
Impact of Inventory Management on Financial Performance of Listed Beverage, Food and Tobacco Companies in Sri Lanka

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ABSTRACT

The inventory of a business is a significant part of the current asset in most industries. In order to avoid losses resulting from stock deficits and surpluses, managing such inventories is useful for the business process. The main objective of this study is to investigate the relationship between inventory management and the financial performance of beverage, food and tobacco companies in Sri Lanka. A quantitative research approach is adopted for this study and financial data was obtained from the published annual reports of 42 listed beverage, food and tobacco companies on the Colombo Stock Exchange for a period of 5 years from 2016 to 2020. In this regard, correlation and regression analysis are used to analyze the data by using E views software. Inventory turnover, inventory conversion period and inventory leanness have been identified as a measurement of inventory management as well as operating efficiency, firm growth and firm size as control variables. Financial performance has been identified as the dependent variable and measured through return on assets and cash flow from operations. Results of the study show that inventory turnover has a significant positive impact on return on assets and cash flow from operations. The study also reveals that the inventory conversion period is significantly and negatively influenced by financial performance and inventory leanness has no significant impact on financial performance. The findings of this study would be important in guiding the management of beverage, food and tobacco companies on inventory management and financial performance.

Keywords: Beverage food and tobacco Companies, Financial performance, Inventory Management

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1. Introduction

1.1 Background of the study

Inventories are an important percentage of current assets for any business organization and they play a vital role in keeping organizational activities running effectively (Nabi, 2018). The storage in inventories disrupts the production process of the business and too much inventory reduces physical space, creates a financial problem, and increases the probability of damage, waste and loss. Also, unnecessary inventory regularly pays for ineffective management, haphazard scheduling, poor forecasting, and insufficient attention to the process and procedures (Karim et al., 2018). Equally, too little inventory often dislocates business operations and increases the possibility of poor customer service. Therefore, the inventory must be managed. The cost of inventories is also important on one hand, because overstocking will be at risk of becoming obsolete, while on the other, under stocking could lead to shortages. The challenge then is to determine how all these affect the financial performance of the organization. Beverage Food and Tobacco is an essential sector in Sri Lanka and it plays an important role in terms of their considerable contribution to the growth in the Gross Domestic Product (GDP) of Sri Lanka (Athukorala et al., 2017). Sri Lanka's food & beverage sector covers a wide range of products including processed vegetables, fruits, concentrates and juices, semi-cooked food, confectionery, bakery products, ready-to-serve food and beverage, animal feed and preparation of cereals.

According to the World Bank collection, food, beverages and tobacco in Sri Lanka were reported at 31.43% of 2018 value added in manufacturing in Sri Lanka. Total expenditure on food, beverage and tobacco as part of GDP in Sri Lanka from 2016, food, beverage and tobacco expenditure accounted for approximately 20.3% of the GDP in Sri Lanka and was estimated to reach about 26.9% in 2021 (Amarasinghe, 2016). Given that the results from the empirical studies on the microeconomic determinants and consequences of inventories are somewhat contradictory, most of those studies used to gather their data from manufacturing companies and limited other studies have focused on beverage, food and tobacco companies in Sri Lanka's perspective (Sritharan & Sivalingam, 2020). So this study aims to fill the above research gap by analyzing the impact of inventory management on financial performance and will try to shed more light to test this issue with recent samples of beverage, food and tobacco companies in Sri Lanka.

1.2. Statement of the problem

Inventory is a vital part of current assets, and huge funds are committed to inventories to ensure a smooth flow of production and meet customer demand (Nestor and Uche, 2020). The challenge is to balance the supply of inventory with demand. A company will ideally want to have enough inventories to satisfy the demand of its customers. On the other hand, the company does not want to have too much inventory staying on hand because of the cost of carrying inventory. Most organizations fail to study their investment in inventory as is found in the investigation into maximized profit (Etale & Bingilar, 2016 cited by Sitienei & Memb, 2015). This is unsuccessful because improving the way an organization controls and manages inventory may have the greatest potential for improving the organization's bottom line (Bai and Zhong, 2008). Beverage Food and Tobacco is an essential sector in Sri Lanka and it plays an important role in terms of their considerable contribution to the growth in Gross Domestic Product (GDP) of Sri Lanka (Amarasinghe, 2016). Increased demand has increased sales for Beverage, Food and Tobacco companies but it positions a great challenge with regard to inventory management of these companies in the country (Labor Market and Socio-economic Information Directorate). The fast demand for Beverage, Food and Tobacco sector has

increased the inventory problem because the organizations need effective and efficient inventory management. Organizations at the right times do not manage their inventory holding and it results in stocking and causing stay production, thereby it resulting in poor performance of the organization financially and therefore this creates a relationship between inventory management and performance of the organization (Sahari et al., 2012). The developing countries give little attention to that inventory management problem, and most researchers have done this research in different environmental situations that are not linked with the developing countries, like Sri Lanka and also given gaps in an empirical review such as contradictions of most researchers' findings with each other's, which gave a greater contribution to the research problem, "the impact of inventory management on the financial performance of listed beverage, food and tobacco sector companies in Sri Lanka."

