

Original Research Article  
**THE EFFECTS OF INVENTORY MANAGEMENT  
PRACTICES ON EDUCATIONAL SERVICE DELIVERY:  
A CASE STUDY OF SUNYANI TECHNICAL  
UNIVERSITY, GHANA**

**ABSTRACT**

The study sought to assess the effect of inventory management practices on educational service delivery at Sunyani Technical University (STU). The study was guided by three specific objectives; inventory management practices available, the relationship between inventory management practices and service delivery, and the challenges in practicing inventory management at Sunyani Technical University (STU). The study made use of a cross-sectional research design coupled with a purposive, convenient sampling technique to sample 230 respondents. The study found the following; On the availability of inventory management practices and techniques, the study revealed per the majority of the respondents' agreement to cycle stock (74.8%), in-transit inventories (51.3%), inventory planning and scheduling (78.3%), inventory recording (56.5%) inventory control (72.6%), material requirement planning (MRPI) (78.7%) and safety or buffer stock (57.0%) respectively are available. Also with the Chi-Square ( $\chi^2$ ) analysis on the impact of inventory management practices and service delivery, the statements such as inventory play an essential position within the increase and survival of an institution inventory is consequently held to make sure an availability of goods, it helps to limit the general expenses, its plays a significant role in stock management, lectures are never delayed in my department, research activities are smoothly facilitated and conducted, it helps predict the response of inventory investment, community outreach activities are timely conducted at 95% confidence interval was statistically significant. The study recommends that staff on recruitment and during induction should be trained on how to handle inventory items so that the process of educational service delivery is not affected. This is because most of the teaching staff feel and think that management of inventory is not their responsibility when actually it is the inventory that facilitates their process of delivering the services expected of them.

1 Introduction

In recent times, inventory management has grown to be very key each to educational establishments and every other institution. It's mostly about specifying the scale and site of stocked items. It is required at exceptional locations within a facility or within multiple places of a delivery network. With an increasing need for powerful operations management, institutions now require that prices and price centers be properly managed. Consequently, shops as a cost center must be properly managed. In practice, institutions spend an inordinate amount of assets i.e. money and time coping with and directing their

suppliers to make sure that critical inventory/stock levels are maintained and the critical float of product needs for operations keep (Wilberforce, 2017).

Inventory is an important asset in any agency. According to Barnes (2018) inventory is checked out as a legal responsibility beneath the just-in-time **management** machine but he concurs with the way accountants deal with it as an asset to the business enterprise. In the assertion of financial role, **the** stock seems beneath the current assets of the **organization** regardless **of** whether its income or no longer for Profit Corporation. Inventory plays a major position and its control is going an extended way in assisting firms **to** grow as it relates to **their** external and internal customers (Gibson, 2013).

With endured innovations and the use of computers, primarily based stock management systems have evolved over the years substantially between **the** 1990s to the year 2000 (Dolnsky, 2015). This system operates in a spherical system, right from **buying** tracking to inventory monitoring up to re-order technique and the opposite again. The early 1980s saw **the** reputation of personal computers which similarly allowed the first variations of inventory management software to be added into **a** sphere. As computer systems became more common and low-cost stock control programs started out distributing all the manner through grocery stores, inventory control **by** hand became reduced (Agha, 2016).

With personal computers based stock control structures, **the** software is suited for **ensuring** usage of bar codes and the identical digital language that represents every inventory item and in case something is achieved on that item there may be an easy tracking mechanism. All these developments have affected the complete world however vital notice are countries like Japan, China, and the United States ~~in~~ America (Munyao et. Al, 2015). In Ghana, stock management systems in location **require** that the use of elements and system is executed in a manner this is timely and does not cause wastage of resources so it has to reduce costs (Narkotey, 2017).

Inventory control in any educational institution entails some ~~of~~ **the** sports which consist of, stock forecasting, stock planning, inventory ordering and storage (Vrat, 2015) and these also are seen in inventory control at Sunyani Technical University (STU). Inventory planning is a method that strives to make certain that there's no **overstocking** but ~~at~~ at the equal time **stock-out** prices are minimized if no longer averted (Kaufman, 2015).

According to Caplice (2016), inventory planning does not best take a look at materials inside the organisation but its miles an included method of looking in any respect organizational components and department finance inclusive. In most instances, planning is preceded by way of forecasting but in some corporation forecasting could come after inventory making plans. Under stock control, forecasting of stock approach putting in region approach to decide what your inventory demands are or could be without counting what you have got in inventory (Toomey, 2012).

### **1.1 Statement of the Problem**

Every institution whether public or private holds and makes use of inventory so as to make sure that operation and manufacturing functions is efficiently undertaken. For making sure clean waft of operations, companies installed place and put into effect inventory control policies that guide all stock control activities (Baily, 2018). Despite this growth in fee and significance of more rigorous inventory strategies, many organizations keep to rely upon simple, use fixed order factor device/ bin gadget; periodic review gadget; financial order amount model; ABC Inventory Control Model, object based methods (Thonemann, Brown, & Hausman, 2016).

Sunyani Technical University (STU) since the upgrade manages one-of-a-kind sorts of stock like stationery, books and different analyzing materials, cleansing substances and construction substances. Educational services are rendered through many departments like colleges, institutes and academic registrar's department. Therefore to be able to efficaciously deliver academic services to which the University is mandated under which a variety of inventories are worried, it determined to use unique inventory management practices like inventory planning, garage, inventory report preserving among others (Hackman & Gyamfi, 2016).

The essential task these days on the Sunyani Technical University is the need to beautify performance while at the same time attaining effectiveness. However, Sunyani Technical University have been accused of negative stock control techniques and this has substantially affected their capability to fulfill their customers. This happened when the institution was upgraded (Audit report, 2017).

In a study by Hackman and Gyamfi (2016) on the organizational analysis of technical universities focusing on Sunyani Technical University stated that, in spite of those stock management practices, little information is available associated with education service delivery. The University nevertheless studies stock outs, shortages, negative fine merchandise and not on time resources. This has caused emergency procurements, bad demand forecasting, negative exceptional merchandise, shortages, inventory outs and negative reaction to the workers and students wish.

They also recorded that, inventory malpractices such as surpluses and shortages was common at the school. Inappropriate coding system, improper records keeping, problem of storage, stock-taking among others was mentioned. It is worthy to attest that; whereas surplus materials can result in capital cost, storage cost, inventory service cost and inventory risk cost; shortages on the other hands result in increasing order cost, risk cost and most especially causing poor satisfaction to the user, customers or the user department (Hackman & Gyamfi, 2016).

There is inadequate literature on the inventory management practices and its effects on educational institutions in Ghana and the study area. Based on the above background, this study in coming out with findings on inventory management practices available, the relationship between inventory management practices and service delivery and the challenges in practicing inventory management, seeks to assess the effect of inventory management practices on educational service delivery at Sunyani Technical University (STU).

## 1.2 **Significance of the Study**

An effective and efficient management inventory flow across the value chain is one of the key factors for success of any educational service delivery. This study would bear so many significance. For instance, efficient management inventory would have positive influence on operations efficiency and by extension on organizational performance. Specific patterns of inventory management practices would be revealed which would further encourage school authority to implement this technique and possibly improve their institutional performances. The study seeks to systematically address this issue. The supply chain

professionals and finance managers Sunyani Technical University (STU) and beyond will find this research useful for knowledge and operational implementation.

