their gender, academic qualifications, age, level of management and number of years of experience in the organization. The findings are summarized in the figure below.

Gender of the Respondents
The study sought to find out the gender of the respondents as indicated in the figure below from the findings, the majority 53.3% of the respondents were females while 46.6% of the respondents were male. This provided a point of reference on how information on inventory management tools on procurement performance was provided by both genders. Mugenda and Mugenda, (2009) argue that equal representation of both genders helps in eliminating cases of data biasness that could arise as a result of gender imbalance in the response rate.

![Gender of Respondents](image)

Gender of Respondents

Age brackets of the respondents
The study requested the respondents to indicate their age bracket by ticking against the appropriate range. From the findings in figure 4.4, 49.7% of the respondents indicated that they were aged between 18-27 years, 41.2% of the respondents indicated that they were 28-37 years while 9.1% of the respondents were aged between 38-47 years. From the findings majority of respondent aged between 18-27 years indicating that most respondents were young and can easily adopt new technologies in inventory managements in supermarkets. These findings agree with Roberg et al., (2010) report that younger employees tend to work harder and are more productive than older employees.
Age bracket of the respondents

Job Group Level
The results in table 4.3 revealed that majority of the respondent (46.7%) worked at lower management level compared (36.6%) in middle level management and (16.7%) in top level management. This implies that majority of the respondent who participated in the study were working in the organization at a lower level management. These findings in this study were significant as the respondent in the low level management were able to give relevant data on the influence of inventory management tools on procurement performance. This was in tandem with findings by Cohen et al., (2010) that respondents at low level management assist in providing reliable data on the sought of problem since they have technical experience on the problem being investigated by the study.

<table>
<thead>
<tr>
<th>Job group level</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower Level management</td>
<td>47</td>
<td>46.7</td>
</tr>
<tr>
<td>Middle Level management</td>
<td>37</td>
<td>36.6</td>
</tr>
<tr>
<td>Top level management</td>
<td>17</td>
<td>16.7</td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td>100</td>
</tr>
</tbody>
</table>

Number of years worked in the organization
The study requested the respondents to indicate the years they had worked in the organization. The data in figure 4.5 show that 53.3% of the respondents had worked for duration of 6-10 years, 26.7% between 11-15 years, 13.3% had worked for between 16 and above years, while 6.7% had worked in the organization for between 1-5 years. The study concludes that most respondents had worked in the organization for 6-10 years. These findings enabled the study in gathering reliable data on influence of inventory management tools on procurement performance
from experienced respondents. These findings corroborate with Research by (Bond, 2010) that indicated that employee with a high working experience assist in providing reliable data on the sought of problem since they have technical experience of on the problem being investigated.

**Number of years worked in the organization**

<table>
<thead>
<tr>
<th>Years</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 yrs</td>
<td>6.70%</td>
</tr>
<tr>
<td>6-10 yrs</td>
<td>53.30%</td>
</tr>
<tr>
<td>11-15 yrs</td>
<td>26.70%</td>
</tr>
<tr>
<td>16 yrs and above</td>
<td>13.30%</td>
</tr>
</tbody>
</table>

**Level of education**

Figure 4.6 indicated the highest academic qualification attained by the respondents. From the findings, majority 41.1% of the respondents indicated that they were holders of certificate, 30.0% of the respondents were diploma holders, 12.50% of the respondents were KCPE holders, 11.30% of the respondents had bachelor’s degree while 5.10% had master’s degree. Majority of respondent (41.1%) were holders of certificate. These findings indicated that with majority of respondent attained certificate they were able to understand the application of inventory management tools in the supermarket. This concurred with Williamson, (2011) that during research process, respondents with technical knowledge on the study problem assists in gathering reliable and accurate data on the problem under investigation.
Inferential Analysis

This section entails the use of correlation analysis, regression analysis, analysis of variance (ANOVA) and coefficient analysis to deduce more meaning of the data for the purpose of concrete result, finding and conclusions. These tests were conducted to verify existence of relationship between the independent variables and the dependent variable.

