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An Assessment of the Inventory Control Systems and Their Effectiveness in Bar Operations

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Abstract**:** *The study was design to investigate the inventory control systems in bar operations within the Bolgatanga Municipality using a mixed research approach. All the 24 registered bar operators were considered where a sample size of 133 respondents drawn from the population consisting various categories of staff in the food processing sector. The study employed the questionnaire as the main research instrument. However, a few interviews were granted to top management of the bar operations to get a detailed overview of the inventory systems. The hand-delivery method was used to administer the questionnaires so as to get all the respondents in the target population to participate in the survey. The statistical procedure used to further analyse the data after the descriptive was the principal factor analysis. It was concluded that bar operations, especially in the food processing industry largely use the physical counting technique as the major inventory control system where stock is taking on a daily and/or weekly basis.*

Keywords: Bar Operation, Beverages, Inventory Management, control Systems, Stock

1. INTRODUCTION

Inventory is the stock of any item or resource used in an organization which includes raw materials, finished products, component parts, supplies, and work-in-process. Inventory is a capital-based management whereby if it is not managed or properly controlled, a lot of money will be held in stock, and when such operational capital is ceased, the operation may run at a loss. The ineffectiveness of bars, restaurants, hotels, and any other food processing establishment to manage or control their inventory creates the challenge of "what to order", "how much to order" and "when to order". Primarily, the well-established bars have an organised system where a department or unit is created for the management of resources within the business.

According to Donald & Waters (2003), an inventory system is the set of policies and controls that monitors levels of inventory and determines what levels should be maintained, when stock should be replenished, and how large orders should be. Managers have dramatically changed their views on stock in recent years. Historically, they saw it as a benefit, with high stocks allowing operations to continue normally when there were problems with deliveries from suppliers. Stocks were even seen as a measure of wealth, giving a clear display of the owner's possessions. This thinking encouraged organisations to maximize their stock – and it is still the main reason why countries keep reserves of gold and individuals keep more food than they need in their freezer. But in the twentieth century, it became clear that these stocks had costs that were surprisingly high. Then managers began to view stocks not as an unreserved benefit, but as a resource that needed careful control. In particular, they looked for ways of balancing the costs of holding stocks against the costs of shortages to find optimal policies that minimized the overall costs.

According to Mwanya (2007), the aim of inventory management is to hold inventories at the lowest possible cost, given the objectives to ensure uninterrupted supplies for on-going operations. When making decision on inventory, management has to find a compromise between the different cost components, such as the costs of supplies inventory, inventory-holding costs and costs resulting from insufficient inventories. The Inventory enables a company to support the customer service, logistic or manufacturing activities in situation where purchasing or manufacturing of the items is not able to satisfy the demand. Lack of the satisfaction could arise either because of the speed of purchasing or manufacturing is too protracted, or because quantities cannot be provided without stock. Several businesses have sprung out in the Bolgatanga Municipality including food processing. It is evident that good establishments come from good management practices but good businesses come from good inventory control and management. In the Upper East Region, most business establishments do not have effective inventory management systems.

2 LITERATURE REVIEW

2.1 Inventory Control Systems

Inventory control is the activity which organises the availability of items to the customers. It coordinates the

purchasing, manufacturing and distribution functions to meet the marketing needs. This role includes the supply of current sales items, new products, consumables, spare parts, obsolescent items and all other supplies (Wild, 2002).

Schonsleben (2000) defined inventory control as the process whereby the investment in material and parts carried in stock is regulated within predetermined limits set in accordance with inventory policy established by the management. The key notes of inventory control include the determination of limits of inventories to be held; determination of inventory policies; and setting out of investments patterns and its regulation. This presupposes that inventory control forms the basis of material control without which the entire functioning of storekeeping may be rendered aimless to a certain extent. Hence, inventory control precedes storekeeping which predetermines the scope of inventories and investments therein (Saleemi, 2007).

According to Owler (1985), stock control is taken to mean that materials of correct quantity are made available and when needed with due regards to economy in storage and ordering cost, purchasing prices and working capital. Several establishments have underscored the functions of inventory control and it is perhaps the single most important control technique having direct relationship with production, marketing, purchasing and financial policies.