The study is of paramount importance to academicians and practitioners as this is expected to uncover many neglected relationships that are of interest to managers in educational institutions. The findings of the study would also add to the already existing literature in the field social studies especially in the use of practical approaches in the management of inventory. The study would benefits other stakeholders who need knowledge about stock control as a reference material.

## **2.0 Concept of inventory management**

Inventory is described as an inventory or shop of products (Stock and Lambert, 2015). These goods are maintained handy at or close to enterprise's place in order that the company can also meet call for and fulfill its purpose for lifestyles. If the company is a retail establishment, a consumer may also appearance someplace else to have his or her desires happy if the company does now not have the desired object in stock while the consumer arrives. If the firm is a producer, it have to keep a few inventory of raw materials and paintings-in-process which will preserve the manufacturing unit walking. In addition, it have to preserve a few deliver of finished items if you want to meet demand.

Coyle et al (2015) defines inventory as raw substances, paintings- in- progress, completed items and components required for advent of a business enterprises items and services. Davis et al (2016) also defines inventory as the stock of any object or aid used in an organisation. In a broader context, inventory can consist of inputs inclusive of monetary, energy, human, gadget, and physical objects which include raw material; inputs along with components, additives, and finished goods; and period in-between stages of the manner, which includes in part completed goods or work-in-progress.

Inventory management is by and large approximately specifying the scale and placement of stocked items. Inventory management is required within a facility or inside a couple of places of a supply community to protect the normal and planned path of production against the random disturbance of walking out of materials or goods. The scope of inventory control also issues the great lines among replenishment lead time, sporting charges of stock, asset management, inventory forecasting, inventory valuation, inventory visibility, destiny stock fee forecasting, bodily inventory, to be had physical area for inventory, pleasant control, replenishment, returns and defective items and call for forecasting.

Kontus (2015) posits that inventory control is a key organizational function that enables inside the improvement of rules aimed at most suitable investment in stock. Consequently, optimal inventory management can cause maximization of liquidity and hazard. Chambers and Lacey (2016) have a look at that inventory management seeks to strike a stability among benefits that accrue from preserving inventory and costs of doing the equal. Consequently, inventory management as cited by using chambers and Lacey is a manner designed to maximize the internet blessings of the stock, yet on the equal time minimize expenses that go to it.

## **2.1 Concept of Service Delivery**

Service delivery is a business aspect that defines the interaction between clients and providers where service is offered by the providers, and the clients either loses value or finds value as a result. Good service delivery provides clients with value increase. The measurement for measuring service delivery incorporates; appeal Coverage which includes particular two measurements, percent of items delivered and percent of appeal coverage. The percent of items delivered metric metric is the rate of the things really been conveyed nearby out of aggregate number of things were asked for operation. The percent of

appeal coverage metric is the amount of sworn things by contributors out of the aggregate number of things asked for the operation. Its utilization is to show how well and rapidly the association is discovering vows for the asked for things. The sign of how well the association is meeting its allure for an operation as far as both conveying things and discovering benefactors is shown by the two measurements together (Dumond, 2015).

## **2.2 Theoretical Review**

### **2.2.1 Stewardship Theory**

The stewardship theory was developed by Donaldson and Davis between (1991 & 1993) as quoted by (Pastoriza, 2018). The researcher used this theory because it brings out a clear relationship between the owners and the managers of resources or funds. In reference to this study therefore, the Institutions managers (STU) are the stewards of funds and property/inventory. Just like the stewardship theory proposes, STU administrations are entrusted with funds of which are in form of revenues from tuition, central government grants and donor funds all aiming at satisfying different stakeholders/public through service delivery.

This is therefore seen as a stewardship phenomenon which can properly be ascertained by ensuring that the resources entrusted with University Administrations are properly utilized to satisfy the beneficiaries (Komwerekko, 2017).

It also explains that ownership does not actually own an enterprise it is just holding it in trust. This demonstrates the means of doing business. The mandate is a means of great responsibility for the initiators original vision, hence creating a profit usually is a basis to achieving an organizations social standard (Al Bondigas, 2016).

Looking at the important assumption considered in the prescriptions of this theory is that there are no self-interests but the actions of managers are matched with the interests of the owners of the institution. According to Van Slyke (2017), stewardship theory puts much emphasis on value, goal convergence amongst the people concerned in corporate governance than on the agent's own-interest. The economic

gain for the owners in a principal- agent relationship comes from lesser business expenses linked with the lesser want for financial incentives and monitoring according to (Sargiacomo & Gomes, 2018).

The researcher used Stewardship Theory as it provides a modification of the agency theory as explained by (Dicke, 2012). According to Dicke, (2012) , the theory depicts a relationship between a steward and agents. That relationship ensures that Universities offer efficient services and indeed that is why the government creates public universities.

## **2.3 Empirical Reviews**

### **2.3.1 Types of Inventory**

Inventory varies in numerous corporations however the maximum common stock is inventory of uncooked substances, paintings in progress, completed goods and inventory in components such as stationery and gas. According to Kakuku (2017), raw materials inventories are the ones inputs from providers which have no longer but entered the manufacturing or transformation process. Those inventories are crucial in assisting a firm/ corporation to conquer troubles confronted by purchasing departments. Suppliers regularly fail to supply expected inputs to their internal inefficiencies.

The commercial enterprise itself may additionally fail to accumulate inputs in time due to the fact its procurement feature is gradual and inefficient. Sometimes, the problems may be because of environmental elements nicely past the providers and the commercial enterprise itself. If there had been no inventories of raw substances, any disruption in supply might be robotically handed directly to operations capabilities. Operations would stall, as there could be no inputs to transform.

According to stock and Lambert (2015), said that inventories can be labeled into six distinct paperwork which are: Cycle stock is inventory that outcomes from the replenishment manner and is required to be able to meet call for underneath situations of certainty, this is, when the company can predict demand and replenishment instances (lead instances) nearly perfectly: In-transit inventories. In-transit are items which can be give up course from one area to another. They may be considered part of cycle inventory even through they're not to be had for sale and /or shipment until after they arrive at the vacation spot:

Speculation inventory. Speculation inventory is stock held for reasons different than pleasant modern-day demand.

For instance, materials can be bought in volumes large than necessary in an effort to receive quantity reductions, due to a forecasted rate increase or substances shortage, or to guard towards the opportunity of a strike: Seasonal stock. Seasonal stock is a form of speculative inventory that entails the accumulated of stock earlier than a season starts off evolved that allows you to maintain a strong labour pressure and strong manufacturing runs or, inside the case of agricultural merchandise, inventory gathered because the result of a developing season that limits availability for the duration of the year: Dead stock is stock that nobody wants, as a minimum immediately. The query is why any agency could incur the costs associated with preserving those objects as opposed to honestly getting rid of them. One cause might be that control expects call for to renew sooner or later inside the destiny. Alternatively, it might cost extra to cast off an item that it does to hold it. But the most compelling motive for preserving these goods is customer service for appropriate carrier transport towards a business enterprise. Perhaps an essential buyer has an occasional want for some of those objects, so management keeps them available as a goodwill gesture.

