

## THE EFFECTS OF INVENTORY STOCKPILING ON SECURITY OPERATIONS: A CASE OF THE ADMINISTRATION POLICE SERVICE IN KENYA

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### ABSTRACT

The National Police Service is made up of Administration Police service and Kenya Police Service. The government has been carrying out police reforms with an aim of improving its service delivery to the public and effectiveness in security operations. Despite the number of police officers being increased through annual recruitment coupled with enhanced intelligence collection, the annual crime rate has gradually been escalating and response to security emergencies appalling. The Administration Police Service like many military and other emergency response organizations stockpiles supplies which are mobilized to officers in the field in case of a security emergency. The purpose of the study was to analyze the effects of inventory stockpiling to security operations of Administration Police Service with an objective of finding out to what extent inventory management skills, policy on stockpiling, inventory location and financing of inventory stockpile affected security operation in Administration Police Service. The target population of the study included Administration Police staff totaling to 105. A stratified sampling technique was employed. The Officers were divided into three levels and then stratified random sampling was used to give a representative sample size of 42 AP staff which was 40% of the population. Data collected through self administered questionnaires was processed using SPSS version 20, analyzed and presented using frequency tables. The study found out that staff inventory management skills; the location of inventory, inventory policy and financing of inventory affected AP security operations. The study recommends that the administration police service should increase the funding of inventory stockpile as well as training of AP staff on inventory management. On the inventory policy the study recommends that the AP should work on their inventory policy on when and how to replenish their inventory. In addition the AP should stagger their inventory near areas of operation for ease of security operation.

**Key Words:** *Inventory Control, Inventory Cycle, Inventory, Iron Mountain, Lead Time and Stockpiles*

## **Introduction**

Inventories are stockpiles of raw materials, supplies, components, work in progress and finished goods that appear at numerous points throughout a firm's production and logistics channel Ballou (2004). According to Jacobs and Aquilano (2004), inventory is the stock of any item or resource used in an organization. An inventory system is a set of policies and control that monitor levels of inventory and determine what levels should be maintained, when stock should be replenished and how large the orders should be.

The dictionary meaning of the word 'inventory' is a "detailed list of goods, furniture, etc." Many understand the word "inventory" as a stock of goods, but the generally accepted meaning of the word 'goods' in the accounting language, is the stock of finished goods only. In a manufacturing organization, however, in addition to the stocks of finished goods, there will be a stock of partly finished goods, raw materials and stores. The collective name of all these items is inventory. The assets which firms store as inventory in anticipation of need are raw materials, work-in-process (semi-finished goods) and finished goods. The raw material inventories that are purchased by the firms from others are converted into finished goods through the manufacturing process. The work-in-process inventory consists of items currently being used in the production process. Finished goods represent final or completed products that are available for sale (Chadda, 2002).

## **Statement of the Problem**

The Annual Crime Report (2011) shows an increase in crimes reported from 70,779 in the year 2010 to 75733 in 2011. There was a rise by 4954 or 6% of crimes, with preceding reports indicating a gradual rise. Bayley (1994) page 3 asserts that cities with more crime had more police officers, dismissing the connection between the police strength and crime rate. A report of the national task force on police reforms recommended that the tooling, logistical and technological capacity of the police services should be reviewed to establish the exact needs and specification in order to bring policing to international standards (ROK, 2009). In reference to importance of logistics and supply chain management to security operation, Rimmer (2013), quoted Gen.Somervell of US Army that "good logistic alone cannot win war, but bad logistics alone can lose it", while Barrow, (1980) emphasized that "Amateurs talk about tactics, but professionals study logistics"

According to Ibrahim Index of African Governance (IIAG, 2013), Kenya was grouped together with failed nations like Somalia and others facing unmanageable security situations. Kenya was at position 42 and is ranked as poorly in personal security for its citizen and visitors as in the safety and rule of law indexes 36 and 33 respectively. The AP Service uses inventory stockpiling to consolidate operational tools, equipment and other supplies in order to enhance swift response to any security emergency just like the United States Homeland Security's Federal Emergency Management Agency stockpile foodstuffs, beddings and tents that can readily be provided to areas that are struck by disaster (Gill, 2007).