The above analysis implies that inventory control techniques do not work with an associated cost. According to Mclaney (2003) all businesses normally seek to balance the costs and risks of holding stock with those of holding no or low level of stock. One of the basic costs associated with holding inventory is the ordering costs which is a sum of the fixed costs that are incurred each time when an item is ordered. Holding cost is another financial burden that comes with holding stock over a period of time. This category of cost can vary considerably from one situation to another. The key feature therefore is that it varies with the amount of inventory being held and with the length of time period.

2.2 Purpose of Inventory Management

The main purpose for controlling and managing inventory is to provide services to the customers at a very minimum cost. Financial, the purpose of inventory management is the ability of funds to inform management's requirements on how much is needed in investing in inventory so that cash has not been tightened in a stock leaving other needs areas with no working capital. In terms of property protection objective, it gives the property controller the responsibility to insure that inventories are safeguarded and protected against all possible hazards, including theft, wastage, and misappropriation of inventory, therefore there should be proper inventory control of stock. To ensure the achievement of organisational objectives, policies should be established to make available materials and when required with regard to ordering cost, holding cost, and working capital by considering three questions. Thus, what to order; how much to order and when to order.

2.3 Challenges of Inventory Control

According to Brent and Travis (2008), the lean of each department in the enterprise is generally different. Each department looks at inventories in a different manner. The production department wants to keep the inventories at a sufficient level at all times. Since production department is interested in producing at minimum possible cost and keep both skilled and unskilled workers occupied all the time, it wants a continuous production for which regular flow of inventories in sufficient quantity and of required quality is a must.

On the other hand, the sales department is interested in ensuring a maximum number of customer of for which it always wants a good stock of all the finished products. The transport department is interested in keeping its fleet intact and all the time in serviceable condition for which the department needs sufficient stock of spare parts, and consumable items as its disposal.

Besides the production and sales departments, the finance section may all the time feel that inventories are consuming capital and locking up the capital. If the capital is free from there, the unit may feel then that the working capital so freed from inventories may start earning a good return. The finance unit, thus, looks at inventories in isolation. It is usually unable to see inventories in relation to the overall objective of the enterprise.

The individual department thinking poses a challenge to the inventory control which has to reconcile the conflicting claims of different departments within the framework of the policies and programmes of the enterprise. It is now being realised that inventory control challenges have to be solved while keeping in view the problems of every phase of operation purchase, production, sales and finance. Therefore, an integrated approach is advocated. This approach will help in solving the problems of inventory control keeping the costs at their lowest. Proper planning of production, efficient and timely purchasing and close control of inventories will result from such an integrated approach to the challenge (Alade, Sharma, Dinesh and Hari (2004).

3.0 MATERIALS AND METHODS

Research approaches have been explicated and categorised differently by various authors in research (Yin, 2003). Kothari (2007) also defined a research design as the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure. This study employed the mixed method in its investigation. Primary data was mainly employed for answering the research questions obtained through personal interviews and administration of questionnaires. The sample frame consists of all the major players within the food processing sector (particularly the bar operators) within the Bolgatanga Municipality. The study seeks to perform a thorough content, descriptive and statistical analysis of the subject using a two-part strategy to solve the research questions; a qualitative-based strategy for analysing qualitative data and a quantitative-based strategy involving the empirical analysis of quantitative primary data.

The study population is the aggregation of element from which the sample is actually selected. It comprises all subjects or units from which information could be obtained (Rubin and Babbie, 2001). In another way, Cavana *et al.*, (2009) defined population as the entire group of people, elements or event of things of interest the researcher desires to investigate. The population consists of registered bar operators within the Bolgatanga Municipality. The study population of twenty four (24) registered bar operators within the Bolgatanga Municipality is too small and hence all the registered bar operators were considered. A total of 133 individuals would be considered as the sample for the study.