### **2.3.2 Inventory management practices and Techniques**

Dilworth (2019) contends that stock planning and scheduling shows how units of stock are required by way of an agency in a given period to enable clean business operations. He elaborates that an amazing stock plan set earlier will enable planners to set procurement/purchase dates and portions which might be regular with the plan to keep away from disruptions because of inventory shortages.

Muller (2020) explicitly notes that accurate and up-to- date stores information are keys to effective shops management. The fundamental procedures consist of counting and recording right away after receipt or manufacturing and whenever there's a store transaction, problem of stores have to be well authorized and show details which include code wide variety, quantity of the transaction and the voucher reference It is undertaken via companies to lessen the errors of inventory control and to ensure accurate and dependable stock facts. It entails spot tests/marvel exams, stock taking, that is the physical counting, and measuring of quantity of each item in stock and recording the results (Brooks et al 2017)

Stores control is worried with making sure that each one the activities involved in storekeeping and inventory manage are finished successfully and economically by means of the ones employed inside the Store. In many cases it's going to also embody the recruitment, choice, induction and the education of stores personnel, and much more. A keep is a place set aside into which all of the objects and materials required for production and/or for sale/distribution are received, in which they're housed for safekeeping, and from which they may be issued as required (Muller, 2020)

Carry (2019) equally illuminates that having a shops control device way that the store is an open get admission to vicinity. Otherwise, humans would just help themselves and there could be no manipulate over the quantity of inventory taken or used. Its price of purchasing and changing stock could be even worse if there has been no manipulate underneath the things on impulse, use of a few gadgets, no longer bothering with the others and this will upload to the price. Needham (2015) argues that one of the major functions of a company is to produce and sell goods efficiently and this can be through a great device of shops management. We need to have a few way of measuring what it charges to make income. If their prices may be reduced in proportion to the sales which can be made, the business enterprise can be said to be becoming greater efficient.

Dickerson (2015) explains the critical function of stores management is to offer the extent of stock to be able to maintain operations of a company at minimum prices, which calls for sporting out inventory management, forecasting on future needs, figuring out how plenty stock to preserve, whilst to vicinity orders and what number of gadgets of stock to reserve at a given time. In doing this, firms could be aimed toward maintaining inventory/inventory degrees, which will stability benefits of having most appropriate levels of stock in opposition to the prices related to having high and coffee tiers of inventory.

These expenses consist of useless tie up of budget, extra sporting costs, danger of liquidity, manufacturing hold up and failure to satisfy deliveries on time. Inventory is any useful resource used to fulfill contemporary or future desires (Render et.al, 2015). Inventory additionally referred to as stock refers to the assets used to satisfy cutting-edge and destiny desires to enterprise of all items and charges of all items owned and held on the market (Ender et.al, 2019). Chasten Flattery are O'Connor (2018) in addition determined that a Company has in its possession and legal tithe to it.

Lysons et.al (2016), defines stock as an American accounting time period for the fee or quantity of raw substances, additives, assemblies, consumables, work in development (WIP) and finished inventory which are kept or stored for use as the want arises. Inventory control includes imparting the specified stock ranges that will maintain the enterprise daily operations at minimal prices. This covers issues like determining the extent of stock to reserve, when to order, organizing receipt and inspection tactics and offering right garage centers. Without right inventory control techniques in location, firms are probably to face unwanted inventory degrees. That is to mention excessive/ high levels of inventory or insufficient/ low ranges of inventory (Dickerson, 2015).

Lucay (2019) observes that immoderate stages of inventory are undesirable due to the fact they boom the dangers of inventory becoming obsolete, stock loss via harm and robbery, multiplied storage costs like lease, coverage and needless tie up of the firms price range. He in addition nation that a company might be foregoing earnings whilst it maintains retaining immoderate degrees of stock, which implies that the probability position of the company is being threatened ultimately since finances aren't being invested in different worthwhile ventures.

Gupta (2017) observes that organizations must set up right inventory control approaches, green and effective records gadget regarding stock in order that they are able to stability the charges and risks of inventory control towards the advantages were given from having stock easily to be had for easy operations.

Some of the techniques used in managing inventories were discussed below:

### **2.3.3 ABC Analysis**

This technique assigns items to three groups according to the relative impact or values of the items that makes up the group. Those thought to have the greatest impact, or value, for example, constituted the 'A' group, while those items thought to have a lesser impact or value were contained in the 'B ' and 'C' groups respectively (Coyle et al., 2015).

In many ABC analysis, a common mistake is to think of the 'B' and 'C' items as being for less important than the 'A' items and, subsequently, to focus most or all of management's attention on the 'A' items. A

decision might be made to assume very high in-stock levels for the 'A' items and little or no availability for the 'B' and 'C' items. The fallacy here relates to the fact that all items in the A, B and C categories are important to some extent and that strategy to assure availability at an appropriate level of cost. The purpose of this classification is to ensure that purchasing staff use resources to maximum efficiency by concentrating on those items that have the greatest potential savings. Selective control will be more effective than an approach that treats all items identically (Lysons and Gillingham, 2017). The relevance of this theory to this study is that it suggests that though all categories of inventory is important, inventory must be categorized or classified in accordance to their relative impact or value and treated differently.

#### **2.3.4 Just- In Time (JIT) inventory**

Ma and Fei (2014) describe Just In Time (JIT) inventory approach as a technique wherein firms merchandise are ordered in small quantities in portions required to satisfy character clients dreams. This manner that acquisition of stock is cautiously programmed to be obtained at that specific time whilst they may be wished which results into a stock level. This degree may be understood from physical level information that is absolutely the wide variety of inventory as little as possible and endless near. However, from the criminal attitude, the zero stock way that the possession of the inventory doesn't belong to the firm although the stock is piled excessive.

#### **2.3.5 Vendor Management Inventory (VMI)**

Vendor managed inventory is a deliberate settlement between a dealer, regularly a manufacturer or a vendor, and a patron wherein complete control of stock controlled and replenishment selections for stores is made by means of the imparting enterprise. Tang (2006) observes that beneath VMI, the buyer offers the supplier the stock data and the supplier uses this information to display stock or vicinity new orders. This means that the stores stock management obligation is via-exceeded and the obligation of stock replenishment choices movements from the buyer to the provider. This also manner that the dealer is given get entry to the clients inventory and motives of tracking the consumers stock stage will call for statistics therefore, the supplier has the right and the obligation to fill up the purchases of inventory according to together agreed stock manipulate concept and targets (Kang and Kim 2012).

### 2.3.6 Economic Order Quantity (EOQ) Model

Plasecki (2001) defines Economic Order Quantity as an accounting components that determines the point at which the combination of order costs and inventory costs are the least. Lysons and Gillingham (2017), additionally defines Economic Order Quantity because the optimum ordering amount for an item of stock that minimizes value.

The economic order quantity (EOQ) version is maximum famous. The basic EOQ model is a formula for figuring out the most advantageous order size that minimizes the sum of carrying prices and ordering prices. The model is derived beneath a fixed of restrictive assumptions, which are as follows: demand is known with truth and is regular over the years, no shortages are allowed, lead time of orders is regular and the order quantity is received suddenly (Ogbo, 2015).