Correlations Analysis

The study conducted a Pearson correlation analysis for all the study variables and results in table below revealed that procurement performance was positively and significantly correlated with Electronic Data Interchange at \( r = 0.845^{**}, \text{p}=0.000<0.01 \). This implied that Electronic Data Interchange had a positive influence on procurement performance in retail industry. These findings support the findings of Tullous & Utecht, (2012) that the use of EDI help supply chain partners to overcome the distortions and exaggeration in supply and demand information by improving technologies to facilitate real time sharing of actual demand and supply information thus improving procurement performance.

The findings in table below revealed procurement performance was positively and significantly correlated with Enterprise Resource Planning at \( r = 0.446^{**}, \text{p}=0.009<0.01 \). This implied that Enterprise Resource Planning had a positive influence on procurement performance in retail industry. This findings supports the findings of Richardson & Roumasset (2010), the ERP systems help monitor material order schedule, finished goods inventory and tracking of orders through the entire logistics channel from procurement to delivery thus improving procurement efficiency and effectiveness.

The findings in table below revealed that procurement performance was positively and significantly correlated with bar coding and Scanner at \( r = 0.225, \text{p}=0.008<0.05 \). This implied that bar coding and Scanner has positive influence to procurement performance in retail industry. These findings support the findings of Malone et al., (2010) that bar codes and scanner enhance efficiency and effectiveness in supply chain since they are widely used throughout the supply chain to identify and track goods at all stages in the process.
The findings in table below revealed that procurement performance was positively and significantly correlated with vendor managed inventory at \( r = 0.627^{**} \), \( P=0.000<0.01 \). This implied that vendor managed inventory has positive effect on procurement performance in retail industry. This findings support the findings of Lucking & Spulber (2011) that VMI offers a competitive advantage for retailers because it results in higher product availability and service level as well as lower inventory monitoring and ordering cost, for vendors, on the other hand, it results in reduced bullwhip effect and better utilization of manufacturing capacity, as well as better synchronization of replenishment planning.

The findings indicated that dependent variable (procurement performance) positively and significantly correlated with independent variables (Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory) at \( P=0.05 \).

**Correlations analysis**

<table>
<thead>
<tr>
<th></th>
<th>Procurement performance</th>
<th>Electronic Data Interchange</th>
<th>Enterprise Resource Planning</th>
<th>Bar coding and Scanner</th>
<th>Vendor Managed Inventory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement performance</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electronic Data Interchange</td>
<td></td>
<td>.845^{**}</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enterprise Resource Planning</td>
<td>.446^{**}</td>
<td>.654^{**}</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bar coding and Scanner</td>
<td>.225^{**}</td>
<td>.066</td>
<td>.175</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Vendor Managed Inventory</td>
<td>.627^{**}</td>
<td>.744^{**}</td>
<td>.552^{**}</td>
<td>.135</td>
<td>1</td>
</tr>
</tbody>
</table>

\* Correlation is significant at the 0.05 level (2-tailed).

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

**Regression Analysis**

To determine the amount of variation on dependent variable (procurement performance) explained by the independent variables (Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory) were carried out. Result in table below revealed that the independent variables (Electronic Data Interchange, Enterprise
Resource Planning, Bar coding and Scanner and Vendor Managed Inventory) reported R value of 0.794 indicating that there is perfect relationship between dependent variable and independent variables. R² value of 0.631 means that 63.1% of the corresponding variation in procurement performance can be explained or predicted by (Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory) which indicated that the model fitted the study data. Adjusted R² in table below is called the coefficient of determination which indicates how the procurement performance varied with variation in the influence of inventory management tools on procurement performance in retail industry which includes Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory.

From the table 4.8, the value of R² is 0.631. This implies that, there was a variation of 63.1% of influence of inventory management tools on procurement performance in retail industry at a confidence level of 95%. This clearly indicated that Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory influenced procurement performance in retail industry.

### Regression Analysis

<table>
<thead>
<tr>
<th>Mode</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.794a</td>
<td>0.631</td>
<td>2.51208</td>
</tr>
</tbody>
</table>

**a.** Predictors: (Constant), Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory.

**b.** Dependent variable: Procurement performance

### Analysis of variance (ANOVA)

Table 4.8 show the total variance (427.500) was the differences into the variance which can be explained by the independent variable (model) and the variance and the F-test( F= 10.686, P=0.000<0.05) which was greater than F critical of 2.743. This indicated that the model formed between influence of inventory management tools on procurement performance in retail industry was a good fit for the data. The strength of variation of the predictor values influence of inventory management tools on procurement performance in retail industry was significant at 0.000<0.05. This means this is a statistically significant test.

