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The role of effective inventory management practices on organizational performance: a case of Tarkwa municipal hospital, western region, Ghana

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Abstract

The study aimed at investigating the role of effective inventory management practices on organisational performance; a case study of Municipal Hospital Tarkwa in the Western Region of Ghana. The specific objectives of the study were to establish the inventory management practices used by organisations, to find the effect of inventory management practices on organisational performance, and to determine the challenges of implementing inventory management practices in organizations. The study adopted descriptive and causal research designs and used questionnaires as the data collection instrument. Data were collected from 200 respondents and STATA 13 analytical tool was used to perform the analysis. The results were presented using frequency tables and descriptive statistics tables. The study also used Probit regression analysis to establish the relationship between the dependent and the independent variables. The findings show that the stakeholders of the hospital are generally happy with the service delivery of the hospital. Thus, the results show that the hospital adopts various inventory management practices including; activity-based costing, economic order quantity, material requirement planning, materials resource planning, enterprise resource planning, distribution requirement planning, and just in time. The study concludes that effective inventory management positively affects the performance of organizations, in this case, the quality of service delivery of organizations. The study recommends organizations successfully implement an effective inventory management system. This will help reduce the risks of shortages. In addition, the concept of inventory management could be simplified for organizations in Ghana. This can be done through education or training to all staff in organizations to enlighten them on the need for effective inventory management practices for their organization's performance.

Keywords: Inventory Management; Organisational Performance; Service Delivery; Just in Time; Materials Requirement Planning

1. Introduction

Every organisation exists and operates with a profit motive except non-governmental organisations (NGOs). However, either a business entity or a non-governmental organisation (NGO) keeps all manner of inventory. Effective inventory management practices have positive results on organisational performance.

Inventory management is the process of efficiently controlling the continual flow of items in and out of existing inventory (Wisner and Leong, 2011). Inventory is kept mainly to serve as a buffer between demand and supply. The terms stock and inventory are often used interchangeably. Coyle et al., (2003) explain that inventory is raw materials, work-in-progress, finished goods, and supplies needed for creation of a firm's products and services. An effective stock management is very significant in all organisations either manufacturing or service. The two most obvious signs of inventory management are laid in financial and operational view.

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Firstly, Song et al., (2006), strongly believe that inventory holds a firm's 50% to 60% of its total assets in the manufacturing organisations. Ramakrishna, (2005) is also of the view that 75% to 80% in wholesale and retail businesses. The pharmacy department is one of the most consumers of the hospital budget and one of the few areas where a large amount of money is spent on buying medicines and drugs. It is therefore important that hospitals ensure a smooth supply of the required stock to ensure uninterrupted supply. This calls for the effective and efficient inventory management of pharmacy stock by keeping close supervision on important drugs, preventing pilferage, and priority setting in the purchase and distribution of drugs. According to Miller (2010), inventory management involves all activities put in place to ensure that customers have the needed product or service. It coordinates the purchasing, manufacturing, and distribution functions to meet the marketing needs and organizational needs of availing the product to customers.

Secondly, it is very imperative to operate without enough stock in the service sector. The hospital that is a service sector cannot compromise on this. The hospital needs to keep adequate stock to cater for the patients. After the diagnoses of patients, the only remedy to their ill health is drugs and medicines that need to be stocked and effectively managed by staff. Ineffective holding and management of stock may result in higher expiration levels (Chopra and Meindl, 2007). Therefore, the amount of inventory kept by the hospital depends on the operational needs and as such characterized by the time needed to acquire deliveries of stock, availability of capital, cost of storage required for detailed records in the form of stock issues that are kept using store records. Gudum (2002), puts it that, increased cost, delays, stock-outs, and uncertain planning are a result of uncertainty and variability of time with regards to the flow of information as well as the flow of goods.