Cavana, *et al.*, (2009) categorizes four major steps in quantitative data analysis; getting data ready for analysis, getting a feel for the data, testing the goodness of data and testing the hypotheses. Accordingly, the study adopted these steps for analysing the data collected. First and foremost, all questionnaires obtained were edited, which includes checking for completeness and inconsistencies, whiles ensuring against any form of bias. Also, the questionnaires were checked for possible blank responses for appropriate measures. After such corrections, the data was coded and keyed using the Statistical Package of Social Sciences (SPSS) Software.

Patton (2001) states that validity and reliability are two features which any qualitative researcher should focus on while designing a study, analysing the results and judging the quality of the study. Buchan (2004) shows that the importance of ensuring validity and reliability of research instruments by saying that, quantitative research has a great investment in reliability and validity. If the data is not reliable and valid, if the assessment techniques are not reliable and valid, if the design features do not create satisfactory internal and external validity, the research is worthless in scientific eyes.

This study therefore took into consideration these two key factors during the course of the research right from inception to completion. During the administration of questionnaires, the hand delivery strategy was employed to ensure that the data was gathered from the target respondents. In the same way, interviews for the qualitative study were carried out personally by the researcher. While the interview is being conducted, notes were taken to serve as an alternative reference to audio records which was utilized and later transcribed to avoid any form of interviewer bias and the possibility of omitting any important data that might affect the validity and reliability of the study. During the analysis stage, data collected was presented and analysed just as provided in the questionnaires. In areas where editing was done, caution was taken to avoid any form of researcher bias.

All researchers have a responsibility to address ethical issues and this research is no exception. There are various dimensions to research ethics which include social and moral accountability (Canvan *et al.*, 2009). With regard to the former, the researchers ensured that all work borrowed from other authors were duly acknowledged in the text. Also, the researcher is careful to include all relevant data and no omission or addition purposely made to persuade readers in favour of any particular argument. Concerning moral accountability, appropriate permission and consent was sought from all respondents, allowing them to willingly participate in the research without any form of compulsion or treachery. The researchers equally informed them of the true purpose of the research and further assured them of a great sense of confidentiality.

4 DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 1: Demographic characteristics of respondents

		Number of Responses	Percentage (%)
Gender of respondents			
	Male	66	49.62

Female	67	50.38
Age group of respondents		
0 – 20	8	6.06
21 – 40	83	62.88
41 – 60	41	31.06
Educational Status of respondents		
No formal education	18	14.17
Primary	11	8.66
Secondary	45	35.43
Tertiary	30	23.62
Others	23	18.11
Current position in the establishment		
Manager	38	28.57
Bar attendant/Waiter	70	52.63
CEO/Owner	25	18.80