In the period January 2012- December2012, the AP warehouse in Nairobi received stocks of; bush tents 400 No. water bag 5477 No. webbing equipment 17,566 No. canned peas 603,000 No. dehydrated vegetables 305,000 pkts. Army biscuits 1,251,000 pkts. corned beef 300,000 No.

among other items (ROK, 2012). Local studies done on Police Service and service delivery have focused on corruption and the high handedness (Momanyi, 2011; Osiche, 2008; Barasa & Eising, 2010). This study sought to find out whether inventory stockpiling affected (hindered or eased) security operation in the AP service with specific attention to inventory management skills, inventory policy, inventory location and funding inventory.

### **General Objective**

To establish the effects of inventory stockpiling on security operations of Administration Police Service.

### **Specific Objectives**

1. To determine the effects of employees' inventory management skills on security operations of Administration Police service
2. To determine the effects of policies of inventory stockpiling on security operations of Administration Police Service
3. To find out the effects of inventory stockpile location on security operations of Administration Police Service
4. To examine the effects of financing to build inventory stockpile on security operations of Administration Police Service

### **Theoretical Review**

#### **Resource based Theory**

The theoretical underpinnings inventory management skills application in public services come from resource based view theory. To examine the effects of staff inventory management skills on security operations, the study was based on resource based theory. The resource-based view of the firm focuses on the role internal resources play in developing and maintaining a firm's competitive advantage (McMahan & McWilliams, 1994). A company will achieve a competitive advantage when it has key resources (these can be physical resources, human resources or organisational resources) that its competitors do not have (Barney, 1991). Developing and maintaining this competitive advantage depends on whether the firm is able to identify, develop, deploy, and protect the internal resources (Barney, 1991).

In the context of the resource-based view, a firm might lose its competitive advantage if important purchasing skills are scarce or are getting lost as they are not easily duplicated or substituted. Purchasing skills are valuable as they help providing supply strategies for future needs and developing supply management strategies to support company strategies (Carr & Pearson, 2002). As purchasing professionals interact with other functions within a complex social network, purchasing skills are difficult to replicate (Eltantawy, 2005).

## Scientific Inventory Management

The purpose of scientific inventory management is to determine rules that management can use to minimize the costs associated with maintaining inventory and meeting customer demand. Inventory is studied in order to help companies save large amounts of money. Inventory models answer the questions: (1) When should an order be placed for a product? (2) How large should each order be? The answers to these questions lead to two inventory models that is deterministic and stochastic continuous-review models (Hillier, Frederick & Lieberman 1995).

### Deterministic Inventory Model

The most common deterministic inventory model is Economic Order Quantity (EOQ). It is the basic model in achieving an optimal ordering quantity which minimizes the total inventory costs. However there are some assumptions to be upheld: demand is known and constant, the lead time-the time between the placement of order and the receipt of the order is known and constant, the receipt of inventory is instantaneous, quantity discounts are not possible, the only variable costs are the ordering cost and the holding or carrying cost, orders are placed so that stock outs or shortages are avoided completely (Hillier, Frederick & Lieberman, 1995).

### A stochastic continuous-review model

Stochastic inventory models are designed for analyzing inventory systems where there is considerable uncertainty about future demands. Thus, the inventory level is monitored on a continuous basis so that a new order can be placed as soon as the inventory level drops to the reorder point. The traditional method of implementing a continuous-review inventory system was to use a two-bin system. All the units for a particular product would be held in two bins.

The capacity of one bin would equal the reorder point. The units would first be withdrawn from the other bin. Therefore, the emptying of the second bin would trigger placing a new order. During the lead time until this order is received, units would then be withdrawn from the first bin.

In more recent years, two-bin systems have been largely replaced by computerized inventory systems. Each addition to inventory and each sale causing a withdrawal are recorded electronically, so that the current inventory level always is in the computer. (For example, the modern scanning devices at retail store checkout stands may both itemize purchases and record the sales of stable products for purposes of adjusting the current inventory levels.) Therefore, the computer will trigger a new order as soon as the inventory level has dropped to the reorder point. Several excellent software packages are available from software companies for implementing such a system (Hillier, Frederick & Lieberman, 1995).

### Modern Qualitative Location Model

The problem of whether inventory stockpile location could affect security operation was examined by applying the modern qualitative location model. Modern location models have combined the decision model (which is a structured technique for organizing and analyzing decisions) with the factor rating model, which makes the modern qualitative location model more accurate. Many researchers investigated the qualitative aspect of facility location. Miller (1993)

stressed the importance of these factors, arguing that they often outweigh the quantitative model results.