Hashmi et al. (2020), have found out that public hospitals are tagged with poor accountability in managing inventory, which affects performance. Managing inventory is a subset of the supply chain and various researches have been conducted to find out the influence of the supply chain on organisational performance such as service logistics (Shamsur and Tritos, 2008), retailing (Rajwinder, Sandhu, Metri and Kaur, 2010) and integrated operations strategy (Kannan and Choon, 2005). Going forward, more research was conducted; Jonsson and Mattsson (2010) studied the inventory management practices and their implications on perceived planning performance, whereas Heck *et al.*, (2010) deliberated in more detail in their proposed framework with regard to improving the performance of inventory management with a process-oriented measurement framework. On the other hand, Kagashe and Massawe, (2012) argue that researches conducted on inventory management practices on organisational performance are limited. Whiles Chalotra, (2013) believes that diverse challenges arise from inventory control because its demand is on an hourly basis in contributing to organisational performance. In view of this, Rossetti, (2008) proposed that future researchers should look into the areas of inventory management practices in service organisations particularly public hospitals. Therefore, limited research is conducted on effective inventory management practices on organizational performance in hospitals, looking into quality service delivery and the study seeks to fill this knowledge gap.

2. Literature review

2.1. Empirical Review

Tarurhor and Osazevaru, (2021) conducted a study on the effect of inventory management on customer satisfaction using lead-time as their moderating variable in public hospitals in Nigeria. They as well researched the impact of inventory management on patients' satisfaction. The outcome of this research showed that lead-time has the tendency of moderating between strategic partnership, lean inventory, and information technology that alternates between inventory management and customer satisfaction. At a five percent (5%) significant level, lean inventory, and strategic supplier partnership recorded statistically positive significance with customer satisfaction. The researchers recommended that the government should focus on lead-time to prevent a lack of primary inventories in the hospitals.

Kihara and Ngugi, (2021) conducted research on Inventory Management Systems and Performance of Public Hospitals in Kenya; Case Of Counties under Universal Health Care Programme. They use the descriptive research design in order to get answers to their research questions and control variance. They found out from the results that Just in Time Management Practices is best used in the hospitals and gives rapid responses whiles permitting the hospitals to keep operations performed quickly and move on to new products swiftly if the need be. They reported that effective inventory management practices aid hospitals to save money that would have been spent on slow-moving items. The researchers recommended that hospitals should be given the pace to make their own negotiations with suppliers, this is because a lot of discounts are offered to hospitals when they are directly from distributors.

Extensive research by Ceylan and Bulkan, (2017), was on the Drug Inventory Management of Pharmacy using ABC and VED Analysis. This study was carried out in a health care facility in Turkey. They believed that the most intricate and

larger amount of inventory kept in the hospital are drugs and should be managed very well. In addition, for better and effective service delivery, drugs must be supplied and stocked in the right quantity, and time to ensure the flow of supply to patients. Their analyses showed that Activity Based Costing and Vital Essential Desirables are the most important inventory practices that a health care facility can use to manage and improve its performance. They concluded that ABC analyses are very essential for drug management that reduce expenditure and increase the effectiveness in the management of drugs. However, VED, cannot be overruled in achieving the use of ABC inventory management practices thus, must be practiced hand in hand in order to achieve high use of budget to prevent Stockout and administer better services to patients.

Otchere *et al.*, (2016) researched inventory management practices in some selected firms in Ghana. Their focus was to assess the inventory management practices of the firms and their existing controls. In so doing, the researchers used interviews and administered questionnaires to obtain primary data from respondents in the organizations. The approach was purely a purposive sampling to gain responses from inventory management staff. It was analysed quantitatively using SPSS and Microsoft excel. The findings show that the organization's understudy used various inventory management techniques to aid them stock inventory properly to give better services to customers. On the other hand, the study revealed that lead-time challenges because of bureaucracy are prevalent in the study organizations which results in several cancellations of procurement requests thus affecting customer service delivery. The paper made a strong recommendation to the organizations to adopt the use of inventory management software to enable them to function effectively and efficiently.

2.2. Inventory Management Techniques

2.2.1. The Activity-Based and Costing (ABC) Analysis Technique

The Activity-Based and Costing (ABC) Analysis is a major and recognized theory in inventory management. A nineteenth-century Italian economist named Pareto propounded this. This theory helps managers gain interest in the critical few (A-items) and not in the insignificant many (C-items). It groups items into three parts A, B, and C that can be managed and controlled separately. A-items comprise only 10% of all inventory items. They are kept under the strict control of higher management as they consume the top 70%- 80% of the total inventory consumption value of the organization. B-items are the interclass items, which include 20% of total inventory items. They need adequate control by middle management because they consume 20% of annual consumption value, while C-items need control by lower management, which also adds up to 70% of total inventory items and consume 10% of the annual consumption value (Coyle *et al.*, 2003; Yu, 2010; Khurana *et al.*, 2013; Kumar and Chakravarty, 2014). This theory helps to minimize a firm's working capital, maximize the effectiveness of inventory spending and reduce the cost of losses from pilferage, shrinkage, or obsolescence down to 20%. It also helps the firm to keep reliable levels of inventory by offering products to consumers (patients) with no cost to shortages of inventory.