1.3. The research question of the study

The study was conducted to answer the following research question, "what is the impact of inventory management on the financial performance of listed beverage, food and tobacco companies in Sri Lanka?"

1.4. The objective of the study

The main objective of this study is to identify the impact of inventory management on the financial performance of listed beverage, food and tobacco companies in Sri Lanka.

2. Literature review

2.1. Theoretical framework

The theory of inventory management was propounded by Nowicka-Skowron (2007) cited by (Garba, 2020). Observation of almost any company's balance sheet, for example, reveals that a significant portion of its assets comprises inventories of raw materials, components and subassemblies within the production process, and finished goods. Most managers don't like inventories because they are like money placed in a drawer, assets tied up in investments that are not producing any return and, in fact, incurring a borrowing cost. They also incur costs for the care of the stored material and are subject to spoilage and obsolescence. A large inventory requires less replenishment and may reduce ordering costs because of economies of scale. Because of their practical and economic importance, the subject of inventory control is a major consideration in many situations.

2.2. Inventory management and financial performance

Falls in the level of inventories is positively related to the financial performance of a firm. Lower inventory to sales ratio and lower the days taken to convert inventory to sales is called higher inventory turnover and it has positive effects on the financial performance of a firm (Shah & Shin, 2007). Inventory turnover is linked to firm performance and inventory turnover has a negative relationship with the firm's performance (Rodrigo, 2020). Businesses must maintain higher inventory levels to increase performance as it avoids costs of possible disturbances and possible loss of business due to shortage (David M. Mathuva, 2010). Management of an organization should monitor and control inventory systems to maintain stability in their production to increase profitability and effectiveness (Nnaemeka Augustine, 2013). Effective inventory management has a positive effect on the profitability of a firm in US manufacturing firms (Shin et al., 2015). Inventory turnover doesn't relate to the firm's financial performance and inventory conversion days play a role in the relationship up to a certain degree (Folinas et al., 2014). There is an impact of inventory management on the firm's financial performance and inventory turnover ratio and it is used to measure inventory management is linked to the net profits of steel manufacturing companies in India (Nabi, 2018). The inventory turnover

ratio and the profitability of a firm have a positive relationship whereas there is a negative relationship between the inventory conversion period and the profitability of a firm (Sunday & E. Joseph, 2017). Poor inventory management has an uncertain influence on the financial performance of firm and financial ratios are not comprehensively influenced by poor inventory management (Rodrigo, 2020).

3. Methodology

3.1. Population and sample

The population of this study consists of all beverage, food and tobacco companies listed under the Colombo stock exchange in Sri Lanka. It includes 50 companies to the date of March 2021. The sample of this study is limited to the 42 listed beverage, food and tobacco companies in Sri Lanka due to the lack of available data for the sample period.

3.2. Data collection

Historical data were mainly used for this study. Primarily, data were obtained from the annual reports of the listed beverage, food and tobacco companies in Sri Lanka for the period of five financial years from 2016 to 2020.

3.3. Data analysis

The research used the E-Views software to analyze the collected data in the study. Descriptive statistics, multiple regression and correlation analysis have been used to study the impact of inventory management on the financial performance of listed Beverage, Food and Tobacco sector companies in Sri Lanka.

Table 1: Variables and the Measurement of the Variables

	Definition	Measurement
Dependent Variables		
Return on Assets	How much return generated from assets of a firm	Net Income/ Total Assets
Cash Flow from Operations	Cash generated from core activities of a firm	Cash Flow from operations / Net Income
Independent Variables		
Inventory Conversion Period	How fast Inventories are converted into Sales	(Average Inventory / Cost of sales) * 365
Inventory turnover	How many times inventory is turned into sales in a year	Cost of sales / Average Inventory
Inventory Leanness	Percentage of closing inventory on total asset	Closing inventory / Total Assets
Control Variables		
Firm Size	The number of Total assets in a firm	Natural Logarithm of Total Assets
Firm growth	Sales growth of a firm	$(Sales_t - Sales_{t-1}) / Sales_{t-1}$
Operating Efficiency	Reduction in operating expenses compared to sales	Operating Expenses / Net Income

Source: Author constructed

The conceptual framework between the dependent and independent variables is given in below. Control variables are used to give a strong understanding and influence of independent variables to provide an accurate result.