Inventory forecasting is the vital activity in management of stock. It is essential for inventory making plans especially whilst demand surroundings are dynamic procurement lead-time is continually lengthy. Therefore the inventory making plans selections are knowledgeable by means of what is in all likelihood to take place basing on the inventory forecast statistics (Lu, Song & Regan, 2016).

The complete idea at the back of inventory forecasting is predicting future inventory ranges to resource timely choice making in order that carrier transport isn't affected. Inventory call for forecasting may be accomplished thru a number of approach like choosing of an appropriate forecasting algorithms, computerized preference of algorithms for each stock item, clipping and filtering techniques to manage extraordinary statistics and capacities to use knowledge to the desired destiny dealings to use call for profiles to destiny profiles among others (Hill, 2016).

Inventory Ordering approach and includes all of the strategies and sports involved in setting and replacing orders for inventory to refill stock whilst the tiers in inventory pass down or start decreasing (Kisler, 2015). Kisler, (2015) adds that for manufacturing groups, production has to hold all through the production time that is why ordering has to be well timed carried out. It isn't always but extraordinary for other agencies like service businesses universities inclusive. Ordering for brand spanking new materials in time also leads to maximization in use of assets and also minimization of lack of substances or robbery (Fariria, 2016).

When stock is ordered for and in fact purchased, the organisation manages it through keeping it in a warehouse until its miles ordered to be used or for sale (Yehuda, 2013). It has to be emphasized that the process of keeping inventory has to not increase operations charges but on the same time the organisation has to no longer suffer inventory out prices (Singh, 2015).

## **2.4 Service Delivery**

### **2.4.1 Inventory Planning and Education Service Delivery**

Inventory Planning is set watching for what your inventory ought to be. Planning is completed by the usage of the guideline of continuity, dividing the total facts crucial with a view to manage the techniques of waft of products (Kot, et al, 2016).

Inventory making plans is how lot units of inventory are needed through a corporation in a particular period to facilitate clean jogging of operations. An excellent stock plan set in advance will assist planners to come up with the purchase date and portions which can be reliable to the plan to keep away from disruptions due to shortages of inventory (Dilworth, 2019).

According to Kaufman (2015) stock making plans refers to a system of arising with the most favorable quantity and time of stock for the motive of matching it with income and manufacturing potential. He goes ahead to state that stock planning has specific impact on a company's coins drift and incomes margins in particular for the small agencies that depend on a fast turnover of merchandise.

Appropriate storage, customer pride, looking ahead to wants and coping with charges are fundamental goals of stock planning. In order to correctly perform stock planning for an agency, it calls for considering the stock control approach used. There are a number of techniques recommended for stock management that encompass;

### **2.4.2 Stock level maintenance and education service delivery**

It is willpower of inventory levels required to keep away from over stocking and below stocking of inventory. More quantities of stock and insufficient stock are both dangerous to businesses. The keeper needs to decide the inventory degrees in this kind of way that matches the requirement. Stock

tiers are maintained for standardized materials which are regularly utilized in an employer. In order to have accurate and right control of inventory those techniques must be taken into consideration (Miller, 2015).

Stock management is the delivery of services and products at the right time of the right price and quantity. It is a regular manner in which companies should be controlled to ensure clients do not emerge as dissatisfied and for companies to remain in characteristic by way of minimizing losses. For this purpose inventory management implies the bringing together of materials for smooth access, control, and utilization. The course of actions with the purpose of obtaining the proper stock from the right source at the proper time and in the proper amount is stock management and it's closely related to production characteristic of any organisation. That signifies that profitability of each firm is without delay and not directly tormented by the stock managing structures used (Miller, 2015).

Inventory management systems ought to make sure you're aware of the amount of each form of product handy. A green device would give you a manual on what, when, and what kind of products you bought of every fashion, color, size, charge and emblem. It would restrict the loss of income bobbing up from undertaking of stock out of commodities that have excessive call for. The complexity of a business enterprise and what sort of human aid they have got are all influential elements in determining an green inventory management plan. Stock management gives a basis of substances management loss of which makes all of the operations of storekeeping to be rendered both unsuccessful and vain to a point (Saleemi, 2017).

Stock conserving additionally consists of stock control which means ensuring that corporations have the proper merchandise to hand to take away stock outs, save you shrinkage and to offer suitable accounting for operations (Nicolo, 2017).

## **2.5 Effects of inventory management practices on the performance of educational institutions**

Inventory plays an essential position within the increase and survival of an employer inside the experience that failure to an effective and green control of inventory, will mean that the organization will lose customers leading to terrible offerings transport and sale will decline. Emphasizing on the importance

of stock on the stability sheet of corporations. Coyle, Bardi and Langley (2015) country that inventory as an asset at the balance sheet of agencies has taken an increased importance due to the approach of many firms to lessen their funding in fixed property, that is flora, ware homes, office homes, system and equipment , and shortly.

Virtually each institution reveals it important to preserve stocks (or inventory) of diverse objects and materials. That is due to the fact it'd be practically impossible to perform with only one of each item to be sold or used in manufacture or used in office work. A reserve or a fund or inventory of each item or fabric used or sold regularly is therefore maintained, in order that as objects or substances are offered or used they can be changed or replenished from the shares held in reserve. Due to uncertainty in destiny demand, and due to the unguaranteed availability of substances, inventory is consequently held to make sure an availability of goods to limit the general expenses associated with the control of inventory (Drury, 2017).

Gittinger (2015) argues that precautionary cause is one of the significant roles of stock management. Accordingly, precautionary motive approach that inventory held to protect towards hazard of unpredictable changes in demand and supply. In most cases, the extent of call for of goods and the time required for supply can't be known with actuality.

Balloon (2017) illuminates that inventories ought to be held to improve customer service and consequently goods should be noticed at an area in which customers can get them in the quantities they wish. The transaction reason is geared toward facilitating clean operations on each day foundation. According to Pandey (2016) Transaction purpose emphasizes the need to hold inventories to facilitate easy manufacturing and income operation.

Institutions need to hold back up stock either in extra or low levels to take advantage of modern and future needs or fee fluctuations. They have to therefore buy items and inventory them earlier when they count on price boom in destiny and additionally prepare for contingencies that may befall a agency, as an instance, strikes, fees, items among others (Kakuru, 2016).

A study carried out by means of Holdren and Hollingshead (2019) in the US notes that much of the \$seven hundred million work of inventory held through American groups is financed by means of the bank

loans with the products pledged as protection. An critical commercial advertising and marketing dating exists between inventory managers and commercial lending officials who write this inventory loan. Inventory manager need to provide their creditors with sufficient data to achieve financing on the lower fee.

Lucay (2017) observes that excessive ranges of stock are unwanted due to the fact they boom the dangers of stock turning into obsolete, stock loss via harm and robbery, elevated storage costs like rent, insurance and unnecessary tie up of the firms price range. He similarly country that a firm could be foregoing profits when it continues keeping immoderate ranges of inventory, which implies that the chance role of the firm is being threatened in the long run when you consider that price range aren't being invested in other profitable ventures. Lower degrees of inventory also are undesirable because it interrupts manufacturing, loss of good will and excessive ordering expenses in particular whilst ordering is common. Inadequate stock ranges results in commercial enterprise closure because of shifting of customers to different efficient suppliers due to manufacturing/ operation interruptions (Gittinger 2015).