2.2.2. Economic Order Quantity

Plasecki (2001); Lysons and Gillingham (2003), explain that the economic order model is designed to maximize an organization's income by minimizing total inventory cost. This is an accounting formula for ensuring that both the order cost as well as the inventory cost are at the barest minimum. This model has been found to be true as an effective inventory management technique when the demand and lead-time are comparatively stable especially when there is variability and uncertainty (Lysons and Gillingham, 2003). The significance of this technique to the study is that an organization is able to meet the expectations of its clients. This is because it advises on the right quantity of stock level that an organization must keep in order to reduce an organizational cost.

The EOQ model requires two equations:

$$EOQ = \frac{\sqrt{2 \times P \times K_z}}{C \times v} = \frac{\sqrt{2 \times P \times K_z}}{K_u}$$

Where

EOQ = economic order quantity:

P = demand for the product/inventory in period (year, month)

Kz = cost per order

Ku = holding cost per unit in a period

The holding cost factor (Ku) is a result of cost²

Opportunity costs (price of money tied-up in inventory) such as storage, insurance, transportation, obsolescence, wasting, and spoilage costs.

2.2.3. *Materials Requirement Planning (MRP I)*

According to Ballou, (1999), material requirement planning (MRP I) is an automated method of supply scheduling where the timing of acquisition products or production output is synchronized to meet period-by-period operations requirements. This practice is used if an organisation wants to avoid carrying huge inventory with respect to the right requirement at the right time. Lyson and Gillingham, (2003) also have the same concept for the definition of MRP I. Meanwhile, they believe that this practice is made up of an end product to time period called the bucket which is scheduled for a maximum of a year's forecast to provide information for sales and marketing.

2.2.4. *Materials Resource Planning (MRP II)*

The American Production and Inventory Control Association defines MRP II as a system construed around materials requirement planning and includes the additional planning functions of production planning, master production scheduling, and capacity requirement planning. Lysons and Gillingham, (2003) exaggerated that manufacturing resource planning (MRP II) has a broader implication than materials requirement Planning (MRP I). Stock and Lambert, (2001) concludes that material resource planning (MRP II) is an advancement of material requirement planning (MRP I), emphasizing the fact that the latter has financial, marketing, and purchasing component in addition. This is an inventory theory that needs to be practiced in the healthcare sector in that, it stresses the need to carry quantities of stock that are needed at a given time to avoid excessive inventory and help reduce holding or carrying costs.

2.2.5. *Enterprise Resource Planning*

According to Lysons and Gillingham, (2003) ERP is a business inventory management model that has a multi-module application software that is added to all departmental functions in organizations. Explaining further, they believe that the ERP is a hybrid module of material requirement planning (MRP I) and material resource planning (MRP II). This theory states that MRP I and I are limited to functions of making the manufacturer track the supplier. Work in progress and the output of finished goods to meet sales order but the ERP can be accessed in all departments of an enterprise, allowing managers and users to have a full view of what is and what is not taking place in the entire organisation.

2.2.6. *Distribution Requirement Planning (DRP)*

Distribution Requirement Planning (DRP) is a technology that works in logistics operations through Information Technology (IT) as a sophisticated planning approach for multiple distribution stages. As indicated by Gebicki et al., (2013), the scheme is capable of helping to consolidate shipments to multiple locations spread over a vast geographical area, thereby helping to reduce freight costs. In addition, the scheme has many benefits in terms of increasing inventory exposure in the supply chain and distribution by reducing inventory and storage room ratios. Lysons and Gillingham, (2003) defined Distribution Resource Planning as an inventory control scheduling technique that applies material requirements planning principles to distribution inventories. It may be regarded as a method of handling stock replenishment in a multi-echelon environment.

