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Effect of Cost of Inventory on Operating Cash Flow of Private Hospitals in Kisumu County, Kenya

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Abstract:

The aim of this study was to establish the effect of cost of inventory and operating cash flow. The study adopted the correlational research design to achieve its aim and objective. The target population was 32 private hospitals in Kisumu County for a 7-year period between 2015 and 2021. The researcher used secondary data from the hospitals' audited financial reports. Panel data methodology with 196 data points was used to establish the relationship between the independent and dependent variables. The study used descriptive and inferential statistics to analyze the data. Correlation and regression were used for hypothesis testing at 95% confidence level. Diagnostics tests were done to determine the viability of the study:

- Normality tests,
- Heteroscedasticity tests, and
- Multicollinearity tests

The results showed ($p=0.00$, $\beta=0.9021$) for the inventory cost; hence the null hypothesis was rejected. The analysis established a strong positive and significant correlation between cost of inventory and operating cash flow. The relationship of specific components of the operating cash flow that can help corporate entities invest appropriately and adequately in their current and fixed assets should therefore be pursued in further studies.

Keywords: Cost of Inventory, operating cash flow

1. Introduction

Operating cash flow (OCF), along with the cash flow from investments and financing activities, are the three components of a cash flow statement. Arguably, the OCF is the most important of the three components of the cash flow statement as it serves as an internal financing source (Hao & Lee, 2017). Takhtaei and Karimi (2013) opine that a cash flow statement is a practical tool for financial evaluation and resource allocation. It shows the tradeoffs of quality management and creates a benchmark for effectiveness. This help makes decisions on various cost strategies. Different studies have shown that cash flow components differ from one firm to another. This is influenced by the size and sector of the business. Changes in factors, such as sales revenue, operating expenses, inventory, accounts receivables, and accounts payable, as stated by Waldron and Jordan (2010), would affect the cash flow from operations. Revenue in most businesses is primarily generated from the sale of goods or service provisions, while costs comprise a wide range of components, including salaries and wages, utility expenses, legal fees, taxes, and marketing expenses. Since the operating cash flow also begins with the net income, any changes in the revenue or costs lead to a counter change in net income, affecting the operating cash flow balance (Frank (2018).

The nature of the private hospital business is profit maximization. According to Shen, Fu, Pan, Yu, and Chen (2020), the increased need for sophisticated medical services poses a burden on limited financial resources. Private hospitals are therefore exposed to the risks of losses as they work towards improving their internal systems of preparedness and implementing initiatives for emergent situations to mitigate risks. Additionally, the government has made it mandatory that private hospitals invest in risk mitigation and preparedness as part of corporate social responsibility (CSR). This not only increases customer confidence but also boosts sales, which may affect cash flow in times of crisis. This study investigated how operational expenses affect cash flow positions that may influence progress, and force some firms to close either temporarily or permanently, and others to shift their lines of business. Operating cash flow is an important metric of the long-term health of any given firm. It has been identified as one of the most important causes of the rise or failure of businesses.

Private hospitals that constantly monitor cash flows can maintain systems for quality services. This guarantees sustainability amid unforeseen expenses hence being able to achieve profit. Various factors, for instance, the most recent pandemic, have caused the Kenyan healthcare industry to lose approximately Ksh.7.8 billion between March 2020 and July 2021, with private hospitals being the most affected. Kenya, being a developing country, has a few well-established private

hospitals, with the majority still striving to establish themselves at a global level. Ineffective cost management causes hospitals to have a shortage of operating funds, therefore, causing them to have poor business performance. Previous studies have focused on health hazard effects on the general performance of firms, stocks return, and value of firms, hence achieving different results. The question of the effect of cost of inventory on the operating cash flow of hospitals, especially in the private sector, has been under-studied in Kenya. The following study, therefore, aimed to test the hypothesis: There is no relationship between cost inventory and operating cash flow of private hospitals in Kisumu County.

