

The Effectiveness of Inventory and Stores Management on Turnover Performance of National Medical Stores

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Abstract

Given that National Medical Store is a distribution industry in a resource limited setting the study was carried out to investigate the effectiveness of inventory and stores management on turnover for National Medical store in a resource limited setting. The study uses a cross sectional research design methodology where National Medical Stores is a case study with an objective of evaluating the effectiveness of inventory monitoring and information management on turnover. Data was collected mainly from primary sources using self-administered questionnaires. The findings arising from this evaluation reveals that inventory management practices are effective on inventory turnover. The established that inventory information management had a strong effect on demand forecasting and direct effect on turnover. The study also finds that it is possible to improve inventory management and optimize inventory turnover, a number of operational strategies are implemented. To achieve a study upward trend in turnover growth, inventory management practices must therefore be carried out efficiently. The study therefore recommended that continuous growth in turnover must be implemented through interventions through organizational policy and operational efficiency affecting inventory management practices.

Keywords: *Effectiveness of Inventory, Stores Management, Turnover Performance*

1.0 INTRODUCTION

This chapter focuses on the background of the study, the problem of the study, research questions, and scope of the study and significance of the study. Senior management's concern is managing inventory levels because the impact of changing the inventory management procedures on turnover is reflected in turnover growth. There is a lot of research that has been done in this area by developed countries however, for resource poor settings there is hardly any documentation Wawera et al; 2004. There is therefore need for study using company in a resource limited setting as a case study to establish how inventory management practices affect turnover of an organization. National medical stores (NMS) has the responsibility of delivering pharmaceuticals and medical supplies to over 70 district health offices and hospitals spread throughout the nation. Mountainous terrain throughout the country, the fact that some health facilities are located on islands and the poor condition of roads all serve to complicate the distribution operation. Add to this the disproportionately high cost of fuel and the limited resources of the government's health budget and the need for efficient transport management becomes clear. Transaid were invited by National Medical Stores of Uganda to undertake an assessment of their transport and distribution function in order to provide a series of recommendations as to how they could reduce costs, increase efficiency and improve service delivery.

The result of the operational assessment was the development of a report detailing recommendations for improvement of the existing NMS distribution operation. The recommendations include suggestions for an appropriate policy and system implementation, resolution of organizational process issues, which had been adversely affecting the transport operation, and the subsequent execution of an outsourcing study to determine an effective solution for ongoing expansion of the delivery network. With the adoption of these recommendations NMS will be expected to benefit from reduced transport costs, increased vehicle utilization allowing a reduction in fleet size, improved vehicle availability allowing a faster response to vehicle demand, and overall improved vehicle service delivery. At present the tasks of managing the day to day transport operation are taking considerable time with the implementation of appropriate processes and systems this work will be greatly reduced freeing the transport and logistics officer to concentrate on upcoming projects to increase the distribution network which NMS services.

Comparison of the audited accounts for 1999/2000, 2000/2001 and 2001/2002 with the five year corporate plan of National Medical Stores indicated that the implementation of the objectives both for its set up and those of corporate plan was done inefficiently. The exact figures for turnover were 7,189,877,006, 6,188,066,486 and 7,449,418,322 respectively. This meant that National Medical Stores had a shortfall from the targeted sales were 9,528,408,399,718,172,041 and 11,970,611,208 respectively. This meant that National Medical Stores had a decline in the targeted sales of 24.5 percent, 42.3 percent, 37.8 percent representing an average shortfall 34.8 percent. Rutaagi 2001 attributes the decline in sales turnover to how customer services levels high costs of sales, uncertainty of customer demand and inaccurate procurement needs estimation all of which are inventory management practice

aspects. Given the inventory turnover cycle of 1.33 and 2 for the same period compared to 1.05, 1.15, in the corporate plan (NMS 1999) respectively. It is apparent that decline in sales had negative effect on inventory turnover. This strongly suggests that inventory and stores management is not effective on the turnover performance in the analyzed period. This study therefore intends to investigate the effectiveness of inventory and stores management on turnover performance and recommend interventions to mitigate the situation.

National Medical stores (NMS) reveals Operational Constraints in areas of operations management, fleet management, management information, human resource and aspects which include how customer service levels, high costs of sales, uncertainty of customer demands, Long supplier Leads times, inaccurate procurement needs estimation. This study intends to undertake analysis on the effectiveness of inventory and stores management practices on turnover performance of National Medical Stores and undertake a series of recommendations as to how these variables could reduce costs, increase efficiency and effectiveness and improve service delivery of National Medical Stores.