2.2.7. *Just-in-Time (JIT) Technique*

Harber *et al.*, (in Biggart and Gargeya, 2002) note that the just-in-time (JIT) production system (as the Toyota Production System) was developed by Shigeo Shing and Taiichi Ohno at the Toyota Motor plant in the mid-1970. Many names are referred to as JIT production: zero inventory system (ZIPS), minimum inventory production system (MIPS), Kanban production, kaizen production, stockless production, inventory systems for pull-through production, and Quick Response (QR) Since its inception, JIT production has gained a great deal of coverage, both as a theory and a disciplinary system of production. The theory of JIT development is based on three basic principles: waste reduction, continual enhancement of effectiveness, and promotion of preparation and implementation of worker participation.

Gourdin, (2001) adds that this concept of just-in-time production allows producers to work closely with suppliers and transport providers to get the requisite details.

3. Methodology

This study mainly used a descriptive and causal research design. (Polit and Hungler, 1993) adds that, "A survey obtains information from a sample of people by means of self-report, that is, the people respond to a series of questions posed by the investigator". In this study, the report is obtained from the self-administered questionnaires given by the

(investigator) researcher. Rocco, *et al.*, (2011) has it that causal research falls under the classification of conclusive research since it attempts to reveal a cause-and-effect relationship between two variables. Thus, the causal research design was used because this research is on the effects of inventory management practices on organizational performance.

The study population of this research comprised the entire staff of the Municipal Hospital of Tarkwa in the in Tarkwa Nsueam Municipality in the Western Region of Ghana.

From the foregoing, two hundred (200) questionnaires were used to solicit answers on the topic at hand from some top management and staff from the municipal hospital in Tarkwa. For accurate data, Taro Yamane's 1967 sampling formula was used to calculate the sample size.

The formula is $n = \frac{N}{1+N(e)^2}$ where n denotes the sample size, N denotes the total accessible population, and e denotes the precision level. Therefore, the study's sample size was: $n = \frac{400}{1+400(0.0025)} = 200$ Respondents.

4. Results and discussions

4.1. Demographic information

The demographic information of the respondents shows the characteristics of respondents, based on their gender, age, marital status, education, number of years of experience, and their category of staff in their organization.

110 of the respondents, which is equivalent to 55% were males, and 90 of the respondents, representing 45% were females. This indicates that males dominated the working population of the hospital

the age distribution of the respondents shows that respondents between the ages of 20-29, made up the majority of respondents. In essence, the respondents between the ages of 20-29 were 95 in number, representing 47.5%. This was followed by the ages of 30-39 with a frequency of 69, which is equivalent to 34.5%. Those with the ages of 40-49 years with a count of 19, which is equivalent to 9.5%, and those with the ages of 18-19 years had a frequency of 9, representing 4.5%, but there were no respondents with ages below 18 years. In addition, the respondents between the ages of 50-59 were 7. Finally, representing 3.5%, and there was only 1 respondent who was 60 years or older, representing 0.1%.

The marital status of the respondents sought to find whether the respondents were married or single, and whether or not they are divorced or widowed. From Figure 4.3, it can be seen that respondents who were single, made up the majority of respondents with a percentage of 57%. The respondents who were married, followed with 42%, and the remaining 1% were widowed. There were no respondents who were divorced.

Regarding their educational background, the results showed that Diploma/HND holders made up the majority of respondents for this study. The Diploma/HND holders represented 51.5%; followed by the respondents with Bachelor's Degree, with a percentage of 35.5%; followed by SSCE/SHS graduates representing 5.5%; Masters' Degree Holders representing 4%, JHS graduates with a frequency of 4, representing 2%. Finally, respondents with a doctorate had a percentage of 1.5%.

, 8.5% had less than a year of working experience; 28.5% had between 1 and 2 years of experience. In addition, 21.5% had between 3 and 4 years of experience, and the remaining 41.5% had between 5 and 6 years of working experience.

The category of staff of the respondents sought to find the various units or departments where the respondents of the study worked in the hospital. The results showed that the majority of respondents were from the administration. The respondents from the administration were 18, representing 9%. The accounts department were 10, representing 5%, then the inventory management, pharmacy, and records departments were 14 respondents each, representing 7% each also. Respondents in the category of service providers were 120, representing 60%, and both Management and procurement departments had 5 each, 2.5% respectively.