2. Literature Review

Inventory can be defined as goods owned or stored with the intended purpose of resale, as raw material or components used in producing goods and services that a business sell. Medical Inventory involves stock items used in patient care. This ranges from PPEs, syringes, swabs, etcetera. Coronavirus has shown us that unexpected events can have a dramatic effect on hospitals' resources, especially with an interrupted supply chain (WHO, 2020). Medical inventory, as described by the WHO, is a priority due to the important role they play in curbing the spread of diseases if properly used. The use of face masks, for example, and other priority medical protective devices in hospital setups during pandemics, as recorded by Pinho (2020), has always been strictly followed as an effort to protect healthcare workers and visiting patients from infection.

Increased use of inventory in hospitals may imply an increase in operating expenses by the institutions. The institutions do not bear the purchasing costs if the government or other agencies donate the PPEs—failure to scan all inventory items during a procedure risks being missed on medical billing and reimbursement. Private hospitals aim to make a profit, and the omission of these charges affects their operational cash flow.

Bawa, Asamoah, and Kissi (2018) investigated the impact of inventory management on firm performance. They adopted a case study with a sample of fourteen listed manufacturing firms in Ghana Stock Exchange for ten years. Secondary Data were collected from audited annual financial statements, after which a two-stage technique of Pearson correlation and multiple regression was used for analysis. The measures of inventory management adopted were the inventory conversion period. Profitability and operating cash flow were used as a measure of firm performance. The results of the study indicated a negative influence of the inventory conversion period on firms' performance. This means that the change in the inventory period negatively affected the profitability and operating cash flow of the manufacturing firms in Ghana. The findings also showed a negative relationship between the dependent variables and intervening variables, including management efficiency, firm growth, and firm size. It was, however, concluded that with efficient management, the performance of these firms could improve. This study is limited in that it solely relied on secondary data, and circumstances in Ghana may not reflect firms in other countries.

In their study of the effect of cost of inventory management on profitability, Etale and Bingilar (2016) used a time series panel and longitudinal research design to study the breweries industry in Nigeria. From the annual reports and accounts of the breweries companies registered on the Nigerian Stock Exchange, secondary data were gathered during a nine-year period hence 2005-2014. The cost of raw materials, cost of work in progress, and cost of finished goods were the chosen metrics for inventory cost management. The management of costs of inventory and the profitability of the brewery industry were observed to be correlated using multiple regression modeling techniques and the SPSS-20 edition of the program. A positive correlation was found, suggesting that efficient cost management techniques would prevent the firms from suffering revenue losses and therefore incurring losses. Effective management of costs of inventory also is linked to retention of customer loyalty. The study concluded by suggesting that firms that aim to achieve profitability should seek to employ and regularly train staff on effective inventory cost management.

A study by Lydia (2016) attempted to examine the effect of cost of inventory and management on the profitability and operating cash flows of Kenya Breweries Beer distribution Companies in Nairobi County. She adopted a descriptive design and conducted a census at six firms. Secondary data for a period of ten years were collected and analyzed by a social science statistics package using ordinary least squares regression equations. A positive correlation was established between inventory cost management, operating cash flows, and profitability. The study showed that longer inventory days, poor management, and small company size negatively impacted profitability. Increased inventory conversion days positively influence operating cash flow as the costs associated with holding or carrying stock are reduced. This study, however, did not show how costs of inventory and management influence operating cash flows in high seasons that could be equated to emergencies in hospitals.

Aifuwa, Saidu, and Aifuwa (2020) adopted a survey research design to conduct a study on the coronavirus pandemic outbreak and the performance of private firms in Nigeria. The study used primary data collected through questionnaires administered online to Lagos-based private business owners. Linear regression was used to show the relationship between coronavirus and private firm performance. The findings revealed that the pandemic hinders the performance of both the financial and non-financial private sector firms in Lagos State, Nigeria. This was mainly due to the increased cost of operation attributed to the adoption of recommended digital ways of business operation and the purchase of equipment such as facemasks, liquid antiseptic soaps, and sanitizers. The dismal performance of the private firms was further linked to the reduced scale of operation that led to short-term financial constraints among companies. The study concluded that the coronavirus pandemic negatively affected the performance of companies in Nigeria. The study recommended that the government should introduce fiscal policies such as tax relief policy to resuscitate the severely affected private-sector firms in Nigeria.