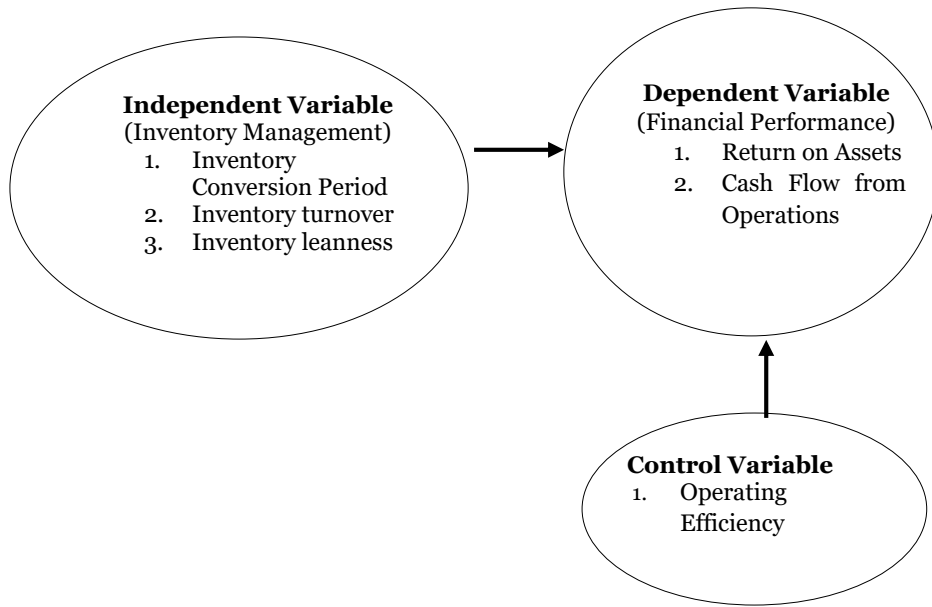


Figure 1: Conceptual Framework

4. Data analysis and interpretation

Table 2: Descriptive Statistics

Variables	N	Mean	Minimum	Maximum	Standard Deviation
ROA	210	0.046	-0.133	0.211	0.076
CFO	210	0.071	0.105	0.263	0.085
ICP	210	43.742	19.140	70.569	12.556
IT	210	9.900	4.109	18.647	3.222
IL	210	0.079	0.035	0.140	0.027
FS	210	17.921	13.690	23.582	2.571
FG	210	0.018	-0.194	0.217	0.104
OE	210	0.605	-2.579	3.142	1.174

Source: Survey data

The mean (average) ROA and CFO are 0.046 and 0.071 for the whole sample and the standard deviation are 0.076 and 0.085, this accounting measure ROA and CFO are used as a financial performance measure, which varies from -0.133 to 0.211 and 0.105 to 0.263 with the mean of 0.046 and 0.071 explain that beverage food and tobacco sector firms have an average accounting performance. The difference in ROA and CFO ranged from profitability of 0.211 and 0.263 (maximum values) for some firms to a loss of 0.133 and 0.105 (minimum values) for other firms. Further, IT and ICP have mean values of 9.900 and 43.742 respectively. The implication is that on average, sampled firms turn over the inventory about 9 times in any year. It also means that it takes about 43 days to convert stock from raw materials to finished goods for sale. The statistics also show that the IT and ICP have minimum values of 4.109 and 19.140 respectively. The maximum values for the variables also recorded were 18.647 and 70.569. The standard deviation also stood at 3.222 and 12.556. However, the standard deviation for ICP is low compared to the mean value which means that there is a significant variation in the number of days beverage; food and tobacco companies in the study hold stock. The descriptive statistics of the firm's inventory leanness as indicated in the table show that the mean proportion of the inventory leanness was 0.079. Results from the table further indicate a maximum and minimum of 0.140 and 0.035 respectively. The standard deviation of 0.027 also shows a significant disparity among the beverage, food and tobacco companies in the volume of inventory as a percentage of total assets of the company.