2.0 LITERATURE REVIEW

In this chapter, the researcher focuses on literature pertaining to inventory management, inventory management variables like inventory monitoring and inventory information management are intended to be critically reviewed and how they relate to inventory turnover.

2.1 Inventory Management Practices

Walgemack et al, 1982, inventories are the merchandise owned by the company and held for resale to customers in the ordinary course of business. Pandey 1998 concurred and added that inventories are classified as current assets because typically they will be sold within the year or during a firm's normal operating cycle if it should be longer than a year for retailing firms, inventories are often the largest and most valuable current assets. Hsu and Kleiner, 2001 define inventory management as being comprised of two major activities namely the control of inventory and the planning of inventories. The purpose of inventory management being to satisfy customer demands and minimization of stock handling costs in order to achieve higher stock turnover rate. Inventory control involves managing the inventory that is already in one's warehouse, knowing what products are in stock, their quantities, cost and location. Inventory planning involves determining when to order items, how much to order forecasting demand and stock replenishment, identifying the most effective source of supply, inventory information management and inventory monitoring.

2.2 Inventory

Kenneth Lysonss 2000 by definition inventory is assets that are intended for sale, are in process of being produced for sale or are to be used in producing goods. For many companies inventory represents a large portion of assets and as such makes up an important part of balance sheet. Inventory can also be defined as the consumables, work in progress (WIP) and finished goods stock that are kept or stored for use as need arises. Ballard 2000 cites three inventory- costing methods that a company can use to determine the costs of inventory and argues that they impact directly on the balance sheet, income statement and statement of cash flow. However the concern with determining the value of closing stock inventory or any quantity of inventory held at a particular point in time cannot be justified by only these three methods. First in, First -out (FIFO). This method assumes that the first unit making its way into inventory is the first sold. Last in, First-out (LIFO). This method assumes that the last unit making its way into inventory is sold first. The older inventory is therefore left over at the end of the accounting period. Average cost (AC). This method takes the weighted average of all available for sale during the accounting period and then uses that average cost to determine the value of cost of goods sold and ending inventory. The choice of the method to use is therefore dependent on how a company wishes to reflect their inventory in its books of accounts.

2.3 Inventory Control

This area of inventory management involves receiving of purchased goods, storage, stock movement, cycle counting, order processing and dispatching to customers Krejewski and Ritzman 1999. The primary objective of inventory management is to ensure that the company is supplied with the right places. Ballou; 1998 This objective can only be achieved if appropriate management and control system which is efficiently and effectively operated; inventory control is affected by a number of factors including characteristics of demand order cycle time, replenishment lead time, it mix, business objectives and cost structure of the company.

2.4 Components of Inventory Management Practices

This research purposely focuses on two components of inventory management practices that are relevant to the subject of this research namely; inventory monitoring and inventory information management.

2.5 Inventory Monitoring

This area of inventory planning involves the day today follow-up and evaluation of the key performance indicators in inventory management practice Tersiane et al 1994 argue that measuring and monitoring the key performance indicators that includes inventory control costs and services level can ensure good inventory planning. An effective inventory monitoring system empowers management with the right information to reduce inventory in times of dramatic sales decline and increase it in times of high demand resulting in high returns on investment Nevill, Rush and Sadd 1998. The best system monitors the process rather than just a stock. This means that monitoring and measurement takes place after cash action has occurred, this highlighting error immediately. If errors are eliminated the idea of a periodic check becomes superfluous Ballard, 2000.

2.6 Inventory Monitoring Variables

Watts Hahn and Sohn, 1999 indicated that in order to minimize the occurrence and impact of performance deviations caused by stem fitness problems, a manager must ensure that the inventory management system is consistent with the operating environment through monitoring. The system can be characterized by many environmental variables. For example demand, costs, lead time, management policies. Decision rules may include order quantity, reorder point and safety stock level. Performance measures like turnover rate, stock out frequency and quality, inventory.

2.7 Performance Deviations

The literature reviews in study on inventory monitoring demonstrated a strong relationship between inventory monitoring and turnover and went further to show that an efficient inventory monitoring system assures accurate economic order quantities for stock. Despite of the extensive work done on inventory monitoring and its impact on turnover before this research, most of this has been done on companies in the developed world; a research gap exists demonstrating the effectiveness of inventory monitoring on turnover.