3. Research Methodology

The study adopted a correlational research design. Correlational research design best suits the study as it helps in assessing the relationship between two or more variables, i.e., how one variable affects the other. Additionally, the study adopted a census design since it sought to use all 32 private hospitals in Kisumu County to collect, record, and analyze data). For the purpose of this study, secondary data were collected for a period of seven years, that is, between 2015 and 2021. This data was sourced from the hospitals' annual audited financial reports. Diagnostic tests were carried out to determine the viability of the proposed study. These included normality tests, tests of homogeneity of variances, and heteroscedasticity tests.

Data was analyzed using quantitative approaches, notably descriptive statistics, correlation analysis, and pooled multiple regression analysis. For easier analysis and interpretation, data transformation was undertaken. Panel data econometrics and descriptive statistics such as means, frequencies, and percentages will be used to analyze the collected data. Panel data method was employed in this study since the variables have two dimensions: cross-sectional and time series.

3.1. Correlational and Regression Analyses

Eviews were used to conduct correlational analysis to establish the strength of the relationship between the independent variables and the dependent variable. Regression analysis was conducted to establish the magnitude of the impact of the independent variables on the dependent variable.

4. Results and Discussions

4.1. Descriptive Statistics

A descriptive analysis was conducted to obtain the mean, standard deviation, and variance among other frequencies on the data.

	Cost of Inventory	Operating Cash flow
Mean	15.94929	16.0064
Median	15.94805	16.00468
Maximum	16.65699	16.93347
Minimum	15.2098	14.98849
Std. Dev.	0.322142	0.386068
Skewness	-0.00099	0.090842
Kurtosis	2.67681	3.155879
Jarque-Bera	0.835647	0.458462
Probability	0.658478	0.795145
Sum	3062.264	3073.23
Sum Sq. Dev.	19.82106	28.46828
Observations	196	196

Table 1: Descriptive Statistics for the Variables

The sample size (N) value in table 1 shows 196 data points, representing the 7-year data from the 28 hospitals that participated in the study. The turnout implies that four hospitals did not respond to the survey. Hence, the study reports an 87.5% response. Table 1 shows the descriptive statistics for the collected data. It shows that the mean inventory cost for the participating hospitals was 15.94929 between 2015 and 2021. The mean operating cash flow for the hospitals was 16.0064. The skewness value of 0.0908420 for operating cash flow and -0.00099 for cost of inventory indicate they are moderately skewed.

Correlation T-Statistic		
Probability	Operating_Cash Flow	Cost_Of_Inventory
OPERATING_CASH FLOW	1	

COST_OF_INVENTORY	0.894617	1
	27.88642	-----
	0	-----

Table 2: Correlation Analysis Results for the Independent and Dependent Variables

Table 2 shows a correlation value of 0.8946 for cost of inventory and operating cash flow.

The high positive value shows a strong positive correlation between cost of inventory and operating cash flow for the hospitals for the 7-year data. This relationship implies that the operating cash flow increases as cost of inventory increases for the respondent hospitals. Thus, it is concluded that the correlation between cost of inventory and operating cash flow is significant at 95% (0.01) confidence level. Thus, the null hypothesis that there is no correlation between cost of inventory and working capital is rejected. The alternative hypothesis that there is a correlation between cost of inventory and operating cash flow is accepted.

Dependent Variable: OC				
Method: Least Squares				
Sample: 196				
Included Observations: 192				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNCINV	0.9021	0.0596	15.1293	0
C	-0.6993	0.6979	-1.002	0.3176
R-squared	0.786	Mean dependent var		16.0064
Adjusted R-squared	0.7826	S.D. dependent var		0.3861
S.E. of regression	0.18	Akaike info criterion		-0.5712
Sum squared resid	6.0908	Schwarz criterion		-0.5033
Log-likelihood	58.8323	Hannan-Quinn criter.		-0.5437
F-statistic	230.2354	Durbin-Watson stat		0.4597
Prob(F-statistic)	0			

Table 3: Regression Analysis

Table 3 shows the influence of cost of inventory on the operating cash flow of hospitals in Kisumu County, Kenya.