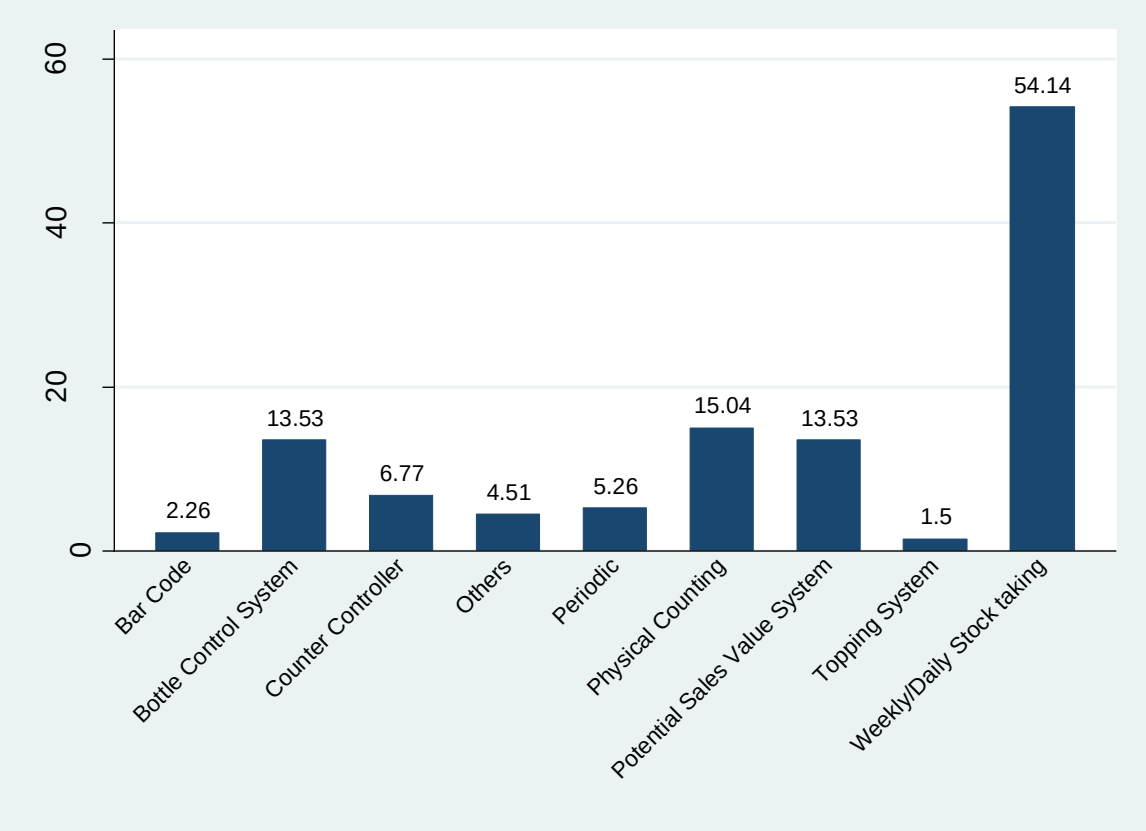
Source: Field Survey, 2018

The demographic characteristics of the respondents as shown in Table 1 indicates that 49.62% of the respondents that were included in the total sample for the study were male whilst 50.38% constituted the female respondents of the total sample.

With respect to the age distribution of the respondents, it was observed that the majority (62.88%) of them were between the ages of twenty-one (41) and forty (40) as at the time of the study. Whilst 31.06% were between the ages of forty-one (41) and sixty (60) inclusive, 6.06% of the respondents were between the age groups of 21 – 40. The distribution of the age groups in the study indicates that majority of the workers at the in the bar operation sector within the municipality that participated in the study are largely within their youthful but matured age.

Based on the results in Table 1, it was discovered that majority of the respondents who constituted 35.43% of the study sample had obtained a secondary educational status as at the time of the study. Though a considerable proportion of the respondents had obtained tertiary education (23.62%), the rate at which respondents with primary or no formal education are employed into the bar operations could be seen as a threat to the advancement of the bar operations into a modern business establishment. The current positions of the respondents were categorised into three groups as managers, bar attendants or waiters and the proprietors/CEOs. It was observed from the results that 28.57% of the study sample contained managers of the various bar operations centre; 52.63% were either bar attendants or waiters whilst proprietors or CEOs constituted 18.80% of the total sample.

4.2 Inventory Control Systems and their Effectiveness



Source: Field Survey, 2018

Figure 1: Inventory Control Systems used by bar operators within the municipality.

According to the results of the study, the bar operators within the Bolgatanga Municipality employs a variety of inventory control systems in an attempt the keep track of their stock. As presented in

Source: **Field Survey, 2018**

Figure 1, there is enough evidence to suggest that the weekly and/or daily stock taking strategy was widely employed by most of the bar operators. The second popular inventory control system that was discovered from the study was the potential sales value system. This result provides evidence to postulate that the computer aided inventory systems such as the barcode inventory system was not used due to the level of education of personnel who are largely assigned to the management of inventory in the bar operations sector.