Table 3: Regression Analysis

Variable	ROA (Model 1)			CFO (Model 2)		
	Coefficient	Std. Error	Prob.	Coefficient	Std. Error	Prob
C	-0.076	0.057	0.179	-0.142	0.076	0.066
ICP	-0.002	0.000	0.001	-0.001	0.001	0.025
IT	0.007	0.002	0.001	0.009	0.002	0.000
IL	0.225	0.177	0.205	-0.099	0.237	0.676
FS	0.006	0.002	0.004	0.010	0.003	0.001
FG	0.136	0.024	0.000	0.106	0.026	0.000
OE	0.007	0.003	0.008	0.009	0.003	0.003
R-squared	0.491	Durbin-Watson stat	1.616	0.891	Durbin-Watson stat	2.122
Prob(F-statistic)	0.000			0.000		

Source: Survey data

According to table Model 1, table II illustrates coefficient of determination (R²) is 49%. That represents the explanatory power of independent variables. Model 2, coefficient of determination (R²) is 89%. That represents the explanatory power of independent variables. It shows how much proportion of variation in the dependent variable can be predicted through the independent variables. The overall model is statistically significant because of F-statistic probability value is less than the 0.05 levels in this model 1 and Model 2. Table Model 1 and 2 represents the Durbin Watson statistic value of 1.616 and 2.122 respectively.

According to the regression analysis inventory conversion period has a negative impact on the return on assets and it is statistically significant with ROA individually. If ICP increases by 1 unit, the ROA decreases by 0.002. The inventory conversion period has a negative impact on the cash flows from operations and it is statistically significant with CFO individually. If ICP increases by 1 unit CFO decrease by 0.001. Inventory turnover has a positive impact on the ROA and CFO of beverage, food and tobacco companies and it is statistically significant for both ROA and CFO. If IT increases by 1 unit ROA increases by 0.007 and CFO increases by 0.009. Inventory leanness is not statistically significant with ROA and CFO. As a control variable firm size has a positive impact on ROA and CFO and it is statistically significant with ROA and CFO. If FS increases by 1 unit ROA increases by 0.006 and CFO increases by 0.010. Firm growth has a positive impact on ROA and CFO and it is statistically significant with ROA and CFO. If FG increases by 1 unit ROA increases by 0.136 and CFO increases by 0.106. Operating efficiency has a positive impact on ROA and CFO and it is statistically significant for both ROA and CFO. If OE increases by 1 unit ROA increases by 0.007 and CFO increases by 0.009.

Based on the results of the above table, which can be developed into the following equation.

$$ROA = C + B_1 ICP + B_2 IT + B_3 IL + B_4 FS + B_5 FG + B_6 OE + \epsilon \quad (1)$$

$$ROA = -0.076272 - 0.001684 ICP + 0.006738 IT + 0.224875 IL + 0.005819 FS + 0.135962 FG + 0.007250 OE + \epsilon \quad (2)$$

$$CFO = C + B_1 ICP + B_2 IT + B_3 IL + B_4 FS + B_5 FG + B_6 OE + \epsilon \quad (3)$$

$$CFO = -0.141506 - 0.001286 ICP + 0.008974 IT - 0.099310 IL + 0.010067 FS + 0.106379 FG - 0.009374 + \epsilon \quad (4)$$

Table 3: Correlation Analysis

	Variable	ICP	IT	IL	FS	FG	OE
Coefficient	ROA	-0.518	0.485	0.044	0.054	0.385	0.474
	CFO	-0.498	0.498	-0.052	0.053	0.313	0.444

Source: Survey data

According to the correlation analysis, the inventory conversion period has a moderate negative relationship with the return on assets and a weak negative relationship with the cash flows from operations. The inventory turnover has a weak positive relationship with the return on assets and the cash flows from operations. The inventory leanness has a weak positive relationship with the return on assets and a weak negative relationship with the cash flows from operations. As a control variable firm size has a weak positive relationship with the return on assets and cash flows from operations. The firm growth has a weak positive relationship with the return on assets and cash flows from operations. The operation efficiency has a weak positive relationship with the return on assets and the cash flows from operations.

4.1. Testing hypotheses

The following hypotheses of the research have been tested according to the findings of this study to identify the impact of inventory management on the financial performance of listed beverage, food and tobacco companies in Sri Lanka.

H1: There is a significant impact of the inventory conversion period on the financial performance of beverage, food and tobacco companies in Sri Lanka.