4.2. Inventory Management Practices in the Hospital

The first objective was set to establish the inventory management practices used by organisations. The purpose is to find out how the hospital manages its inventory to make sure that there is always available inventory to satisfy the needs of customers. To ascertain the average response of the respondents, responses less than 2.5, generally indicated

disagreement with statements, responses greater than 2.5 but less than 3.5, indicate agreement, and responses greater than 3.5 to 5.0 indicate agreement with statements.

The descriptive statistics below explain the findings on the inventory management practices at the Hospital. The findings reveal that the hospital classifies items in accordance with their stock values (Mean = 4.33, SD = 0.81). This implies that the hospital has the Activity Base Costing (ABC) practices embedded in the inventory management. The ABC as an inventory management practice has been pivotal in helping the hospital to keep a reliable level of inventory by offering services to patients with no cost to shortages of inventory. Lysons and Gillingham, (2003) stressed that the main aim of this practice is to make sure that products are efficiently maximized by focusing on the items that have potential savings. It is very effective in the management of stock levels (Kumar and Chakravarty, 2014).

Furthermore, with a mean of 4.15 (SD = 0.87), respondents agree that the hospital practices the Economic Order Quantity (EOQ) in the management of their inventory. The EOQ has helped them in implementing a standard cost-effective order of several stocks as revealed by the study. This assertion is supported by Plasecki (2001), who emphasized that the EOQ is designed to maximize an organisation's income by minimizing total inventory cost.

Respondents fairly agree (mean = 3.89, SD = 1.07) that there exist planning systems where bills of materials are 100% accurate in the hospital. This means that opinions were slightly divided as to how often the hospital uses the Materials Requirement Planning (MRP I) method to manage their inventory. In as much as the (MRP I) facilitates the automation of supply scheduling and timing of products acquisition, Coyle *et al.*, (2003) believes that practice is made up of a set of logically related procedures with complex rules and it is a practice that sometimes discourages supply chain managers.

The findings also reveal that Materials Resource Planning (MRP II) is one of the inventory practices used by the hospital (mean = 4.19, SD = 0.81). The respondents agree that the (MRP II) has positioned the hospital planning to aid in strategic logistics planning. Stock and Lambert, (2001) indicated that material resource planning (MRP II) is an advancement of material requirement planning (MRP I), emphasizing the fact that the latter has financial, marketing, and purchasing components in addition. On whether the hospital uses Enterprise Resource Planning (ERP), the respondents indicated they use the ERP in supply forecasting for optimal profit.

The Distribution Requirement Planning (DRP) also forms part of the inventory management practices the hospital uses. The respondents expressed that the hospital uses distribution scheduling to predict demand more effectively. As cited by Coyle *et al* (2003), the DRP is used to predict demand more effectively and used to leverage data back of inventory.

With a mean of 4.23 and a standard deviation of 0.97, respondents agreed that the hospital acquires goods at the right time and quantity. This statement refers to the management of inventory under the Just in Time (JIT) Model. According to Carlson, (2002), the Just in Time model is just right for organizations that have the objective of maintaining just sufficient material at the right place and at the right time to make first the right quantities of inventories.

From the results, it can be established that all the inventory management practices have been adopted by the hospital to manage the effective and efficient delivery of its services. Thus, the respondents agreed that Activity Based Costing (ABC), Economic Order Quantity (EOQ), Material Requirement Planning I (MRP I), Materials Resource Planning II (MRPII), enterprise resource planning (ERP), distribution requirement planning (DRP), and just-in-time (JIT), are all practices that are used to manage the hospital's inventory. However, the results show that JIT, DRP, MRP II, EOQ, and ABC are used mostly in the hospital than MRP I, and ERP.

4.3. Correlation of inventory management practices on organizational performance

The second objective of the study was aimed at investigating the relationship between inventory management practices and organizational performance. The results are shown in Table 1 below. It can be observed that there is a positive relationship between all the variables. However, the Economic Order Quantity, Activity Base Costing, Materials Resource Planning, Enterprise Resource Planning, Distribution Requirement Planning, and Just In Time are significant at 0.01 (1%) whiles the Materials Requirement Planning is significant at 5%. The findings essentially mean that there is a positive relationship between the independent variables and the dependent variables. Therefore, an upward movement in any (or all) of the independent variable (Inventory management practices) will cause a proportionate upward movement in the dependent variable (Organisational performance). The reverse is also true.