The factor which Miller emphasized the most is the availability of quality labor. He argued that in the future, quality would play a main role. Government support and the infrastructure of the location was another area Miller emphasized. Scott (1989) argued that the facility location process involves gathering and analyzing much different information and relating it to the organization's strategic goals. He developed a checklist of the qualitative factors that are involved in a facility location decision: Location of major market; Location of materials and/or service; Availability of labor; and Suitable transportation links. MacCormack, Newmann, and Rosenfield (1994) said that qualitative facility location received only limited exposure in the strategic planning literature, as there was too much reliance on quantitative factors such as transportation and labor costs. Location decisions based primary on cost factors underestimates the importance of qualitative factors which could provide long term advantages.

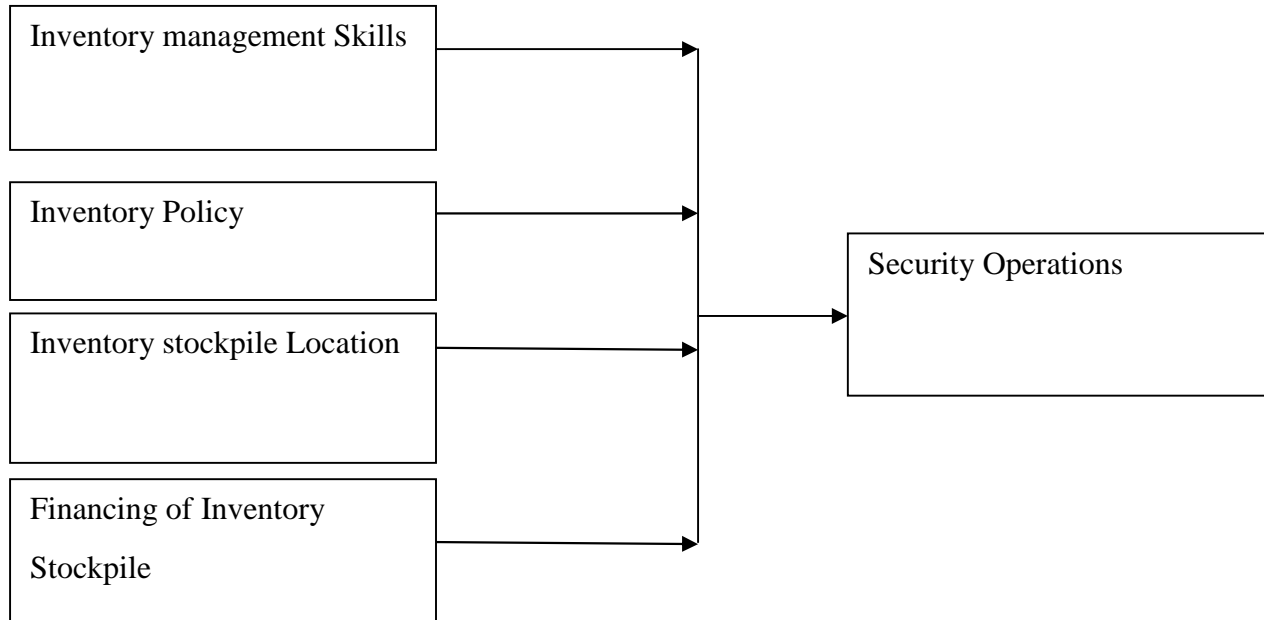
### Finance constraint Theory

Finance constraint theory was used to guide the study in examining the effect of funding to build inventory stockpile on security operations. Evidence obtained by the majority of studies supports the theory that finance constraints reduce investment by firms that have high information costs. In the literature on inventory investment, the results more clearly support the theory of the finance constraints. Guariglia (1999), Zakrajsek (1997), Gertler and Gilchrist (1994), Kashyap, Lamont, and Stein (1994), and Kashyap, Stein, and Wilcox (1993) examine data on inventory investment for evidence of finance constraints. They all tested some form of partial-adjustment inventory model augmented with financial variables that proxy for internal funds, such as cash flow, interest coverage ratio, liquidity ratios, or other financial ratios.