Based on the findings of this study there is a significant negative impact of ICP on ROA and CFO. Therefore, accept the alternative hypothesis because there is a negative impact of ICP on the financial performance of listed beverage, food and tobacco companies in Sri Lanka.

H2: There is a significant impact of inventory turnover on the financial performance of beverage, food and tobacco companies in Sri Lanka.

There is a significant positive impact of IT on the both ROA and CFO. Therefore, accept the alternative hypothesis because there is a significant positive impact of IT on the financial performance of listed beverage, food and tobacco companies in Sri Lanka.

H2: There is a significant impact of inventory leanness on the financial performance of beverage, food and tobacco companies in Sri Lanka.

There is no significant impact of IL on ROA and CFO. Therefore, reject the alternative hypothesis. So, there is no significant impact of IL on the financial performance of listed beverage, food and tobacco companies in Sri Lanka.

4.2. Discussion of findings

The findings from hypothesis 1 reveal that the inventory conversion period has a negative significant impact on the return on assets and the cash flows from operations. This implies that the long days it takes beverage, food and tobacco companies to turn raw materials purchased into finished goods and sold to customers the lower the financial performance company will make. This is consistent with the works of Rodrigo (2020), which show a significant negative impact on inventory conversion period and financial performance and also consists of previous studies such as Mohamad et al (2016) and Obeidat (2020). This result does not confirm some previous studies such as Abioro (2013).

The test of hypothesis 2 shows a significant positive impact on inventory turnover with the return on assets and cash flows from operations. The implication is that beverage, food and tobacco companies that have higher inventory turnover tend to have better financial performance than those with lower inventory turnover. In general, higher inventory turnover is better because inventories are the least liquid form of asset. This consist of the works of Moridipour and Mousavi (2014) and Koliass, Dimelis and Filios (2011), which reveal a significant positive impact of inventory turnover on financial performance. However, these findings do not conform to Sitienei and Memba (2016).

The findings from hypothesis 3 reveal that inventory leanness has no significant impact on the return on assets and cash flows from operations. This implies that the level of closing stock in the warehouse at the end of a firm's financial year does not impact financial performance. This result consists of Sunday and E. Joseph (2017) and reveals no significant impact of inventory leanness on financial performance. This result does not conform with some previous studies like Eroglu and Hofer (2011).

Results of control variables in the first model and the second model provide that there is a significant positive impact of firm size, firm growth and operating efficiency on return on assets and the cash flows from operations. These results consist of Rodrigo (2020), which

indicates that the larger the firm size, the larger the return generated from assets of the firm and cash flows from operations. The higher operating efficiency of a firm directs that hither the financial performance of the firm and increasing firm growth increases the financial performance of beverage, food and tobacco companies in Sri Lanka.

5. Conclusion and recommendation

The study aimed to investigate the impact of inventory management on the financial performance of listed beverage, food and tobacco companies in Sri Lanka. Studies conducted in Sri Lanka have mainly tested the effect of inventory management by taking profitability ratios as a measurement of financial performance. After that, data was collected for this study using secondary data from published annual reports of 42 beverage, food and tobacco companies for five years. Panel data regression analysis was used to analyze the collected data and data was analyzed using descriptive, correlation and regression analysis. The results of this study concluded that the inventory conversion period has a significant negative impact on return on assets and cash flow from operations. Inventory turnover has a significant positive impact on return on assets and cash flow from operations. Inventory leanness has no significant impact on return on assets and cash flow from operations. Among control variables used in the study, firm size, firm growth and operating efficiency had a significant positive impact on return on assets and cash flows from operations. This study concludes that inventory management has a vital role to play in the financial performance of companies. Hence companies' inventory systems must maintain appropriate inventory levels to enhance financial performance and reduce the inventory costs associated with inventory holding. This study provides further understanding of the impact of inventory management on the financial performance of listed beverage, food and tobacco companies in Sri Lanka. This study will be an important indicator for firms for managing their inventories, especially in the beverage, food and tobacco sectors.

The following recommendations are made based on the findings of this study. This study recommends managers of a firm,

- To reduce the time taken to convert inventories into sales. By doing so, they can increase the financial performance of a firm, since the lower the days taken to convert inventories to sales, the higher the financial performance of the company.
- They should take steps to increase the size of their firms as the findings of this study indicate that the firm size has a positive impact on the financial performance of the company.
- We should embrace modern production technology that will enhance faster production to shorten the inventory conversion period, which will in turn improve inventory turnover and the financial performance of the company.

The above-mentioned Methods can be used by a company to manage their inventory and can help to improve the financial performance of the company.

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