2.8 Information Management

This is the other variable of inventory planning that includes the systematic processing analysis and feedback of information that determines the accuracy and timely decision on the key data of inventory planning that includes demand history, costing history and stock level history. The key ingredients of efficient information management include accurate outputs ensuring actual representation of system data that is real time. This will ensure timely and correct management decision and inventory forecast Everett and Ebert, 1992. To do this information must be bench marked, captured consistently, and measured correctly. The best measure for good information management being how well system data matches physical inventory Razi and Tam 2003. Narasimhan 2000 argues that inventory turnover rate can be threatened when the physical inventory quantities do not match the on-hand quantities displayed by the information system. This is because information system must be able to display accurate quantities for each item as inaccuracies may lead to wrong sales promises to customers, leaving items unsold yet they are in the system or wrong procurement decisions due to wrong physical stock data.

2.9 Gap Analysis

To assess the gap in information management system, a gap analysis needs to be done the gap analysis tool for assisting the organization to understand what information it holds and where it needs to improve to meet business needs in order to accurately forecast demand namely the data function gap and rationalization, in essence it looks at the extent to which the information required by the function is supported in practice, all information holdings should support some activity or should refer to some elements of the information system.

2.10 Customer Service Level

Skeet, 2001. This indicates how often items must be in stock when customers require them. It is calculated by dividing the number of line items for stocked items shipped complete by the promise data with the total number of line items for stocked products ordered

The customer service level takes into account only sales to stocked items that are filled using warehouse inventory and excludes non stock items. Customer service level should be monitored frequently in order to carry out appropriate interventions and maintain good turnover.

2.11 Demand Forecasting

David Jessop and Alex Morrison 1994 estimates the future needs of stocks and when to order. Its purpose is to ensure that the right items are purchased at the right time, for right customer in the right quality and delivered in

right quantities. A balance must therefore be strike between how much to buy and how long it takes to get supplies from the vendor.

2.12 Inventory Costs and Turnover

Goran 2003, in his research of inventory efficiency of turnover rate concluded that there is a part an association between companies' inventories and changes in turnover rate. Occurrence in changes in turnover rate requires some knowledge to be considered in corporate strategic planning of supply chain management. Companies have to carefully consider the impact that their current policies of inventory management have qualitative and quantitative changes in turnover. As a result of increased changes, the financial benefits that may be achieved through being lean in the inventory management areas of ones business might negatively influence the financial costs incurred.

2.13 Inventory Turnover

Drury 2000. This is how much stock is sold in a given period and is measured by the turnover rate which is a ratio that shows how many times the inventory of a company is sold and replaced over a specific period of time normally in the last twelve months. It is calculated by taking the annual cost of sales divided by the average inventory holding of stock. Nevill et al 1999. The result is an indicator of how well the company's products are succeeding in the market place. In general, the higher the number, the better, although, the right amount of inventory turnover depends on industry the company serves and its profits margins. Teresa, Saunders and Show, 1998, argue that every time one sells an amount of a product, product line, or other group of items equal to the average amount of money one has invested in those items they are "turning" their inventory. It is therefore the researcher's opinion that if inventory does not turn rapidly, there is too much money being tied up in unproductive or obsolete inventory.

2.14 Conclusion

The literature reviewed above shows the effectiveness of inventory and stores management practices on turnover as highlighted by several researchers from studies done in high income countries. The degree of the effect on the turnover varies from industry to industry but mainly how efficiently and effective companies implement inventory management practices. The literature indicates that having an efficient inventory monitoring system, information management system will directly have an effect on the company's turnover performance and growth.

However the studies reviewed the literature focuses on resource rich settings and non in the poor setting. The effectiveness of inventory and stores management practices may behave differently or may have negative results when applied to a company in a resource poor setting. There was need to carryout this research to evaluate the effectiveness of inventory and stores management practices on turnover in a company based in a poor resource setting.

3.0 METHODOLOGY

This chapter focuses on the methodology used to carryout the research. The study looks at the framework within which data is to be collected, analyzed, study designs, instruments to be used and procedure to be followed highlighting the reason for using a specific method

3.1 Research Design

The study uses explanatory research design approach to explain the effectiveness of inventory and stores management on turnover performance for a wholesale distribution company in resource limited setting is based on this study of National Medical Stores, a whole organization whose business involves the national procurement, storage and distribution of drugs and medical supplies.

3.2 Data Types and Sources

The study uses primary data generated for this specific research using different methods like observation, questionnaires and secondary data from National Medical Stores (NMS) which will be ready existing prepared or developed. It intends to include both internal and external sources like financial records, adverts, journals, magazines depending on the nature and scope of the information needed.