<table>
<thead>
<tr>
<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>1</td>
<td>Regression</td>
<td>269.736</td>
<td>4</td>
<td>67.434</td>
<td>10.686</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>157.764</td>
<td>96</td>
<td>6.311</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>427.500</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**a.** Dependent Variable: Procurement performance
b. Predictors: (Constant), Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory.

**Coefficients of Regression Analysis**

The raw Regression equation model used in the study was:

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon \]

The established regression equation was:

\[ Y = 4.064 + 0.714 X_1 + 0.175 X_3 + 0.064 X_2 + 0.042 X_4 \]

Where: \( Y \) = Procurement performance, \( X_1 \) = Electronic Data Interchange, \( X_2 \) = Enterprise Resource Planning, \( X_3 \) = Bar coding and Scanner and \( X_4 \) = Vendor Managed Inventory and \( \varepsilon \) = Error term

The findings in table below indicated that influence of inventory management tools on procurement performance in retail industry would be at 4.064 holding influence of inventory management tools on procurement performance which includes Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed Inventory constant at zero. Findings in table 4.10, revealed the result of the coefficient of the regression analysis, Electronic Data Interchange (\( \beta = 0.714, p = 0.001 < 0.05 \)), Enterprise Resource Planning (\( \beta = 0.175, p = 0.002 < 0.05 \)), Bar coding and Scanner (\( \beta = 0.175, p = 0.002 < 0.05 \)) and Vendor Managed Inventory (\( \beta = 0.042, p = 0.004 < 0.05 \)) had positive influence on procurement performance. The findings shows that all independent variables had statistically significant predictive capacity as indicated by \( p < 0.05 \).

Therefore, all factors notably Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed inventory influence procurement performance in retail industry in Kenya. The study therefore concluded that through effective implementation of inventory management tools procurement performance can be improved in retail industry. This further indicates that Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed inventory are critical factors to improvement in procurement performance in retail industry. These echoed findings of Hennart, (2008) that the influence of improved inventory management tools and user access to the procurement process has a significant impact on the configuration and structure of supply chains.

**Coefficient of regression Analysis**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1 (Constant)</td>
<td>4.064</td>
<td>2.031</td>
<td>2.001</td>
<td>0.01</td>
</tr>
<tr>
<td>Electronic Data Interchange</td>
<td>.714</td>
<td>.194</td>
<td>.779</td>
<td>3.680</td>
</tr>
<tr>
<td>Enterprise Resource Planning</td>
<td>.064</td>
<td>.212</td>
<td>.074</td>
<td>0.302</td>
</tr>
<tr>
<td>Bar coding and Scanner</td>
<td>.175</td>
<td>.200</td>
<td>.117</td>
<td>0.872</td>
</tr>
<tr>
<td>Vendor Managed inventory</td>
<td>.042</td>
<td>.228</td>
<td>.039</td>
<td>0.184</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Procurement performance
b. Predictors: (Constant), Electronic Data Interchange, Enterprise Resource Planning, Bar coding and Scanner and Vendor Managed inventory.

**Summary of findings**
Empirical literature showed that procurement performance is a concerned area influenced by various factors. The study examined a total population of 126 employees of Uchumi hyper outlet in Sarit centre situated in Nairobi County. The study was conducted by use of interviewer administered questionnaires in parallel to qualitative data collected. Out of the 126 respondents 101 responded giving a response rate of 80.2%. Kothari (2004) observes that 50% and above is adequate for analysis and therefore this rate was considered sufficient. SPSS version 21 was used as the statistical tool for analysis all through the study. Quantitative data was analyzed and described using descriptive and inferential statistics. Multiple regression model was used to test the combined effect of all the independent variables to the dependent variable. The study had the following findings:

**Electronic Data interchange**
The finding of this study suggested that electronic data interchange influence procurement performance. This was indicated by majority (71.30%) of the respondents who agreed that Electronic Data Interchange influence procurement performance. These findings indicate that Electronic Data Interchange is an effective way of improving inventory management towards procurement performance. The study provides contributions to the literature as it helps practitioners to know the importance of Electronic Data Interchange in ensuring effectiveness and efficiency in inventory management.