These studies typically featured firm-level data analyzed over periods of recession or periods when monetary policy was known to be restrictive. The augmented model of inventory investment was estimated separately for the finance-constrained and unconstrained groups of firms. Most authors focused on manufacturing firms; the exceptions are Kashyap, Stein, and Wilcox (1993), who used aggregate data, and Zakrajsek (1997), who studied retail sector inventories.

Previous studies on inventory investment and finance constraints found that the financial variables had significant and larger coefficients for firms in the finance -constrained group compared with the unconstrained firms. Kashyap, Stein, & Wilcox (1993) also found that financial variables were significant in explaining inventory investment using aggregate data. Although the evidence in the literature on fixed investment and finance constraints is mixed, research to date on inventory investment is less ambiguous. Existing studies more clearly support the view that finance constraints lead to a positive relationship between cash flow and inventory investment.

### Conceptual Framework



*Independent Variables*

*Dependent Variable*

**Figure 1: Conceptual Framework**

### Inventory Management Skills

A “skill” is the ability gained by practice or knowledge (Carr & Smeltzer 2000). Generally, the employees’ skills’ impact on organizational performance has been the focus of numerous research studies and writings (Borman, 1991). Specifically, supply management skills were found to influence the effectiveness of firms’ performance (Carter & Narasimhan, 1996).

Firms are realizing that strategic supply management skills are essential if they need to acquire the materials and services in a way that will enhance their supply chain’s competitive advantage (Tan, 2002).

The recognition of the supply management’s strategic role raised the concerns about developing and maintaining a world-class staff or supply managers who possess the necessary strategic skills for competing in today’s environment. According to Giunipero & Percy (2000) “the world-class purchaser is an individual who visualizes and approaches his or her job from a strategic perspective in dealing with the supplier firm-purchaser firm-customer linkage. This individual continually embraces and leverages his or her skills and knowledge of critical supply management activities to provide value in meeting corporate and customer objectives.”

Therefore, supply management’s strategic skills are represented by the ability to perform strategic functions such as: supplier coordination, supplier development, supplier market research, cost analysis, sourcing strategy formulation, benchmarking, make or buy decision, and supplier capability analysis (Carr et al., 2000). Strategic supply management is defined as the process of planning, evaluating, implementing, and controlling highly important and routine



sourcing decisions. Strategic supply management skills enable directing all activities of the supply management function toward opportunities consistent with the firm's capabilities in order to achieve its long-term goals.

Supply management strategic skills allow the supply management function to develop its strategies and practices that could be used as a valuable inimitable input to the firm's planning process and, hence, are a source of competitive advantage. Continuously upgrading the level of supply management strategic skills is a prerequisite for supply management professionals to interpret changes in the supplier market and offer technical assistance in developing suppliers, which will produce valuable supplier relationships that cannot be imitated by competition (Lester, 1999).

Previous research addressed the nature of emerging supply management skills and their importance in enhancing firm's performance for example; (Kolchin & Giunipero 1993; Carter & Narasimhan, 1996). However, the study of the impact of inventory management skills on supply management decisions and performance was largely overlooked. Like other organizational assets, supply management skills should be classified as core and peripheral skills. Supply managers need to be able to pinpoint and enhance the core skills that their departments need. This study explored one category of these skills; inventory management skills on stockpiling and examined its effects on security operations.

### Inventory Policy

Dave & Patel (1981) considered the optimal inventory replenishment policy with the assumptions that the demand rate was deterministic and time proportional, and that the replenishment periods were equal. The drawback of Dave and Patel's model was that the scheduling periods were assumed to be of equal length. Since the demand rate changes linearly with time, both the order quantity and frequency of the orders should vary with the passage of time in order to achieve the minimum inventory cost. Keeping the ordering cycle constant and only varying the order size resulted in higher inventory cost than adjusting both ordering cycles and the size of the orders. Bahari-Kashani (1989) proposed a heuristic which permitted variation in both replenishment cycle length and the size of the order.