The respondents also indicated that inventory control systems works to prevent or easily identify fraud and theft in cases where stock materials are being used on daily basis by different employees at a time. In such cases, the movement of stock items can be done by several individuals without the fear of misappropriating stock materials. When several products are stored in a very large warehouse, it can sometimes be difficult to identify the needed stock materials at the times they are actually required. The study indicated that the use of inventory control systems helps to easily identify stock materials or products even in the midst of large stock items in the same warehouse. It was said that they are able to replenish products whose levels are running low with less difficulty

Table 2: Effectiveness of the Control Systems

	Level of satisfaction (%)		
	Agree	Neutral	Disagree
We can distinguish between good and poor performance	100.0	-	-
Stock controller achieved its intended purpose	91.73	8.27	-
Storekeepers have full independence in performing their duties	75.19	12.78	12.03
The system creates challenges to the business	64.39	11.36	24.24
The storekeeper have power to advice management with stock matters	80.30	5.30	14.39
Physical inventory vary from the system stock in the last stock taking	72.52	16.03	11.45
Stock controllers have the required competence in performing their duties	80.30	6.82	12.88

Source: Field Survey, 2018

In an attempt to measure the level of effectiveness of the inventory systems employed in bar operators within the municipality, respondents were asked to rate the statements in

Table 2 based on their satisfactory level. They opined that the inventory systems available enabled them to distinguish between good and poor performance during stock review. In general, all the items in

Table 2 scored over 70.0% satisfactory rating as per the opinion of the respondents.

According to the results of the qualitative survey, the respondents identified a number challenges that they observed to be hindrances to the business as a result of the use of inventory control system. It was reported that damages and/or breakages could occur in areas where physical counting is employed. In their explanation, physical counting sometimes involved the movement of products in and out of the warehouse in order to completely enumerate all the stock items for the purposes of recording the available stock levels at the end of the day, week or month.

Beside the damages caused by the inventory control system, staff of the establishments could have misunderstanding among themselves largely due to theft, fraud or laziness. The stealing of products was however reported to be rampant among staffs who are usually involved in the inventory process. Most times, bars that include drinks also risk these products going flat in the process of stock taking. Individually, the inventory processes were reported to be very stressful which adversely affects their health as well.

Table 3: Factor loadings and unique variances

	Factor 1	Unique variance
Q7A – Ability to distinguish between good and bad performance	-0.22	0.95
Q7B – Stock controllers achieved their intended purpose	0.37	0.87
Q7C – Storekeepers have full independence in executing their duties	0.62	0.62
Q7D – The system creates challenges to the business	0.52	0.73
Q7E – Storekeepers have power to advice management	0.79	0.38
Q7F – physical inventory vary from the system stock	0.55	0.69
Q7G – stock controllers have the required competences	0.65	0.58

Source: Field Survey, 2018

Based on the results in Table 3, one factor was identified relating to the performance of the stock controllers, the challenges that the inventory system creates the independence of the stock controllers to execute their work without interference as well as the willingness of management of the various bar operators to accommodate the suggests and advice of the stock controllers.

The reliability of the factor analysis is dependent on the sample size of the data. Though several authors have relied on the well-known rule of thumb that suggests that a researcher has at least 10 – 15 participants per variable, its empirical basis is unclear (Field, 2012). The current study assumes that the sample size of 133 respondents to the seven (7) item factor variables is enough to validate the results of the factor analysis. However, the scale of reliability for the

