

Inventory Management and Its Impact on the Firm Performance

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Abstract:

Inventory management is a challenging area so this study will illustrate the ways of managing inventory. The main aim of this study is to examine the impact of inventory management which will be measured by inventory turnover on firm's performance which will be measured by firm's profitability using return on assets and return on equity. The data was collected from the Egyptian stock exchange market. The analysis of this study was done using (Eviews 12) for both descriptive statistics and multiple regression. The results of this study indicate that there is a positive correlation between inventory turnover and Return on assets ($R^2=0.769321$) and also with Return on Equity ($R^2=0.669593$) which were found to be statistically significant at 5% level.

Keywords: Inventory management - Inventory turnover - Firm performance - Profitability.

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Introduction

Inventory management is critical in the financial performance of a business since it is at the top rank in the most valuable physical assets in the balance sheet. For this reason, inventory management should be well managed and apply replenishment rules for each item such as the strategies that will be mentioned. The right stock should be available in the right place and in the right quantity, acquired at the lowest price possible. Stock-outs mostly occur when there is demand in the market and there is little stock for fast selling items, which would lead to lost sales and customer loyalty. High stock in the company than needed leads to higher storage costs, handling costs and interests from the short-term borrowings. Eventually when selling, a loss can be experienced once materials are sold at a lower price than normal. The main goal of inventory management is minimizing total inventory costs and maximizing profits in operations. Many cases have been experienced where inventory management and inventory planning decisions have been effective with the assistance also of inventory planning models developed and implemented. A balance has to be achieved between costs of acquiring and that of holding inventory as they are the ones that significantly affect the company's' profitability. The inventory management systems make specifications on the order quantity and re-order point with the intention to make profits. Economic order quantity (EOQ) should be ordered at once which then affects the inventory ordering and holding cost. This will have an effect on the profitability of the company. That is if few large orders are made, annual ordering costs tend to be lower, but the annual holding costs are high. Conversely, frequent small orders increase the ordering costs, but holding costs tend to be lower. Hence for a company to be profitable there is needed to increase the order size and obtain volume discounts and off-set by lowering holding costs. Profitability of a company would be achieved at optimum level of relevant costs which are holding and ordering costs.

Inventory is a vital part of current assets mainly in manufacturing concerns. Huge funds are committed to inventories as to ensure smooth flow of production and to meet consumer demand. However, maintaining inventory also involves holding or carrying costs along with opportunity cost. Therefore, Inventory management plays a crucial role in balancing the benefits and disadvantages associated with holding inventory. Efficient and effective inventory management goes a long way in successful running and survival of a business firm, when organizations fail to manage their inventory effectively they are bound to experience, stock out, the decline in productivity and profitability, customer dissatisfaction. Thus the study seeks to investigate the effect of inventory management on the organizational performance of the selected manufacturing firms. The main aim of this research

is to examine empirically the relation between inventory management and financial performance in Egypt companies for the period ranging from 2013 to 2021.

Research problem and question:

The paramount matter of the operation management literature for last two decades has to seek the operations excellence in the organizations.

The firms who applied all the techniques which will be mentioned later to enhance the efficiency and effectiveness of their operations achieved better market share, profitability and products of better and superior quality. This study is inspired to seek support for this hypothesis to visualize results of enhancing the inventory management. Plethora of research has been perpetrated to estimate the influence of performance of inventory management over financial performance has been carried out in developed markets and developed economies. Our study aims to augment the evidence of inventory management on firm performance in a developing market environment. (Nawaz et al., 2016) proved that the profit is one of the main goals of the establishment of every business entity. Without profit, the company cannot fulfill other objectives, namely concerning corporate social responsibility.