Xu & Wang (1990) decided the optimal policy by a dynamic programming with the assumption that the replenishment time was discrete. Among papers that studied mitigating policies to address potential supply disruptions, Schmitt (2011), analytically models supply disruptions in a multi-echelon supply chain and numerically demonstrated the effectiveness of combining inventory placement and back-up methods, where the greatest improvement in service level could be achieved by inventory placement to cover short disruptions and back-up methods to help the supply chain recover from long disruptions. In similar streams of research, a range of different supply chain strategies were proposed to mitigate disruption impact, including the use of advance warning of disruptions (Snyder & Tomlin, 2008), strategic inventory (Schmitt, 2011). The base stock control policy prescribe that each production stage start production whenever associated inventory level drops to or below a predetermined base stock level and stop production when the inventory level reaches the base stock level. Thus this policy implies

continuous review. This type of policy can be classified as a “pull system because replenishment orders are pulled down by the lower echelon from their replenishment sources (Zipkin, 1981). The studies conducted on inventory policy have majored on fast and slow moving stock but there is a gap on policies on replenishment of inventory in security and disaster management organizations whose basis of holding inventory is to counter emergencies whose magnitude and area of occurrence are unknown.

### Inventory Stockpile Location

Traditionally, facility location, inventory, and transportation decisions are treated separately or pair-wise. For instance, given inventory decisions, the traditional facility location problem focuses on the trade-off between transportation and fixed facility costs (Daskin, 1995). Another stream of research proposes integration, i.e., simultaneous optimization, of location and inventory decisions (Drezner et al., 2003; McCann, 1993; Romeijn et al., 2007; Teo & Shu, 2004).

Facility location and inventory decisions are connected through the transportation costs in the system. Facility location decisions have an impact on transportation, and, hence, on replenishment costs which, in turn, affect the optimal inventory policy. On the other hand, the inventory policy dictates the frequency of shipments to replenish inventory, which, in turn, affects the number of deliveries, and, hence, the transportation costs, between facilities. As a result, facility location and inventory decisions are interdependent due to the economies of scale inherent in transportation and replenishment costs (Teo & Shu, (2004).

Teo & Shu (2004) studied a warehouse-retailer network design problem that incorporated transportation and inventory cost functions under deterministic stationary demand over an infinite planning horizon in a two-stage distribution system. Their goal was to determine how many warehouses to setup, where to locate them, how to serve the retailers using these warehouses, and the optimal inventory policies for the warehouses and the retailers so that the total of transportation, fixed facility, inventory replenishment, and holding costs were minimized. It is true that facility location, inventory, and transportation decisions are treated separately or pair-wise but the effect of inventory location on operation of an organization whose clients are scattered on a wide geographical area and with inconsistent demand has not been considered.

### Financing Inventory

According to Walters (2008), end customer needs are the starting point for relations within the supply chain. This demand leads to orders and interaction-based activities in different steps of the value chain (Rainbird, 2004). Since interaction can evolve through several steps in the supply chain, the role of buyer and seller varies. Nowadays, a logistics service provider is usually charged with the physical processing of the transactions within the supply chain (Selviaridis & Spring, 2007) while a financial service provider will be assigned to provide capital and settlement facilities.



Any funds required for inventory can be covered by spontaneous financing related to the cash conversion cycle (because they arise in the course of the normal business transactions), or by other short-term sources like bank credit arrangements (e.g. single-payment loans, letters of credit) as well as unsecured or secured borrowings (Buzacott & Zhang, 2004). From a financial service provider's perspective, in the case of inventory financing firm's current assets are used as security or as collateral for short-term loans. A basic problem is the "marketability" of inventory in the hands of the lender. Unlike accounts receivables or back-up liquidity, inventory does not turn to cash by itself. It has to be sold. The closer the inventory is to being a commodity item, the easier it is for the lender to sell and the higher its collateral value (Lasher, 1997).

Logistics service providers are usually debt financed with average equity ratios of 20 to 30 percent; according to van Laarhoven et al., (2000) they do not use this capital to finance inventory but for resources such as fleet, personnel or IT systems. An alternative form of financing would be factoring to sell receivables to specialized financial intermediaries: the logistics service provider could thereby transfer the entire credit risk to the factoring intermediary (Fiordelisi & Molyneux, 2004). Owing to the possibility of changing amounts and duration of the financed inventory, the composition of the portfolio and thereby the credit risk can vary. According to Buzacott & Zhang (2004), the financial service provider will adjust the interest rate according to the new risk situation and might even redefine its hedging strategy accordingly.

## **Research Methodology**

### **Research Design**

The study adopted descriptive research design. A descriptive research design determines and reports the way things are, Mugenda & Mugenda (2003). Creswell (2003) observes that a descriptive research design is used when data are collected to describe persons, organizations, settings or phenomena. Descriptive design was ideal as the study was carried out in a limited geographical scope and hence is logistically easier and simpler to conduct considering the limitations of this study (Mugenda 2008).