An important parameter of regression is the F-Statistic, which gives the p-value for the relationship between variables. As a rule, a p-value that is ≤ 0.05 implies a rejection of the test or null hypothesis that there is no correlation between an independent and dependent variable. Therefore, a p-value of 0.000 for cost of inventory means the hypothesis that there is no correlation between cost of inventory and operating cash flow is rejected. Instead, the hypothesis that there is a correlation between cost of inventory and working capital is accepted.

The variation of the dependent variable with change in the independent variable was perhaps of the most importance.

Table 3 shows the coefficient for the variable when the other variable is held constant. A coefficient value of 0.9021 implies that a unit increase in cost of inventory results in a 0.9021 change in operating cash flow. These statistics further show the strong positive correlation between cost of inventory and operating cash flow, hinted at by the correlation coefficient. Thus, it can be ascertained that there is a correlation between cost of inventory and operating cash flow for hospitals in Kisumu County, Kenya.

5. Discussions

These findings show that cost of inventory and operating cash flow have a strong positive correlation. The study findings concur with the findings of a study by Etale and Bingilar (2016), which adopted a longitudinal research design using a time series panel and examined the effect of cost of inventory management on the profitability of the brewery industry in Nigeria. Secondary data were obtained from annual reports and accounts of breweries companies listed on the Nigerian Stock Exchange from 2005 to 2014. The cost of raw materials, cost of work in progress, and cost of finished goods elements of costs of inventory management were employed as the independent variables.

Multiple regression analysis techniques and computer software SPSS-20 version were used to show the correlation relationship between cost of inventory management and the profitability of the breweries industry. A positive relationship was established, which implied that effective cost management practices would save the companies from experiencing loss of revenues hence making losses. However, the results invalidate the findings of a study by Bawa, Asamoah, and Kissi (2018), who studied the impact of inventory management on firm performance with a case study of listed manufacturing firms in Ghana.

The study adopted a cross-sectional study design with a sample of fourteen listed companies in the Ghana Stock Exchange over a ten-year period. Secondary Data were collected from audited annual financials while the two-stage technique of Pearson correlation and multiple regression analysis were used to analyze the collected data. Measures of firm performance that were inventory conversion periods were used as the independent variable, while profitability and operating cash flow from the dependent variables. The study empirically revealed a negative relationship between the inventory conversion period and firms' performance.

The analysis showed there is a strong positive correlation between cost of inventory and operating cash flow for the respondent hospitals. Essentially, the implication is that operating cash flow increased as cost of inventory increased for the collected data. This trend and the relationship were observed for all the hospitals regardless of their financial capabilities. Several arguments support or explain this finding for the 196 data points from the 28 medical institutions.

First, it is worth noting that inventory is an asset that is conventionally captured and reported on the balance sheet. Thus, inventoriable costs are recorded as assets in the balance sheet. Since working capital is obtained by

subtracting an organization's liabilities from its assets, the cost of inventory forms part of and contributes to working capital. Hence, as inventory increases, so does operating cash flow. In accounting, inventory is a current asset account that can be converted into cash within a fiscal year.

As the findings indicate, as the hospitals increased their inventory for each fiscal year, there was a corresponding increase in operating cash flow. This trend shows that as the hospitals invested more money in inventory in the form of cost of inventory, the investment was converted into revenue. Subsequently, a business has more working capital, the money readily available for its current and short-term obligations.

As a business invests more in inventory, cost of inventory increases and may result in more cash in bank accounts and un-deposited checks with customers in the short-term. These events eventually culminate in more assets and higher working capital for businesses. The fact that operating cash flow increased with an increase in cost of inventory for the hospitals implies that the expenses related to inventory or storing of unsold goods yielded returns within the year for the facilities.