Profit which is the company's main goal can be achieved by selling goods or services. The greater the sales volume of goods and services, the greater the profit generated by the company. The business that is often carried out by companies to increase profitability is to increase inventory sales so that inventory turnover also increases. Inventory is one of the most important asset posts because inventory is a post of current assets which is of considerable value. The higher the turnover of the inventory, the higher the cost which can be suppressed so that the greater the profitability of a company. Conversely, if the slower turnover of the inventory, the smaller the profit gain. (Nasution, 2020). However, Inventory that is well managed can have some great impact on the profits of a company due to the ability of the company to recognize areas for reducing the cost of storage of stock and ensure that there is a smooth flow in production activities (Cheung et al., 2004). Bourne and (Walter, 2005) state that there is a direct relationship between proper management of inventory and the performance of a company (Abrams et al., 2005; Marota, 2017). When companies practice inadequate inventory management techniques it is obvious that the result there is an increase in waste due to the increase in the cost of storing inventory and the pronounced risk of exposing the inventory to damages or losses (Lwiki et al., 2013).

Therefore, effective performance can be achieved if companies can develop strategies for attaining the maximum possible revenue within the minimum cost.

(Aljaaidi & Bagais, 2020). Effective inventory management allows an organization to meet or exceed customer expectations by creating stocks of each product that maximize net income. Corporate policy that promotes efficient inventory management is the first component of successful inventory management (Waddock & Graves, 1997). A study conducted in Kenya by (V.W. & Namusonge, 2015) identified that inventory management affects competitive advantage of manufacturing firms. The same study further concludes that the firm is able to compete based on quality and delivery of customer orders on time. Competitive advantage comprises capabilities that allow an organization to differentiate itself from its competitors and is an outcome of critical management decisions (Li et al., 2006).

The relation between inventory management and firm performance affect the inventory management decision. Most previously Researches were held in developed countries. However, limited Research was held in emerging firms. Emerging firms have different characteristics such as different political, economic and institutional conditions in general in Egyptian setting in specific to investigate the effect of Inventory management on firm performance in financial sector, although research problem can be summarized in the following question: Does inventory management has an impact on firm performance?

Research Hypotheses:

It's based on traditional method theory. The study predicts that inventory turnover negatively affects return on equity (ROE) and return on assets (ROA).

The following hypothesis is:

H1. Inventory Turnover has positive effect on ROE.

H2. Inventory Turnover has positive effect on ROA.

Literature review:

(Liu et al., 2020) this paper investigated the effect of firm-level operating flexibility on stock performance during the COVID-19 outbreak in China. The researchers used all the Chinese A-share listed companies on the Shanghai and Shenzhen stock exchanges as initial samples. All data and variables are obtained from the China Stock Market & Accounting Research database. The relevant financial data are calculated using the reports for the third quarter of 2019. The firm level operating flexibility was measured by firm level inflexibility and the stock performance was measured by ROS. Coming up that the sudden outbreak of COVID-19 has seriously affected the normal production and operating activities of firms and has induced a massive shock on financial markets, finding that firms with high operating flexibility have better stock performance than those with lower operating flexibility because of the risk hedge value of contraction