Stock and Lambert (2015) similarly explained that, higher inventory control can increase the potential to govern and predict the response of inventory investment to modifications in control coverage. Therefore, inventory managers must determine how a whole lot inventory to reserve and while to area the order. Chopra and Meindl (2016) explained that inventory exists in an organizational operation because of the mismatch between supply and call for. Therefore, inventory's role is to boom the amount of demand that can be glad by having the product or service equipped and to be had while the purchaser wishes it.

Another essential position, inventory performs is to lessen fee by exploiting economies of scale that can exist all through production and distribution, but managers ought to use movements that lower the quantity of inventory wished without growing cost. Chopra and Meindl (2016), suggests that considering that stock performs a significant position in a supply chains potential to guide a company's aggressive method and that the firms aggressive method calls for very high level of responsiveness, a business enterprise can reap this responsiveness by using finding massive amounts of inventory near the consumer. Another very vital position that inventory plays in an employer is to avoid stock-out expenses (the expenses of being out of inventory).

According to Kenneth and Brian (2016) said that there are four goals of inventory management which include the following; Provide each inner and external customers with the required offerings tiers in phrases of quantity and order rate fill; Ascertain present and future necessities for all styles of stock to avoid over-stocking while warding off “bottlenecks” in manufacturing; keep expenses to a minimal with the aid of range discount, low-priced lot sizes and analysis of expenses incurred in acquiring and wearing inventories and to offer upstream and downstream stock visibility in the supply chain.

## **2.6 Contributions of inventory management to organizational efficiency**

Since overall performance is multidimensional, its miles advantageous to integrate exceptional dimensions of overall performance in empirical research Extension groups are complex and each business enterprise faces a unique set of situations. Based on the lengthy- time period and short-term goals of the corporation, the organizational performance measures may be economic and market overall performance and consumer satisfaction. The monetary and market overall performance factor is operationalized in phrases of marketplace share, go back of total property, annuals sales boom (Tan, Kannan & Handfield, 2019).

The customer pride size is measured by total product fee to the purchaser; meeting great requirements set through the patron, expertise purchaser desires, retention of unswerving clients and alignment of institutions intention in terms of consumer wishes (Daugherty, Ellinger, & Dale, 2015)

During the past decade, the studies for performance dimension has been extraordinarily energetic (Neely, 2019). Many a success overall performance dimension frameworks had been supplied and implemented in groups. These measurement frameworks, which includes the Balanced Scorecard, determine how measures are selected for a size system and how they may be used. The starting point of this newsletter is that due to the fact that there are properly hooked up size frameworks already to be had, there's no want to assemble yet every other framework for building overall performance dimension structures. Instead, the point of interest is on fixing the unique demanding situations that are associated with making use of performance size to understanding extensive businesses.

At the instant, there is a fairly common knowledge among overall performance size researchers that the great manner of measuring companies' overall performance is to use a few kind of comprehensive

dimension machine. Some of the well-known performance size frameworks in the intervening time are the Balanced Scorecard, the Performance Pyramid, and the Performance Prism (Kaplan and Norton 2016 and Neely and Adams, 2019).

Although these frameworks have some differences, there also are many similarities, e.g. a company's performance is measured comprehensively the use of measures from unique perspectives. A comprehensive size device includes both monetary and non-financial measures, as well as measures of enterprise effects and the drivers of those effects. Organizations want information approximately their tactics, customers, competition, marketplace tendencies, and their financial scenario. If some of those are ignored, the company increases the risk of being stuck in hassle. Another function of a comprehensive dimension machine is that the measures chosen need to be aligned with enterprise objectives derived from a corporation's vision and approach. When enterprise goals are modified, the size system need to be modified for that reason. Otherwise it cannot be used to manipulate the strategically important success factors. (Kaplan and Norton, 2016).

There are also at least overall performance size frameworks that are mainly designed for measuring intellectual capital (Sveiby 2018). They consist of e.G. The Intellectual Capital Management Model, the Balanced Performance Measurement System, the Intangible Asset Monitor, and the Skandia Navigator (Van Buren 2019). Many of them are basically similar to the previously defined performance measurement frameworks. The difference is they consciousness on measuring highbrow property.

The emerging emphasis on deliver chain disruptions (Hendricks & Singhal, 2005; Svensson, 2017) presents an interesting lens thru which to view stock overall performance. By definition, a supply chain disruption is any unplanned occasion which would possibly affect the everyday float of materials (Svensson, 2015). Disruptions can take many bureaucracy, inclusive of transportation delays, port stoppages, herbal disasters, operational troubles, and component shortages (Craighead, Blackhurst, & Handfield, 2016).

The truth that component shortages remain a prime supply of deliver chain disruptions is in particular thrilling seeing that stock has historically been one of the most not unusual techniques used to save you or buffer the effects of disruptions (Craighead, Blackhurst & Handfield, 2016). However, this does gift a possibility to investigate the performance of opportunity processes to stock replenishment in phrases of

their impact on supply chain disruptions. Within this disruption context, the important thing measures of inventory performance then end up the variety, duration, and magnitude (Craighead *et al.*, 2016) of the disruptions attributable to a lack of inventory.

Once an initial stock float disruption occurs, the period of the disruption (as measured by using the distinction between while the item became backordered and while the backorder became filled) becomes a key degree of performance because the length of the unavailability of parts is a main region of problem. (Fortuin & Martin, 2019).

Thus some distance, the measures have targeted at the quantity and length of inventory waft disruption. The remaining two measures offer perception into what Craighead *et al.* (2016) consult with as the “domino section” of disruption restoration and are meant to offer extra perception into the impact of inventory technique on the importance of disruptions. They provide an explanation for that as the disruption continues in time, the terrible impact of the disruption will increase. An endured disruption can result in excessive operational impacts which include misplaced sales or procedure shutdowns. Disruptions ensuing in such intense operational affects because of their length or because of the criticality of the part inflicting the disruption are henceforth known as operational disruptions (Craighead *et al.*, 2016)

## **2.7 Challenges in applying inventory management practices**

Inventory debts should be reconciled on a monthly basis. The reconciliation have to verify that the value of the inventory held in the stock device is equal to the price in the stock account on the general ledger, and contain adjusting both or each of the balances for transactions that may be out of sync at the cease of the economic length (e.g. Unpaid invoices, product returns, and so on.) The enterprise manager, working with the U.S. Accounting Office, is liable for ensuring that the stock accounts are reconciled. Inventory management is a critical difficulty for managers in all kinds of corporations. For agencies which includes J C Penny limited, which perform on notably low profit margins, terrible stock management can seriously undermine the commercial enterprise.

The venture isn't to pare inventories to the bone to lessen prices or to have masses round to satisfy all needs, but to have the right quantity to reap the competitive priorities for commercial enterprise maximum

efficaciously (Krajewski and Ritzman, 2019). Since a few variances are constantly gift because of the timing of transactions, business managers ought to understand that the business device and the overall ledger may never be precisely identical. Therefore business managers ought to set up a threshold for suited variances and manipulate the reconciliations with theses installed parameters.

Finally, according to the U.S Bureau of Census (Ballou 2019), inventories are observed in such locations as warehouses, yards, store floors, transportation gadget and on retail store shelves. Having these inventories available can price among 20 and 40 percentage in their value in line with year. Therefore, carefully managing stock levels makes properly economic feel. Damaged, obsolete and missing objects need to be written-down or written-off immediately upon discovery, to avoid overstatement of the inventory fee. Material write-offs or write-downs have to be researched.