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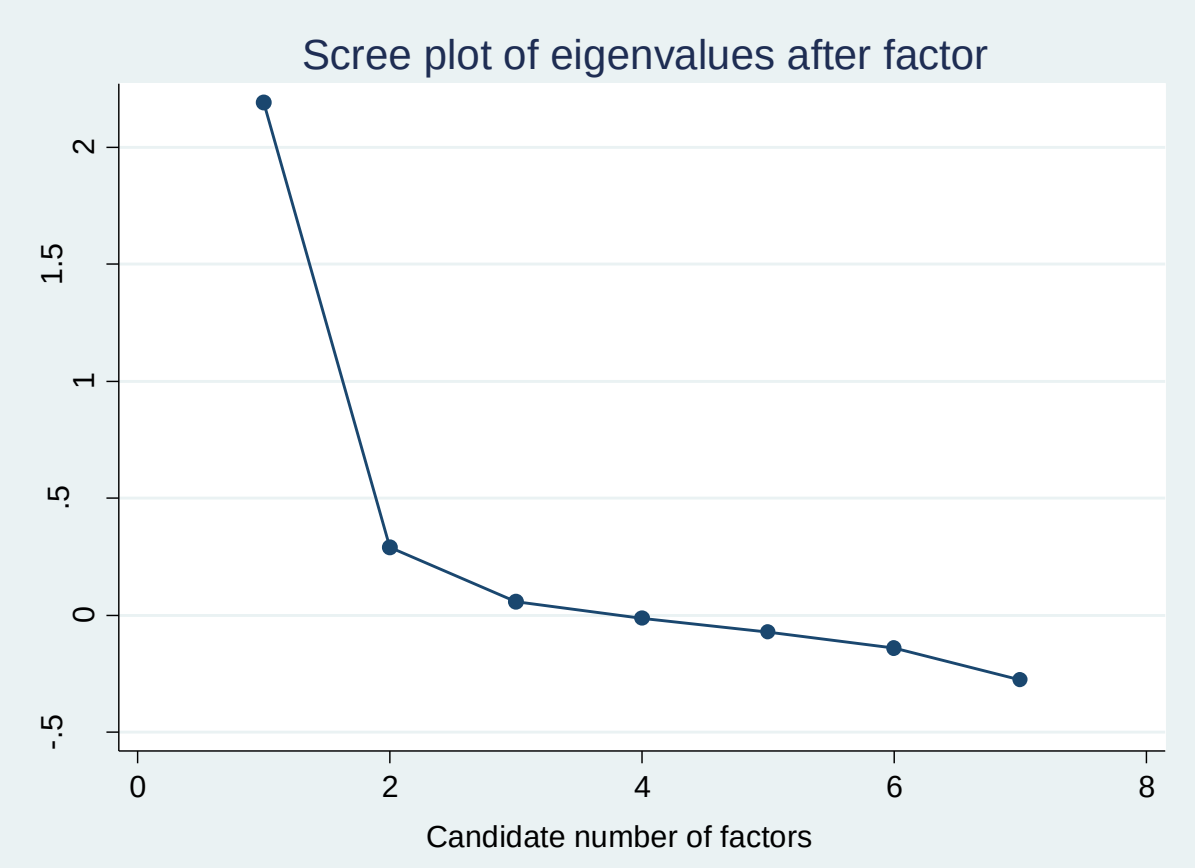
survey instrument was estimated to be 74.73% which is very high with a covariance of 0.28.

A principal factor analysis was conducted on the 7 items with orthogonal rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy of the analysis (kmo = 0.77).
The likelihood ratio test on the sphericity of χ^2 (21) = 192.84 (p-value = 0.000) indicated that correlations between items were sufficiently large for the principal factors. An initial analysis was run to obtain eigenvalues for each component in the data. As shown in Table 3, the only component (factors) had an eigenvalue over the Kaiser's criterion of 1 and explained 85.13% of the variance. The loadings in Table 3 indicate the weights of the observed variables (items) on the latent variable.



Source: Field Survey, 2018: Figure 2: Scree plot of eigenvalues

The scree plot as shown in Source: **Field Survey, 2018:** Figure 2 is a selection criteria for retaining the underlying constructs of the effectiveness of the inventory control systems as used by the bar operators within the municipality. It is clear from the graph that the steep curve occurred at the second factor which has an eigenvalue much lower than the Kaiser's criterion of 1. It is therefore confirmed that there is only one underlying construct as far as the effectiveness of the inventory systems are concerned.

5.0 Conclusions

In conclusion, bar operations, especially in the food processing industry largely use the physical counting technique as the major inventory control system where stock is taking on a daily and/or weekly basis. Though there was no digital inventory system, the traditional way of taking stock by the bar operators was considered to curb or prevent fraud, theft and identify the fast selling products in order to make sure products in the warehouse are not perished

The major challenges as was identified by the study include the damages, fraud and theft by staff which results in the misunderstanding of staff working under the inventory department. The tendency of drinks in the bar going flat was also identified as one of the challenges confronting the inventory control systems in bar operation business within the municipality.

The measures to certain the challenges, according to the study were adherence to proper supervision by inventory supervisors, an installation of a well-planned inventory program as well as given staff in the inventory sector enough rest to prevent stress which results in damages and misunderstanding of staff.

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