### **Population**

The target population was 105 Officers and civilians in their various ranks who were categorized into three i.e. the Senior Management, (Deputy Commandant of Administration Police (DCAP), Assistant Commandant of Administration Police (ACAP), Senior Superintendent (SSP), Superintendent (SP), Chief Supply chain management officers (CSCMO) and Senior chain supply management officer (SSCMO)), Middle management (Chief Inspector (CIP), Inspector (IP) and supply chain management officer I and II (SCMO I & II)) and Support staff (Senior Sergeant (S/SGT), Sergeant (SGT), Corporal (CPL) and Police Constables (PC)).

### Sampling Frame

The sampling frame investigated consisted of the 105 staff working under the Administration Police Service at the logistics and operations section and quartermaster stores at administration police training college. The staff were involved in procurement, storage and distributions of supplies to AP in the Republic of Kenya. According to Mugenda & Mugenda (2003) a sample size of at least 10% of the total target population is considered sufficient. In this study a percentage 10% of 105 staff would have resulted to 11 staff which was not ideal. A 40% of the population was proposed to make up the sample size.

### Sample and Sampling Technique

In the study, since the population was not homogeneous in terms of rank, stratification was used to divide the population into three different strata according to management level (i.e senior management, middle management and support staff) so as to draw randomly a predetermined number of units. Stratification introduces an element of control as a means of increasing the precision and representativeness. Stratified random sampling was applied to pick 40% of officers in each stratum and developed a sample size of 43 officers that satisfied the needs of the study.

### Research Instruments

The primary research data was collected from Administration Police Officers and civilian staff working under the Administration Police Service at the logistics and operations section and quartermaster stores at administration police training college Nairobi using questionnaires which were self-administered supplemented by in-depth interview. A laptop Compaq 610 and software (Word, excel and power point) were used in the compiling, analysis and presentation of the data collected.

#### Data Collection Procedure

The study collected data on social demographic knowledge of inventory management, inventory location, inventory policies and funding inventory by the interviewee. The mode of collection of the data was through self administered questionnaire and in-depth interview.

#### Data Processing and Analysis

Before processing the responses, data preparation was done on the completed questionnaires by editing, coding, entering and cleaning the data. Data collected was analyzed using descriptive statistics. The descriptive statistical tools help in describing the data and determining the respondents' degree of agreement with the various statements under each factor. Data analysis was done using SPSS version 20 and Microsoft excels to generate quantitative reports which was presented in the form of tabulations, percentages, mean and standard deviation. ANOVA data analysis method was applied to analyze the data that was obtained from open ended questions. A multiple regression analysis was conducted to determine the relationship between security operations in the Administration Police Service and the four variables using the following model:

$$(Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \epsilon)$$

Where Y is the dependent variable (security operation),  $X_1$  is the inventory management skills variable,  $X_2$  is inventory policy variable,  $X_3$  is inventory location variable and  $X_4$  is funding inventory variable.

$\beta_0$ = Constant or Intercept

$\beta_1$ -  $\beta_4$ = Regression coefficient

## Data Analysis, Presentation and Interpretations

### Regression Analysis

In this study, multiple regression analysis was conducted to test the influence among predictor variables. The research used Statistical Package for Social Sciences (SPSS V 20) to code, enter and compute the measurements of the multiple regressions

**Table 1: Regression Model**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.969 <sup>a</sup>	.939	.921	.01575

Adjusted R squared is a coefficient of determination which tells us the variation in the dependent variable due to changes in the independent variable. From the findings in the above table, the value of adjusted R squared was 0.921, an indication that there was variation of 92.1% on the security operations due to changes in inventory management skills, inventory policy, inventory location and inventory funding at 95% confidence interval . This shows that 92.1% changes in security operations could be accounted for by inventory management skills, inventory policy, inventory location and inventory funding. R is the correlation coefficient which shows the relationship between the study variables. The findings show that there was a strong positive relationship between the study variables as shown by 0.969.

**Table 2: ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	0.002	2	0.001	3.869	.015 <sup>b</sup>
	Residual	2.667	127	0.021		
	Total	2.669	129			

From the ANOVA statistics in table above, the processed data, which is the population parameters, had a significance level of 0.015 which shows that the data is ideal for making a conclusion on the population's parameter as the value of significance (p-value ) is less than 5%. The calculated p value was greater than the critical value ( $2.667 < 3.869$ ) an indication that inventory management skills, inventory policy, inventory location and inventory funding were significantly influencing the administrations police security operations. The significance value was less than 0.05 indicating that the model was statistically significant.