Table 1 Pearson Correlation Co-efficient Analysis

	Performance (1)	ABC (2)	EOQ (3)	MRP I (4)	MRP II (5)	ERP (6)	DRP (7)	JIT (8)
Performance (1)	1							
ABC (2)	0.266**	1						
EOQ (3)	0.224**	0.656**	1					
MRP I (4)	0.179*	0.724**	0.666**	1				
MRP II (5)	0.263**	0.620**	0.573**	0.752**	1			
ERP (6)	0.425**	0.485**	0.474**	0.514**	0.566**	1		
DRP (7)	0.277**	0.533**	0.532**	0.573**	0.535**	0.542**	1	
JIT (8)	0.329**	0.568**	0.495**	0.647**	0.611**	0.595**	0.756**	1
Note: **. Correlation is significant at the 0.01 (1%) level (2-tailed).								
*. Correlation is significant at the 0.05 (5%) level (2-tailed).								
Source: Author's Computation, (2021).								
				Legend				
1= Performance				5= Materials_Resource_Planning (MRP II)				
2= Activity_Base_Costing (ABC)				6= Enterprise_Resource_Planning (ERP)				
3= Economic_Order_Quantity (EOQ)				7=Distribution_Requirement_Planning(DRP)				
4= Materials_Requirement_Planning (MRP I)				8= Just_In_Time (JIT)				

4.4. Probit Regression Analysis

The study adopted Probit regression analysis to investigate the effect of inventory management practices on organisational performance. The aim of using probit regression is to measure the impact of the various independent variables (individually) on the dependent variable (Organisational Performance). According to McHugh, (2009) probit regression is essential when a researcher is interested in investigating the impact of various explanatory (independent) variables on a response (dependent) variable. When the independent variables are compounded the analysis ignores the covariance among variables and is subject to confounding effects, as in the case of linear regression (McHugh, 2009).

As stated earlier in Table 2, the dependent variable is organisational performance, a dichotomous variable because of recoding from a scale of 1 to 5 on a Likert scale. The independent variables on the other hand refer to the inventory management practices that are listed in Table 1: above. The general regression model was:

$$Y = 95.415 + 0.527ABC + 0.405EOQ + 1.072MRPI + 2.146MRPII + 0.324ERP + 1.902DRP + 0.455JIT$$

The variables in the equation analysis helped the researcher to model the chance of an outcome based on individual characteristics of the independent variables. From the Table below, the study shows that the Activity Base Costing has a significant relationship with the dependent variable ($p < 0.05$) at 0.2%, and that, a unit change in the ABC can cause a 0.527 change in the quality of service rendered at the hospital. Kelle et al. Beheshti *et al.*, (2017) agree that ABC analysis usage in hospitals rightly brings inventory management to a stand and its good application decreases to the barest minimum all associated cost due to the arrangement of inventory, based on their entire value, which will in turn improve on performance through service delivery in the hospital.

Table 2 Results of Probit Regression Analysis

Variable	Coefficient	St. Err	P - Values
Activity Base Costing	0.527	0.621	0.002
Economic Order Quantity	0.405	0.435	0.038
Materials Requirement Planning	1.072	0.748	0.052
Materials Resource Planning	2.146	0.576	0.007
Enterprise Resource Planning	0.324	0.570	0.048
Distribution Requirement Planning	1.902	0.662	0.010
Just In Time	0.455	0.563	0.038
Gender	1.018	0.568	0.00
Department	0.4825	0.571	0.09
Prob (F-Statistic)	0.71946	1.911	0.37
Constant Term	95.415	1.861	0.014

Again, the results show that the relationship between the Economic Order Quantity and the dependent variable is significant at 3.8% ($p < 0.05$) and has a coefficient of 0.405. This means that a unit change in the Economic Order Quantity can cause a 0.405 change in the quality of services rendered at the hospital. This outcome is in line with Otchere et al. (2016), that economic order quantity as a practice in hospitals aids to offer the best managerial decisions in uncertain conditions for demand and supply lead times. This will, as a result, yield quality service as a performance in the hospital.

On the other hand, Materials Requirement Planning is less statistically significant with a p-value of .052 (5.2%) which is greater than 5% ($p < 0.05$). However, a unit change in MRP I can cause 1.072 changes in the quality of service delivered at the hospital which will adversely affect performance. The MRP I is less significant in the hospital because of an upgrade and a hybrid of it, which is MRP II, and ERP performs more functionalities than it. This has made some organizations rarely use them. Hospitals that operate based on forecasting, scheduling, and lead-time may still use it for smooth operation Kim, (2014).