Unit managers have to aid adjustment requests with written motives. The write-off transaction ought to involve crediting the stock account immediately and expensing the same quantity to the Inventory Write-offs account. This is a stock control technique, which involves controlling the quantity of inventory held by using an employer. The most important intention of this technique is to strike a balance between profitability and liquidity to ensure that there is no below or over stocking. According to Kamukama, 2016, quick adherence to inventory control should be installed to be able to minimize the prices associated with inventory. Firms have to therefore decide the level of stock they require so that excess or inadequate stock is avoided. Several Authors suggest that corporations need to establish the following practices to be able to avoid undesirable inventory tiers i.e. the re-order stage, common inventory degree and maximum inventory level, minimal inventory degree of protection stock.

According to Gourdin (2016), said that keeping (or carrying) charges are which include garage, handling, insurance, taxes, obsolescence, robbery and interest on finances financing the products. These costs increase as inventory stages upward push. In order to reduce wearing costs, control makes frequent orders of small portions. Holding costs are generally assessed as a percentage of unit price, i.e. 15 percentage, 20 percentage, as opposed to attempting to derive a financial cost for each of these expenses person. This exercise is a reflection of the issue inherent in deriving a particular in line with – unit fee for, as an example, obsolescence or theft.

### **3.0 METHODOLOGY**

#### **3.1 Study Design and Type**

A research design is a plan showing how problems under investigation are solved. This study adopted descriptive cross-sectional survey design.

Descriptive research assists the researcher to collect data by way of observation, description, and recording, analyzing and reporting the conditions operating at that moment from a population (Cooper and Schindler, 2006).

The cross sectional research design is also suitable in finding out the prevalence of a problem or situation in a study by selecting a cross section of a population. The design is helpful in obtaining an overall of the time of carrying out the study according to Ranjit (2011). This means that, cross sectional research enables the researcher to collect data and compare many different variables at the same time without manipulating the study environment.

In this study, the researcher employed both quantitative and qualitative methods (mixed approaches) of data collection. This was coupled with purposive, convenient sampling technique to select the respondents.

### 3.2 Study Population

According to Ngechu (2004), a population is a well-defined or set of people, services, elements, and events, group of things or households that are being investigated. The study population should have some observable characteristics, to which the researcher intends to generalize the results of the study. The study was carried out at Sunyani Technical University. STU employees were **545** in number made the study population including lecturers and administrators. The study targeted the various departments such as the accounts and procurement department, academic affair and faculties, school clinic

**Table.1: Population of Study**

<b>Department</b>	<b>Population</b>
Accounts and HR	79
Procurement	27
School clinic	47
Academic affair and Faculties	392
<b>Total</b>	<b>545</b>

### 3.3 Sampling Procedure

Sampling as the process of choosing from a much larger population, a group about which a generalized statement is made, so that selected parts represents the total group.

The researcher made use of two sampling techniques namely purposive and convenient of the non-probability sampling. A purposive sampling method was used to sample all the heads of departments, the accounts officers, stores and procurement officers.

Purposive sampling technique refers to the process by which a researcher selects a sample based on the experience or knowledge of the group that is to be sampled. This method allowed the researcher to select respondent who were very informative on the topic. It was therefore necessary because it assist in getting in-depth information on the assessing the effect of inventory management practices on educational service delivery at Sunyani Technical University.

The researcher coupled the purposive sampling method with convenient sampling technique. It is also called as accidental sampling or opportunity sampling. This approach is to help access respondents that are available and are ready to answer the questions or the researcher includes those respondents who

are easy or convenient to approach. In reference to this study, the researcher used those who are qualified, ready and are available in answering the questions.

### 3.4 Sample Size Estimation

The formula developed by Yamane (1973) for calculating sample size was used as follows:

$$n = \frac{N}{1 + N(\alpha)^2} \quad \text{Where}$$

n = the required sample size.

N = the population size (545, total population of the employees)

$\alpha$  = Tolerable error/margin of error (which in this study was pegged at (0.05).

$$n = \frac{545}{1 + 545 (0.05)^2}$$

$$n = \frac{545}{1 + 1.36}$$

$$n = \frac{545}{2.36}$$

$$n = 230$$

A formula adopted by Kathuri and Pals (1993) was used in determining the sample size from each bank

$$n^h = \frac{N^h}{N} \times n \quad \text{where}$$

$n^h$  = sample size of stratum h (that is the sample size for each department)

N = Total size of population

n = Total sample size

$N^h$  = Population size of stratum h (population size of each department)

**Table 2: Sample Size**

Department	Population	Sample
Accounts and HR	81	34
Procurement and Public relations	37	17
School clinic	47	20
Academic affair and Faculties	390	165

### **3.5 Research Instrument**

The following research instruments were employed for the study; in using this design indicated above, self-administered questionnaire were used.

#### **3.5.1 Questionnaires**

The researcher used administers questionnaires to collect data from the respondents. The relevance of this is that the questionnaires are convenient and less time consuming.

The questionnaire constituted both closed-ended and open-ended questions. The closed-ended questions were designed in a Likert scale. Bryman (2006), posit that, the Likert scale normally has five or seven categories to show strengths of agreement or disagreement, and it is further asserted that the multiple-item scales such as the Likert scale are popular for three reasons.

#### **3.5.2 Interview Guide**

The researcher used formal interviewing as a method of data collection to offer a greater chance to explore topics in depth and allow interaction between the researcher and the respondents such that any misunderstanding of the questions and answers provided could easily be corrected. The researcher interviewed the heads of departments by using the interview guide. These were used to tap the vital information that may not be collected using the questionnaires from other officers.

The interview method of collecting data involves presentation of oral-verbal stimuli and reply in terms of oral-verbal responses. This is to give the interviewee enough opportunity to fully express themselves on issues pertaining to the question.

### **3.6 Data Collection**

The study employed a mixed method approach in collecting data from the field. In view of this, questionnaires and structured interviews were used to gather the information but respondents were left to decide on whether to participate or not.

The question items were structured in two broad sections. Section A dealt with the demographic characteristics and section B captured the specific objectives. The likert scale of 1, 2, 3, 4 and 5 with close-ended and open-ended questions were used. The close-ended questions sought to vividly compare the responses while the open-ended questions aimed at allowing respondents to supply information which was not captured by the response categories.

In other words, the open-ended questions are meant to supplement and exhaust the response categories in the questionnaire. The open-ended questions were used to give the interviewee enough opportunity to fully express themselves on issues pertaining to the question.

The researcher was assisted by two other research assistants during the data collection. The study focused mainly on primary data. The researcher in company with the research assistants went through the various department and sub units to administer the questionnaires. The interviews were also conducted with interview guide to collect the data. The data collection took a period of two weeks from Monday to Friday at 8am to 4pm. The respondents who were not ready were left behind and the next respondent was contacted.

### **3.7 Data Processing and Analysis**

The researcher after collecting all the necessary data, coded and edited, analyzed and rephrased to eliminate errors and ensure consistency. In this process involves categorizing, discussing, classifying and summarizing of the responses to each question in the coded frames from each responses. That was to ease the tabulation work and remove unwanted responses which may be considered insignificant.