3.3 Tools and Methods of Data Collection

The study uses self-administered questionnaires observation, focus group discussion as an instrument for document review and participation include questionnaires, tape recorders, and cameras as an instrument for collection of primary data from customers, staff and top management.

3.4 Data Processing and Analysis

The study upon gathering data intends to use word processors to enter key words into the text field notes and print them, use statistical package for social scientists (SPSS) correlation analysis to determine the extent and degree of relationship between inventory and stores management and turnover performance.

4.0 DATA ANALYSIS

This chapter presents analysis and discussion of findings obtained after collecting data from primary and secondary sources, the findings are coded, edited, presented in form of tables, frequencies and final discussions to give insight in answering the research questions by finding out how inventory and stores management practices affect turnover performance.

4.1 Departments on National Medical stores

Table 1: Distribution of staff in Functional areas

Departments	Frequency	Percentage (%)
Transport and logistics	9	18
Finance and accounts	12	24
Audit	2	4
Marketing and stores	22	44
Procurement	5	10
Total	50	100

Source: Primary data

Results in table 1 above indicate that 44 percent of staff were in the marketing functional area and the least staff were in the Audit function. This implies that inventory management practices and turnover information was obtained from relevant staff.

4.2 Duration of staff

Table 2: Duration of staff in the organization (NMS)

Period	Frequency	Percentage (%)
1-2 years	9	18
3-4 years	8	16
5-6 years	21	42
7 and above	12	24
Total	50	100

Source: Primary data

Results in Table 2 indicate that 42 percent of the staff had experience of 1 year and above in the organization implying that they had enough information regarding inventory and stores management practices and turnover performance in National Medical Stores.

4.3 Effectiveness of Inventory Monitoring

4.3.1 In order to establish the effectiveness of stock out warning mechanism in the system of National medical Stores. The following responses were established.

Table 3: Effectiveness of stock out warning mechanism

Response	Frequency	Percentage (%)
Large extent	22	44
Small extent	15	30
Moderately	12	24
Not at all	1	2
Total	50	100

Source: Primary data

According to Table3, there exists a good stock out warning mechanism in the system of National Medical Stores portrayed by the results 44 percent of the respondents.

4.3.2 To establish the extent to which stock becomes obsolete in National Medical Stores the respondents' answers were as follows.

Table 4: Extent to which stock become obsolete

Response	Frequency	Percentage (%)
Large extent	16	32
Small extent	17	34
Moderately	10	20
Not at all	7	14
Totals	50	100

Source: Primary data

The finding in Table 4 indicate that stock became obsolete at a small extent represented by 34 percent this indicates that there is an efficient system to handle inventory.

4.3.3 Extent to which physical inventory varies from the system's stock taking, the following responses were given.

Table 5: Extent to which physical inventory vary at stock taking

Response	Frequency	Percentage (%)
Large extent	11	22
Small extent	13	46
Moderately	24	48
Not at all	2	4
Total	50	100

Source: Primary data

Results in Table 5 indicate that physical inventory varied moderately at stock taking indicated by results 48 percent implying that inventory monitoring system were effective.

4.3.4. To obtain information on the extent to which economic order quantities are achieved the respondents provided the following information.

Table 6: Extent to which economic order quantities are achieved

Response	Frequency	Percentage (%)
Large extent	18	36
Small extent	9	18
Moderately	16	32
Not at all	7	14
Total	50	100

Source: Primary data

Results in table 6 above shows that Economic Order Quantities are achieved to a large extent as reflected in results above with (36%) however there were minimal difference between respondents who said moderately.

4.4 Effectiveness of Information Management

4.4.1 To establish the effectiveness of information management system the respondents were asked how long it took to update the system and the responses were;

Table 7: How long it takes to update the system

Response	Frequency	Percentage (%)
Immediately	29	58
Daily	13	26
Weekly	8	16
Total	50	100

Source: Primary data

Results above indicate that the system is updated immediately with the transactions made as indicated by the respondents with (58%).

4.4.2 To obtain information on how fast the system generates the required information for corporate use respondents were asked and the following were the responses

Table 8: How fast the system generates required information

Response	Frequency	Percentage (%)
Immediately	29	58
Daily	5	10
Weekly	14	28
Monthly	2	4
Total	50	100

Source: Primary data

Results indicate that information was obtained for corporate use by the system immediately as the respondents respond immediately with (58%) this indicated that the information collected was relevant to the organization whenever it was required.