**Enterprise Resource Planning**
The research findings showed a great positive correlation between enterprise resource planning system and procurement performance. This was indicated by majority of respondents (67.80%) who agreed that ERP Systems influence procurement performance. These findings indicate that the use of ERP systems help monitor material order schedule, finished goods inventory and tracking of orders through the entire logistics channel from procurement to delivery thus improving procurement efficiency and effectiveness.

**Bar code and scanner**
The study showed that Bar code and scanner has a positive influence on procurement performance in retail industry in Kenya. This was indicated by majority of respondents (63.30%) who agreed that Bar code and scanner influence procurement performance. This shows that use of bar codes and scanner in retail outlets enhance efficiency and effectiveness in supply chain since they are widely used throughout the supply chain to identify and track goods at all stages in the process.

**Vendor Managed Inventory**
The research findings showed a great positive correlation between vendor managed inventory and procurement performance. This was indicated by majority of respondents 65.30% agreed that VMI Systems influence procurement performance. These findings indicated that VMI implementation helps in reduction in customer demand uncertainty, reduction of inventory level, reduction of stock out number and frequency, more flexibility in production planning and distribution and improvement of customer services which leads to procurement performance in an organization.

**Conclusion**
Based on the research findings it was concluded that the use of inventory management systems on procurement performance can be enhanced. Given the backdrop that the use of inventory management systems in retail industry is not fully implemented, the findings indicated that currently inventory management systems that includes electronic data interchange, enterprise resource planning system, barcode and scanner and vendor managed inventory are not fully used in retail industry. It was articulated that the current phenomenon of poor inventory management can be reversed if the retail industry can maximize utilization of inventory management systems towards enabling a company to meet or exceed customers’ expectations of product availability with the amount of each item that will maximize net profits or minimize inventory investment.

Recommendations
The study raises a range of recommendations based on the findings on the context of the effect of inventory management systems on procurement performance in retail industry. The study justifies that with by developing and using a comprehensive set of inventory management tools to closely monitor the performance of inventory, retail industry can achieve goals more efficiently. Therefore having accurate, reliable counts of actual inventory on-hand empowers to keep retail outlets with required inventory and saves costs by helping to avoid the need to over-order. The government of Kenya, policy makers, suppliers, retailers and other stakeholders with interest in procurement performance should pay attention on measures that ensure proper use of inventory management systems. The study recommends that there is need for the retail industry to make use of electronic data interchange system to ensure providing timely information about its customers’ sales as well as highly accurate and very efficient. This will also help in sending invoices, bills of lading, confirmation of dispatch, shipping details and any information that the linked organizations choose to exchange. Proper use of EDI will help retail industry in quick process to information, better customer service, reduced paper work, increased productivity, improved tracing and expediting, cost efficiency and improved billing.

Another recommendation is that the retail industry should implement Enterprise Resource Planning systems in inventory management since management of inventory is critical to controlling costs and ensuring the smooth operation of the organization. Proper use ERP System will give retail outlets real time information on current stock levels and values including stock on order, raw materials, work in progress and finished goods therefore enhancing Supply Chain Management. Most modern ERP systems have increased efficiency as processing transactions are real time, often including accounting transactions and real time inventory management. Furthermore, the study recommends that there is need for effective use of bar codes and scanner in the retail outlets. This will enhance effectiveness and efficiency in the supply chain through identification and tracking goods at all stages in the process. The use of bar codes can speed up operations of an organization significantly there once used properly, they improve procurement performance.

Recognizing that Vendor Managed Inventory (VMI) system is key to improving inventory management, creating access to on-going reliable support and making the most of its use in an organization is vital for effective procurement performance. The use VMI system helps in encouraging collaboration and information sharing among trading partners. The retail industry should implement effective use of VMI systems towards enhancing higher product availability and service level as well as lower inventory monitoring and ordering cost, for vendors, on the as
well reducing bullwhip effect, better utilization of manufacturing capacity and better synchronization of replenishment planning.

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