Moreso, Materials Resource Planning MRP II is also statistically significant and this is affirmed by its p-value of 0.7% which is less than 5%. This implies that a unit change in MRP II can cause a 2.146 change in service delivery at the hospital. Furthermore, Distribution Requirement Planning and Just in Time inventory management practices are also significant to the quality of service with p-values of 0.010 and 0.038 respectively. Janakkumar T, (2017), Has it that, a large hospital that holds stock of diverse capacity needs MRP II and DRP to record its Items, and those that need to be allocated for patients, those are not accessible for use. The MRP II also helps in planning and scheduling, distribution when integrated into organizations' inventory management.

The Enterprise Resource Planning (ERP) inventory management practice on the other hand has a perfect significant relationship with the quality of service offered at the hospital ($p = 0.048$). Consequently, a unit change in the ERP model can cause a 0.324 change in the quality of services offered at the hospital. The result also shows that the Service Quality which is the constant term is significant at a 0.014 significance level ($p < 0.05$) with a predictability of 95.42%. These findings support the results in Table 2 above. This is in support of Sanja, (2013) that ERP with its well infrastructural systems in place adds value to the organization by supporting customer relationships and entire supply chain management. ERP system such as Electronic Medical Records (EMR) helps track patients' care processes and facilitate the Decision Support System in the hospital. As a result, service delivery is enhanced, thereby increasing performance in the hospital.

4.5. Challenges of Inventory Management Practices in the Hospital

The third objective of this study is to determine the challenges of implementing inventory management practices in organizations. A descriptive statistic depicting the outcome of responses from respondents is;

On a scale of 1- 5, respondents were asked to indicate 1 - never, 2- rarely, 3 - sometimes, 4 -often and 5- always. Generally, the findings show that majority of the responses are skewed towards 4 (often) and 5 (always). For instance,

with means greater than 3.5, respondents expressed that the hospital often experiences internet connectivity challenges and there are intermittent changes in demand for stocks which causes disturbance in the hospital's supply chain systems. The response with a mean of 4.83, ranked the highest posed challenge in the hospital, being the insufficient fund for procurement. Tomlin, (2009) researched that, an insufficient fund for procuring drugs and non-medicines in hospitals is a standing challenge, especially in public hospitals.

Again, the study's response to the question on the hospital's usage of outdated storage facilities received the second highest rating. This might have a high negative effect on performance, in that, limited and old usage stock facilities are intimidating and can hinder smooth and effective practices.

The study again revealed that the facility could hold too much or too little inventory which is the third highest challenge with a mean record of 4.16. In as much as the hospital is challenged with partially using manual inventory management systems, it also experiences system breakdowns in its inventory management practices. This shows outcomes of 3.55 and 3.48 means respectively. There is rarely a loss of drugs and non-medicines through inventory shrinkages in the hospital. This shows that the hospital employs effective and efficient inventory management practices, which ensure that there is always optimal use of materials in the hospital. However, the findings show that the hospital never purchases drugs with a near expiration date. In contrast, this has not been a challenge because of the effective manner in which it manages inventory. Issuing quality drugs (non-expired drugs) to patients draws out the quality of service and terms that enhance excellent performance.

In contrast, Chase *et al.*, (2002) indicated in their study that performance requires minimizing the cost of the entire inventory management system, including transport and storage of raw materials, WIP, and inventories of finished products. According to them, to be effective, businesses should use strategies targeted at gaining optimum cost savings and non-value-adding processes should be minimized, economies of scale pursued, and optimization techniques introduced to achieve the highest opportunity for use. Being sensitive in these areas ensures that customers' needs and demands are always met.

5. Conclusion

The purpose of this study is to find the effect of inventory management practices on the performance of organizations focusing on the Tarkwa Municipal Hospital. This study was necessary because inventory management has been a major challenge for organizations over the years and organizations must find how effective management of inventory affects their performances so that they would be better positioned in determining the efforts that they exert into the management of their inventories. Even though inventory management has been studied extensively in other countries, the study of inventory management practices and their effect on performance is minimal in Ghana. To thoroughly achieve the main aim of this study, the study aim was divided into three main objectives as follows:

- To establish the inventory management practices used by organizations.
- To find the effect of inventory management practices on organizational performance.
- To determine the challenges of implementing inventory management practices in organizations.