Both quantitative and qualitative data analysis methods were used in the data analysis. In the quantitative method, both descriptive and inferential analysis were employed. Statistical analyses with descriptive and inferential statistics were carried out using the Statistical Product for Service Solution (SPSS) version 21.0. Descriptive analysis with the quantitative data were presented in form of tables, means and percentages. Chi Square test as well as Spearman's correlation were used to determine significant differences dependent and independent variables. A probability (p) value of less than 0.05 was accepted.

The data was also analyzed using the qualitative method. These were the data collected with open ended questions and the interview guides. A qualitatively content analysis of the qualitative approach was used.

Content analysis is the systematic analysis of the content of a text (who says what, to whom, why, and to what extent and with what effect) in a quantitative or qualitative manner.

## 4.0 RESULTS AND DISCUSSION

### 4.1 Inventory Management Practices Available

**Table 3: Inventory Management Practices Available**

Statement	Yes (%)	No (%)	Total
Cycle stock	74.8	25.2	100.0
In-transit inventories	51.3	48.7	100.0
Speculation inventory	43.9	56.1	100.0
Seasonal stock	32.2	67.8	100.0
Dead stock	46.5	53.5	100.0
Inventory Planning and Scheduling	78.3	21.7	100.0
Inventory Recording	56.5	43.5	100.0
Inventory Valuation	40.4	59.6	100.0
First in First out (FIFO)	35.7	64.3	100.0
Physical Inventory Counts	49.6	50.4	100.0
Inventory control	72.6	27.4	100.0
Activity Based Costing (ABC) Analysis	48.3	51.7	100.0
Just- In Time (JIT) inventory	42.2	57.8	100.0

Vendor Management Inventory (VMI)	30.9	69	100.0
		.1	
Economic Order Quantity (EOQ) Model	43.9	56	100.0
		.1	
Material Requirement Planning (MRPI)	78.7	21	100.0
		.3	
Safety or Buffer Stock	57.0	43	100.0
		.0	

The study assessed the effect of inventory management practices on educational service delivery at Sunyani Technical University (STU). One of the research objectives is to find out the inventory management practices available. Amazingly, majority of the respondents agreed to cycle stock (74.8%), in-transit inventories (51.3%), inventory planning and scheduling (78.3%), inventory recording (56.5%) inventory control (72.6%), material requirement planning (MRPI) (78.7%) and safety or buffer stock (57.0%) respectively. This means that the above inventory management practices and techniques are available at the Sunyani Technical University (STU).

The study on the other hand found per the majority agreement that speculation inventory, seasonal stock, dead stock , inventory valuation, First in First out (FIFO) , physical inventory counts, Activity Based Costing (ABC) Analysis, Just- In Time (JIT) inventory, Vendor Management Inventory (VMI) and Economic Order Quantity (EOQ) Model as inventory management practices and techniques are not available.

#### 4.2 Impact of inventory management practices and service delivery

**Table 4: Chi-Square ( $\chi^2$ ) analysis on the impact of inventory management practices and service delivery**

Statement		Chi-Square ( $\chi^2$ )	f	Sig.
Inventory plays an essential position within the increase and survival of an institution	30	156.565 <sup>a</sup>		.000
Inventory is consequently held to make sure an availability of goods	30	86.043 <sup>a</sup>		.000

It helps to limit the general expenses	30	88.182 <sup>b</sup>	000
Its plays a significant role in stock management	30	132.348 <sup>a</sup>	000
Lectures are never delayed in my department	30	23.670 <sup>c</sup>	000
Research activities are smoothly facilitated and conducted	30	50.652 <sup>a</sup>	000
It helps predict the response of inventory investment	30	145.165 <sup>c</sup>	000
Teaching is never interrupted in my faculty	30	56.435 <sup>c</sup>	007
It has raised the reputation of the institution	30	92.191 <sup>c</sup>	000
It keep expenses to a minimal with the aid of range discount	30	59.739 <sup>c</sup>	000
Reading materials are readily available for our students	30	21.861 <sup>c</sup>	000
Replenishing of books is regularly done	30	30.529 <sup>c</sup>	000
Examinations are always done as programmed	30	36.400 <sup>b</sup>	000
Completing students get their documents as and when they need them	30	18.443 <sup>c</sup>	000
There is a variety of reading materials for students need	30	19.600 <sup>c</sup>	000
Community outreach activities are timely conducted	30	21.861 <sup>c</sup>	000

The Chi-Square ( $\chi^2$ ) analysis on the impact of inventory management practices and service delivery is demonstrated in table 4.. The data on the impact of inventory management practices shows that, the statements such as inventory plays an essential position within the increase and survival of an institution inventory is consequently held to make sure an availability of goods, it helps to limit the general expenses its plays a significant role in stock management, lectures are never delayed in my department, research activities are smoothly facilitated and conducted, it helps predict the response of inventory investment , teaching is never interrupted in my faculty due to proper inventory management practices, it has raised the reputation of the institution , it keep expenses to a minimal with the aid of range discount , reading materials are readily available for our students, replenishing of books is regularly done in the library, examinations are always done as programmed, completing students get their documents as and when

they need them, there is a variety of reading materials for students need, community outreach activities are timely conducted meaning at 95% confidence interval was statistically significant. These recorded the P-values of .000 respectively.

This implies that the management of inventory management practices and techniques is affects the smooth running of the Sunyani Technical University.

A study agrees with Osei, (2015) who notes that inventory planning affects improvement of service delivery in public institutions especially in the hospitals.

The study states and explains further as follows; “that inventory management practices in the Hospital has an effect on their healthcare service delivery level including inventory planning and scheduling improved customer service and it supports previous studies by Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014).

For instance, the study by Nzioka & Were (2017) in Kenya established that there is a great need to ensure that stock levels are managed effectively at the Ministry using the Economic Order Quantity to avoid stock out. The study added on that for instance Just-in-Time replenishment needed to be revived with a view of ensuring that the Ministry that was studied maintains the required inventory and recommended that the management at the Ministry plan for various materials’ requirements embracing proper inventory control practices to ensure quality products in the store.

From a business perspective, (Osei Mensah, 2015) notes that *“Inventory is a major use of capital and for this reason; efficient inventory management is to increase organizational profitability, to predict the impact of organizational policies on inventory levels, and to minimize the total cost of logistics activities.”*

Also in agreement with Still from Stock and Lambert (2001) it is explained that, corporate profitability can be improved by increasing sales volume or cutting inventory costs. *“Increased sales are often possible if high levels of inventory lead to better in-stock availability and more consistent service levels. Low inventory levels can reduce fill rates on customer orders and result in lost sales.”*