5.1. Summary of Findings

Operating cash flow is one of the indicators of financial health for businesses. Through its components, such as working capital, an enterprise can support the routine operations by which it offers quality service and memorable experiences to customers. In the private healthcare sector, cost of inventory contributes to or affects the operating cash flow available to hospitals. The researcher attained 196 data points from 28 of the 32-targeted hospitals. Correlational analysis showed that cost of inventory is significantly positively correlated with operating cash flow. Through regression analysis, the researcher also established that there exists a significant correlation between cost of inventory and operating cash flow.

5.2. Conclusion

Operating cash flow is a metric by which businesses project and ascertain their medium- and long-term financial status and sustainability. In Kenya, the private healthcare sector has faced considerable hurdles in pursuing financial success, necessitating drastic cost management measures. In particular, health facilities have suffered a shortage of operating funds, culminating in poor performance. The study, therefore, reveals that management of inventory costs can help businesses efficiently manage their operating cash flow for optimal performance.

6. References

- i. Aifuwa, H. O., Saidu, M., and Aifuwa, S. A. (2020). Coronavirus pandemic outbreak and firms' performance in Nigeria. *Management and Human Resources Research*.
- ii. Bawa, S., Asamoah, G. E., and Kissi, E. (2018). *Impact of inventory management on firm performance*. LAP LAMBERT Academic Publishing.
- iii. Deb, P., Furceri, D., Ostry, J. D., and Tawk, N. (2020). The economic effects of COVID-19 counter-measures.
- iv. Etale, L. M., and Bingilar, P. F. (2016). The effect of cost of inventory management on profitability: A study of listed brewery companies in Nigeria. *International Journal of Economics, Commerce and Management*, 4(6), 446-455.
- v. Frank, E. O. (2018). Assessment of the comparative ability of accounting bases in predicting future cash flows: Evidence from Nigeria. *Trends Economics and Management*, 12(32): 35-48.
- vi. Hou, F., Tang, W., Wang, H., and Xiong, H. (2021). Economic policy uncertainty, marketization level, and firm-level inefficient investment: Evidence from Chinese listed firms in energy and power industries. *Energy Economics*, 100: 105353.
- vii. Hsiao, C. (2005). *Analysis of Panel Data*. 2nd Ed. Cambridge University Press.
- viii. Mwangi, L. (2016). *The effect of inventory management on firm profitability and operating cash flows of Kenya breweries limited, beer distribution firms in Nairobi*.
- ix. Shen, H., Fu, M., Pan, H., Yu, Z., and Chen, Y. (2020). The impact of the COVID-19 pandemic on firm performance. *Emerging Markets Finance and Trade*, 56(10): 2213-2230.
- x. Takhtaei, N., and Karimi, H. (2013). Relative ability of earnings data and cash flow in predicting future cash flows. *International Journal of Accounting and Financial Reporting*, 3(1): 214-226. <https://doi.org/10.5296/ijafr.v3i1.3803>
- xi. Waldron, M. A., and Jordan, C. E. (2010). The comparative predictive abilities of accrual earnings and cash flow in periods of economic turbulence: The case of the IT bubble. *Journal of Applied Business Research (JABR)*: 26(1).
- xii. World Health Organization (WHO). (2020). Coronavirus Disease (COVID-19): Vaccines. Retrieved from: <https://www.who.int/news/item/07-05-2021-who-lists-additional-covid-19-vaccine-for-emergency-use-and-issues-interim-policy-recommendations>
- xiii. World Health Organization. (2020). *Priority medical devices list for the COVID-19 response and associated technical specifications: interim guidance, 19 November 2020* (No. WHO/2019-nCoV/MedDev/TS/O2T. V2). World Health Organization.
- xiv. Ye, Q., Zhou, J., and Wu, H. (2020). Using information technology to manage the COVID-19 pandemic: development of a technical framework based on practical experience in China. *JMIR medical informatics*, 8(6), e19515.