Three corresponding research questions were also formulated from these research questions so that successfully answering those questions will eventually lead to the achievement of the study objectives.

This survey research thus adopted the descriptive and causal research designs to describe the inventory management practices of the study organization, and to ascertain the effect of effective inventory management on performance respectively. Qualitative data which is also primary data was solicited with the help of a carefully drafted questionnaire that was distributed to 200 respondents from the hospital, using purposive, convenience, and random sampling techniques. Data from the questionnaire were analyzed using STATA 13.0 Version. Results were presented in frequency tables, frequencies and percentages, and descriptive statistics tables, minimum, maximum, mean, and standard deviation figures. Regression analysis was also run to show the association between the dependent variable (performance) and the independent variable, inventory management practices. To ensure the validity and reliability of the study, Cronbach's Alpha was also run.

Results of the study indicated that even though there were lots of females at the hospital, males were more, having a population of 10% more than the women. It was also revealed that there are more youths in the hospital than the old ones, especially those older than 39 years. The young youth, between the ages of 20 to 39, made up over 70% of the entire respondents, which implies that the hospital could be filled with young energetic youth, who can perform more tasks than the elderly ones. Since the young youth dominated the respondents, it is no surprise that the majority of the

respondents were single with up to 57% of the population. This does not mean that there were no married workers at the hospital since married respondents made up a respectable 42% of the respondents.

The educational background of the respondents showed that even though there were several levels of education at the hospital, Diploma/HND, and Bachelor's Degree holders made up the majority of respondents 87%. The others which made up 13%, included JHS and SSCE/SHS graduates, Master's Degree Holders, and Doctorate Degree Holders. It was also revealed that the majority of respondents have worked for more than 2 years and that only 8.5% of the respondents had less than one year of working experience. Finally, the category or units where the respondents worked revealed that the administration gave the most respondents, representing 60%. The remaining 40% included Management, Procurement, Inventory Management, Pharmacy, Records, Accounts, and Service providers.

Furthermore, the results of this study revealed that respondents are happy about the service delivery of the hospital, and therefore a whopping 92% of the respondents said yes when asked whether the service quality in their hospital was high. The results thus show that the hospital adopts various inventory management practices, including *Activity Based Costing (ABC)*, *Economic Order Quantity (EOQ)*, *Material Requirement Planning 1 (MRP I)*, *Materials Resource Planning 2 (MRPII)*, *Enterprise Resource Planning (ERP)*, *Distribution Requirement Planning (DRP)*, and *Just-in-Time (JIT)*.

The study also showed that these strategies adopted by the hospital have proved effective for the organization. This is possible because the regression analysis from the study revealed a regression coefficient of 0.622 between inventory management practices and performance. The results thus show that an increase in inventory management practice of the hospital causes a 62.2% increase in performance, and a decrease in inventory management practice causes a 62.2% decrease in performance.

Recommendations

The following recommendations are made, based on the results of the study.

- Effective Inventory Management is important, and therefore organizations must endeavor to practice effective inventory management activities that will enhance service delivery for customers, and enhance the smooth operation of the organizations, which will eventually lead to better performance. To successfully implement an effective inventory management system, organizations must clearly state their inventory management goals and strategies and communicate the same to all members and stakeholders of their organizations, especially their suppliers and transporters.
- The Government of Ghana should also formulate policies and laws to enable organizations to engage in more effective inventory management practices. These policies should create avenues and template strategies for organizations that seek to engage in these practices. To motivate organizations to engage in effective inventory management practices, governments, and organizational bodies should create means of recognition and motivation for organizations that successfully implement their inventory management systems to motivate others. Effective management of inventories means that quality healthcare will be delivered and citizens will enjoy better services in turn.
- Also, the concept of inventory management should be simplified for organizations in Ghana. Employees in charge of inventory management in organizations must make it a point to periodically educate or inform other people, especially management members on effective inventory management and its benefits to get total organizational support for the management of inventory. This includes making the necessary resources in the form of funds and humans available at every level of the inventory management system. This can be done through workshops, seminars, printing and sharing of brochures, and sending management e-mails.

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