#### 4.3 Challenges in practicing inventory management

**Table 5: Chi-Square ( $\chi^2$ ) analysis on the challenges in practicing inventory management**

Statement	N	Chi-Square ( $\chi^2$ )	Df	Sig.
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There are notably low profit margins	230	161.757 <sup>c</sup>	3	.000
Lack of training	230	129.635 <sup>d</sup>	2	.000
Loss of inventories	230	90.730 <sup>c</sup>	3	.000
Un predetermined products demand	230	235.083 <sup>e</sup>	4	.000
Opportunity costs	230	96.174 <sup>a</sup>	4	.000
Administration costs	230	100.652 <sup>a</sup>	4	.001
Theft among workers	230	93.783 <sup>a</sup>	4	.001
Conflict of interest in the institution hinders Inventory Management practices	230	71.435 <sup>a</sup>	4	.007
Poor evaluation and monitoring hinders inventory Management practices	230	300.435 <sup>a</sup>	4	.000
Strain on resources is a challenge to inventory Management practices	230	153.478 <sup>a</sup>	4	.002
Weak management systems is a challenge to in Inventory Management practices	230	236.913 <sup>a</sup>	4	.000
Bureaucratic constraints hinders the operation of inventory management systems	230	101.261 <sup>a</sup>	4	.001

Table 3 shows the Chi-Square ( $\chi^2$ ) analysis on the challenges in practicing inventory management. At 95% confidence interval, the study revealed that there are notably low profit margins, lack of training, loss of inventories, un predetermined products demand, opportunity costs, administration costs, theft among workers, conflict of interest in the institution hinders inventory management practices, poor evaluation and monitoring hinders inventory management practices, strain on resources is a challenge to inventory management practices, weak management systems is a challenge to in inventory management practices and bureaucratic constraints hinders the operation of inventory management systems are statistically significant with the probability values of .000, .000, .000, .000, .000, .001, .001, .007, .000, .002, .000 and .001 respectively. This is an indication that the above statements as the challenges influence the institution practicing effective inventory management.

The study findings agrees with researchers such as Oballah et al. (2015), Anichebe and Agu (2013) and Ogbo et al. (2014) who found the challenges of inventory management practices as bureaucratic process

in procurement, loss of drugs through inventory shrinkages, conflict of interest, weak management system and insufficient funds for procurement.

The findings again falls in line with Osei and Mensah (2015) studies who revealed the challenges of challenges of inventory management practices and techniques as delays in delivery of drugs leading to insufficient inventories, bureaucratic process in procurement, loss of drugs through inventory shrinkages, conflict of interest, weak management system and insufficient funds for procurement, etc. which were indicated as either occasional problems, major problems or threats to the implementation of effective inventory control practices.

## **5.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Summary of Findings**

The study sought to assess the effect of inventory management practices on educational service delivery at Sunyani Technical University (STU). The researcher used three objectives; inventory management practices available, the relationship between inventory management practices and service delivery and the challenges in practicing inventory management at Sunyani Technical University (STU). The study made used of cross sectional research design coupled with purposive, convenient sampling technique to sampled 230 respondents. It was quantitative in nature.

The study found the following;

On the availability of inventory management practices and techniques, the study revealed per the majority of the respondents agreement to cycle stock (74.8%), in-transit inventories (51.3%), inventory planning and scheduling (78.3%), inventory recording (56.5%) inventory control (72.6%), material requirement planning (MRPI) (78.7%) and safety or buffer stock (57.0%) respectively are available.

The study on the other hand found per the majority agreement that speculation inventory, seasonal stock, dead stock , inventory valuation, First in First out (FIFO) , physical inventory counts, Activity Based Costing (ABC) Analysis, Just- In Time (JIT) inventory, Vendor Management Inventory (VMI) and Economic Order Quantity (EOQ) Model as inventory management practices and techniques are not available.

Also with the Chi-Square ( $\chi^2$ ) analysis on the impact of inventory management practices and service delivery, the statements such as inventory plays an essential position within the increase and survival of an institution inventory is consequently held to make sure an availability of goods, it helps to limit the general expenses , its plays a significant role in stock management, lectures are never delayed in my department, research activities are smoothly facilitated and conducted, it helps predict the response of inventory investment , teaching is never interrupted in my faculty due to proper inventory management practices, it has raised the reputation of the institution , it keep expenses to a minimal with the aid of range discount , reading materials are readily available for our students, replenishing of books is regularly done in the library, examinations are always done as programmed, completing students get their documents as and when they need them, there is a variety of reading materials for students need, community outreach activities are timely conducted at 95% confidence interval was statistically significant.

At 95% confidence interval, the study revealed that there are notably low profit margins, lack of training, loss of inventories, un predetermined products demand, opportunity costs, administration costs, theft among workers, conflict of interest in the institution hinders inventory management practices, poor evaluation and monitoring hinders inventory management practices, strain on resources is a challenge to inventory management practices, weak management systems is a challenge to in inventory management practices and bureaucratic constraints hinders the operation of inventory management systems are statistically significant with the probability values of .000, .000, .000, .000, .000, .001, .001, .007, .000,

.002, .000 and .001 respectively. This is an indication that the above statements as the challenges influence the educational delivery and practices of effective inventory management.

## **5.2 Conclusions**

The study on assessing the effect of inventory management practices on educational service delivery at Sunyani Technical University (STU), found a stronger and positive relationship between inventory management practices and effective management of the school.

For instance the study found that cycle stock, in-transit inventories, inventory planning and scheduling, inventory recording, inventory control, material requirement planning (MRPI) and safety or buffer stock were available. This means that some aspect of inventory management practices and techniques are not available at the STU. It was concluded by the majority that, speculation inventory, seasonal stock, dead stock, inventory valuation, First in First out (FIFO), physical inventory counts, Activity Based Costing (ABC) Analysis, Just- In Time (JIT) inventory, Vendor Management Inventory (VMI) and Economic Order Quantity (EOQ) Model as inventory management practices and techniques are not available.

On the impact of inventory management practices and service delivery the found that inventory plays an essential position within the increase and survival of an institution inventory is consequently held to make sure an availability of goods, it helps to limit the general expenses, its plays a significant role in stock management, lectures are never delayed in my department, research activities are smoothly facilitated and conducted, it helps predict the response of inventory investment, teaching is never interrupted in my faculty due to proper inventory management practices, it has raised the reputation of the institution, it keep expenses to a minimal with the aid of range discount, reading materials are readily available for our students, replenishing of books is regularly done in the library,

The research concluded that there are series of challenges confronting STU in the implementation of the effective inventory management practices. All notwithstanding, the study recalled that inventory management practices to a greater extent has effects on the educational deliveries at the STU.

### **5.3 Recommendations**

The study on assessing the effect of inventory management practices on educational service delivery at Sunyani Technical University (STU), basing on the analyses, findings, and the study conclusions as presented above, makes the following recommendations;

The study recommends that staff on recruitment and during induction should be trained on how to handle inventory items so that the process of educational service delivery is not affected. This is because most of the teaching staff feel and think that management of inventory is not their responsibility when actually it is the inventory that facilitates their process of delivering the services expected of them.

Public institutions need to strengthen their planning to make it participatory so that user departments plan for inventories they need from time-to-time. This is because the study discovered that most of the users were never involved in planning for the inventory items for their department.

The study recommends that there should be a strong linkage among institutional departments and the central stores. The departments should always work using a systems approach so that the final service is as a result of the contribution of different components/departments.

### **5.4 Areas for further studies**

The study mainly focused on assessing the effect of inventory management practices on educational service delivery at Sunyani Technical University (STU). However, there are issues that were not under the scope of this study but actually emerged as the study unfolded, they can be covered in other studies as stated below;

- Inventory management practices and service delivery in public universities.
- Inventory planning and service delivery in higher institutions of learning in Ghana.

UNDER PEER REVIEW

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