Table 3: Coefficients

Model	Unstandardized		Standardized	t	Sig
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	.455	.231		1.973	.106
Inventory management Skills	.204	.009	.444	1.815	.009
Inventory Policy	.016	.050	1.231	3.616	.036
Inventory location	.182	.017	1.075	3.159	.025
Inventory Funding	.053	.240	.230	.850	.028

From the data in the above table the established regression equation was

$$Y = 0.455 + 0.016 X_1 + 0.182 X_2 + 0.053 X_3 + 0.204 X_4$$

From the above regression equation it was revealed that if inventory management skills, inventory policy, inventory location and inventory funding are held to a constant zero, AP security operations would stand at 0.455, a unit increase in inventory management skills would lead to an increase in security operations by a factor of 0.204, improvement in inventory policy would lead to increase in security operations by a factor of 0.016, an improvement in inventory location would lead to increase in security operations by a factor of 0.182 and unit increase in inventory funding would lead to increase in security operations by a factor of 0.053. At 5% level of significance and 95% level of confidence, inventory policy had a 0.036 level of significance; inventory funding showed a 0.028 level of significance, inventory location had a 0.025 level of significance while inventory management skills showed 0.009 level of significance hence the most significant factor is inventory management skills. Overall Inventory management had the greatest effect on the security operations, followed by Inventory location, then Inventory financing and Inventory policy had the least effect to the security operations. All the variables were significant ( $p < 0.05$ )

### Inventory management skills

The study found out that the majority of the respondents (71.4%) indicated that staff inventory management skills in stockpiling affected the administration police operations. This is in agreement with (Eltanawy, 2005) who emphasized that employee skills contributed to value creation in a firm. The study also found out that most respondents (57.1%) agreed that most AP staff handling inventory had the necessary skills in inventory management. This finding agrees

with Giunipero & Handfield, 2004) who indicates that the value of inventory management skills is dependent upon their potential to contribute to the competitive advantage of the firm and are considered valuable as they support the firm in formulating and implementing strategies that improve its efficiency or effectiveness. The study in addition indicated that respondents rated ICT literacy; Analytical Skills, Ability in decision making and inventory

### **Inventory Location**

The study further indicated that most of the respondents 73.8% agreed that location of the inventory affected AP security operations. This is in agreement with (Daskin, 1995) who indicates that for there to be simultaneous optimization there should be integration of inventory location and decisions. On the other hand, the inventory policy dictates the frequency of shipments to replenish inventory, which, in turn, affects the number of deliveries, and, hence, the transportation costs, between facilities. The study further indicated that most of the respondents 52.4 % disagreed with appropriateness of AP inventory stockpile location, 35.7% agreed, 7.1% were not sure, 2.4% strongly agreed and 2.4% strongly disagreed. Finally the study found out that majority of respondents rated Space for the stockpile and Mechanization of Stockpile handling to be good as shown by means of 3.9286 and 3.6905 respectively, while they found Labor availability to handle stockpile and Transport of stocks to AP in the field to be fair as shown by means of 3.4762 and 3.2195 and respectively. This collates with Ballou (1998) who states that logistics planning deals with four major problems regarding customer service levels, facility location, inventory, and transportation decisions.

### **Inventory Policy**

Additionally the study found out that most respondents indicated that there is an effect of inventory policy on security operations as shown by 64.3% of the respondents while 35.7% indicated no effect of inventory policy on security operations. The study also found that most of the respondents 42.9% agreed on the appropriateness of the AP inventory policy, 23.8% disagreed, 19% strongly agreed, 9.5% were not sure while 4.8% strongly disagreed. This indicates that the AP inventory policy was appropriate. The study also found out that respondents rated the Consistency in the application of inventory management policy, Relevance of Inventory replenishment policy, Management awareness of quantity of stockpile to replenish and the Management awareness of when to replenish stockpile, to be good as shown by means of 3.2619, 3.1951, 3.1429 and 2.9762 respectively. This indicates that management awareness of when to replenish stockpile, management awareness of quantity of stockpile to replenish, relevance of inventory replenishment policy and consistency in the application of inventory management policy is good. According to Hillier, Frederick & Lieberman (1995) an inventory policy should specify when to replenish the inventory and how much to order for replenishment.