4.4.3 To establish the how often the system was backed up respondents were asked the question whether the system was backed up the following results were obtained.

Table 9: How often the system is backed up

Response	Frequency	Percentage (%)
Immediately	25	50
Daily	9	18
Weekly	9	18
Monthly	7	14
Total	50	100

Source: Primary data

Results above reflect that the system is backup immediately as shown by respondents immediately as respondents in table9 with (50%) by the respondents this meant that loss of information was not essay after the transaction was made.

4.4.4 To obtain information on how often the stock items are forecasted the respondents were asked whether the items ordered were forecasted and the following responses were obtained.

Table 10: How often items ordered are forecasted

Response	Frequency	Percentage (%)
Immediately	22	44
Daily	5	10
Weekly	17	34
Monthly	6	12
Total	50	100

Source: Primary data

Results in table 10 above show that items that are ordered and forecasted were ordered immediately as reflected in the table 10 above with (44%) indicating clear estimations in transactions.

4.4.5 To establish how often the organization carries out demand forecasting respondents asked whether demand forecasting is done often and following results were obtained.

Table 11: How often demand forecasting is done

Response	Frequency	Percentage (%)
Immediately	8	16
Daily	10	20
Weekly	18	36
Monthly	14	28
Total	50	100

Source: Primary data

Results in table 11 above show that demand forecasting is done weekly as shown in the table with 36 percent.

4.5 Effect of Turnover Performance On Independent Variables

4.5.1 To establish the extent of change in turnover on inventory the respondents were asked whether the magnitude is bigger when there is change in turnover rate and the following responses were obtained.

Table 12: The extent of change in turnover on inventory

Response	Frequency	Percentage (%)
Large extent	24	48.0
Small extent	11	22
Moderately	12	24
Not at all	3	6.0
Total	50	100

Source: Primary data

The results in table 12 show that there were a greater change in inventory when the turnover rate changes, reflected in the above results by 48 percent from the respondents who say to a large extent.

5.0 CONCLUSIONS

The major aim of the study was to establish the degree effectiveness of inventory monitoring and inventory information management on turnover performance to recommend interventions necessary to achieve optimal turnover using National Medical Stores as a case study. In conclusion inventory monitoring and inventory information management indicated that they were directly influenced; turnover performance, but they were essential for demand forecasting system to achieve accurate results and timely forecasts. However, National Medical Stores put less emphasis on information management functional gap which affected the accuracy of the demand forecasting input data.

The study further puts insight on high and steadily growing turnovers can be achieved if demand forecasts are efficient and timely Economic Order Quantities in line with customer demand cycles, therefore the decreasing demand forecasting time always yields increases in inventory turnover as long as Economic Order Quantities were accurate.

The results in this study further revealed that inventory information management and inventory monitoring affected turnover, setting of safety stock, reorder cycles and Economic Order Quantities based on demand cycles and information on demand data when monitored efficiently would help to achieve optimal turnover.

5.1 Recommendations

Inventory management practices are the key factor in ensuring continuous improvement in turnover growth. In this regard this recommended that distribution companies should carry out efficient inventory monitoring and operate good inventory information management system to ensure realistic inventory forecasts and high turnover. Considering the importance of demand forecasting in achieving a good turnover, information that is required as input to demand forecasts must be consistent and based on customer needs. Therefore companies must strive to see that there is continuous monitoring of inventory, such that the decision rules that include safety stock, reorder points and

EOQ on which forecasts are based are up to date and are based on historical data from past sales but also analyzed customer based information.

To minimize expertise, NMS should identify slow moving stock and damages, regular cycle counts should be carried out. This will reduce the cost of stock verification at the end of the accounting periods because it may no longer be necessary to close the company for long periods to handle stock reconciliations. This research also recommends intervention particularly for NMS' optimization of its turnover. This include automation and instituting an automated customer relationship management (CRM) module to capture lost sales for accuracy of demand forecasting information.

Finally, the manipulation of information to find patterns is increasingly giving companies a competitive edge over the others. Therefore need to introduce decision support tools that will analyze customer relationship management information and use it to categorize products and services that will improve turnover.

5.2 Suggested Areas of Further Study

This research considered two inventory management practices variables namely inventory monitoring and inventory information management and their effect on turnover. The research did not quantify the effect these two variables have on turnover. Further research needs to be done to quantify this effect so that companies can easily simulate and extrapolate variances for each variable.

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