### **Financing of Inventory**

Finally the study found out that most of the respondents 83.3% indicated that financing of inventory to have an effect on security operations while 16.7% found it to have no effect. This indicates that the financing of inventory has an effect on AP security operations. Kashyap, Stein

& Wilcox (1993) indicates that financial variables were significant in explaining inventory investment. The study also found out that 38.1% of the respondents strongly disagreed that the financing of inventory was adequate, 31% agreed, 14.3% were not sure, 9.5% strongly agreed while 7.1% strongly agreed. This is in agreement with Van Laarhoven et al. (2007) who indicate that inventory financing should be adequate to finance for resources such as fleet, personnel or IT systems. The findings indicate that the respondents indicated funds for inventory from other sources (partners, friendly forces etc.) and absorption of Finance allocated for building of stockpile and to be good as shown by means of 3.1429 and 2.9762 respectively.

### Conclusions

The study concludes that the study did not suffer from any gender and age biases as all the genders and ages were represented in the study. The respondents in the study had also been working in the AP and in their ranks long enough to understand the workings of inventory management in the organization and their effects on security operations. The study also concludes that the respondents had the necessary educational and professional training requirements to work in the service and in inventory management. On skills in inventory management the study concludes that staff inventory management skills in stockpiling affects the administration police operations, most of the respondents agreed that the AP staff handling inventory have the necessary skills on inventory management (stockpiling). In addition the study concludes that respondents AP staff skills in inventory record management, ability in decision making, analytical skills and ICT literacy were good in handling inventory.

On inventory location the study concludes that the location of inventory affects AP security operations and that location of AP inventory stockpile is not appropriate. In addition the study concludes that the space for the stockpile and mechanization of stockpile handling are good while labor availability to handle stockpile and transport of stocks to the administration police in the field are fair. On inventory policy, the study concludes that there is an effect of inventory policy on security operations and the AP inventory policy is appropriate. In addition the study also concludes that consistency in the application of inventory management policy, relevance of inventory replenishment policy, management awareness of quantity of stockpile to replenish and management awareness of when to replenish stockpile to be good. On inventory financing, the study concludes that the financing of inventory has an effect on AP security operations. The study concludes that 38.1% of the respondents strongly disagreed that the financing of inventory was adequate, 31% agreed, 14.3% were not sure, 9.5% strongly agreed while 7.1% strongly agreed. In addition the funds for inventory from other sources (partners, friendly forces etc.) and absorption of Funds allocated for building of stockpile and was good.

The study also did a regression analysis on the factors and concludes that 92.1% changes in security operations could be accounted for by inventory management skills, inventory policy, inventory location and inventory funding. R is the correlation coefficient which shows the relationship between the study variables. The calculated p-value was also found to be greater than the critical value ( $2.667 < 3.869$ ) an indication that inventory management skills, inventory



policy, inventory location and inventory financing were significantly influencing the administrations police security operations.

The significance value was less than 0.05 indicating that the model was statistically significant. At 5% level of significance and 95% level of confidence, inventory policy had a 0.036 level of significance; inventory funding showed a 0.028 level of significance, inventory location had a 0.025 level of significance while inventory management skills showed 0.009 level of significance hence the most significant factor is Inventory management skills. Overall Inventory management skills had the greatest effect on the security operations, followed by Inventory Location, then Inventory financing and Inventory policies had the least effect to the security operations. All the variables were significant ( $p < 0.05$ ).

### Recommendations

From the findings the study recommends that; the administration police service should increase the funding on the inventory to allow inventory to be positioned at county level and AP specialized units. The finances can be obtained by AP working with all stakeholders especially the community and the private sector who can be instrumental in financing through provision of equipment and other supplies as a way of community policing. In addition AP service should invest on training staff working at AP Quartermaster, logistics and supply sections on record management and decision making in relation to inventory management in order to enhance their contribution to strategic decision on security operations. On the inventory policy the study recommends that the AP should work on management awareness on when to replenish stock. Finally the AP should preposition stocks of supplies near insecurity prone areas for quick response to security emergencies. This would also reduce congestion at the quartermaster warehouses and minimize transport costs stock from central warehouse to field stations.

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