options embedded in firm operating flexibility. (Karki, 2020) examined the effect of inventory management on profitability in Nepal. Listed in Kathmandu from 2071 fiscal year to 2075 fiscal year. The secondary data had been collected from the annual financial statements using regression technique considering statistical patterns Minitab 16 version to analyze the data and also finished goods inventory values were identified and employed as independent variables while net income was employed as proxy of profitability. Concluded that there is a positive impact of inventory management upon the profitability of uniliver Nepal. (Nasution, 2020) determined the effect of inventory turnover on profitability in automotive companies listed on Indonesia stock Exchange from 2015-2017. Profitability is measured by Return on Assets (ROA) which was the dependent variable. The data used are the financial statements of each sample company, which are obtained through ICMD (Indonesia Capital Market Directory) The analytical method used in this study is a quantitative method The variables of this study are inventory turnover, and Return On Assets with a total sample per year of 18 companies. The results of this study are inventory turnover has a negative effect on Return on Assets. (Aljaaidi & Bagais, 2020) investigated the association between Days Inventory Outstanding (DIO) and firm performance of energy industry in Saudi Arabia, from 2013-2019. The sample comprises of 21 firm year observations. Firm performance was measured by 2 dependent variables ROA and ROE. The Regression results indicated that DIO was negatively associated with firm performance. (Vikas & Sandeep Malik, 2020) examined the effect of a well-managed inventory on a manufacturing company as well as to enhance the performance of inventory management in an organization and to reduce risk those are facing inventory management. Data used were collected through personal interviews, discussion with Finance-Executive and from the company for the past years since 2014-2019. This paper used ABC analysis and economic order quantity (EOQ) to test the effect. Therefore, implementing advanced inventory management always sounds good in theory, in practice, the balance of cost and benefit should be considered. (Golas & Bieniasz, 2016) determined the effect of inventory management on profitability. Listed in Poland from 2005 to 2017. The method that was used in this study is inventory-performance relationship analysis and the regression models (INVIC, RMIC, WIPC, and FGIC) were measured by ROA. As a conclusion for this study was that the day's sales of inventory for total stocks tended to become shorter due to reduction in the days in inventory ratio for materials and finished products also the improvement that was found in inventory management efficiency was positively correlated with financial performance. (Nugroho et al., 2020) investigated the association among supply chain management (SCM), just in time and quality management and also their

impact on organizational performance. 650 questionnaires have been received from the 2780 questionnaires sent to the different corporations in Indonesia. Corporations lie in the range of 100 to 2000 workforces and the median is 100 personnel. Further to check reliability analysis was conducted by making use of Cronbach's Alpha in order to make sure that components used to operationalize just-in-time, total quality management, supply chain management and performance were evaluated to check that the components are from statistical errors. Recognizing SC collaborations is not just an emphasis on quality but also a primary factor of FP. Either through cooperation and assimilation of operations across the SC or by the acknowledgement of the skills of direct manufacturers, recognizing the aspects of the SC has a positive effect on FP. Moreover, policymakers should focus on the encouragement of the firms to introduce efficient manufacturing through JIT and TQM to improve performance from all aspects. (Khan et al., 2019) investigated the effect of various inventory management factors on firm's efficiency. These factors included capacity utilization, inventory accuracy, lean inventory, and stock availability. Firm's efficiency was measured by firm performance and profitability. Data was collected by questionnaire from 250 individuals from different departmental stores in Karachi in Pakistan. Data was analyzed using structural equation modeling. The results showed inventory accuracy, lean inventory, and stock availability has positive and significant impact on efficiency. However, Capacity Utilization doesn't seem to affect efficiency. Stock availability can lead to effective inventory management. (Opoku et al., 2020) examined the effect of different inventory management practices on the operational performance of manufacturing firms. Listed in Ghana between 2019 and 2020. The methods used in the study included: research design and approach, population and sample size, data collection instrument, validity and reliability of data collection instrument and data processing and analysis. The variables that was used in the study are: SPP, ABC, VMI, EOQ, and MRP AND JIT. The study concluded that any unit increase in any of the practices would lead to significant and positive unit increase in operational performance of the firm's studied. (George, 2019) analyzed whether the inventory management has any direct impact on the net profits of the company. Inventory management was measured by inventory conversion cycle and inventory turnover ratio; net profits measured the firm performance. Five years' financial data of five selected companies were considered for the study. Tools such as ratio analysis, trend analysis and correlation analysis have been used for analyzing the data. The study showed that inventory conversion cycle is directly related to the net profits of the company. (Eveline et al., 2019) investigated the effect of SAP on inventory management which recommended using SAP appropriately in managing their procurements for an efficient

operation. Also recommended EOQ as an important technique in inventory management that firms should be ensured to order the recommended lot size of as determined by the EOQ. (Mulandi & Ismail, 2019) investigated the effect of inventory management practices on performance of commercial state corporations. Listed in Kenya between 2016 and 2019. The specific objectives were used to determine the effect of just-in-time inventory system on performance of commercial state corporations. The variables of the study included IT based system: JIT, VMI, and ERP system of managing inventories techniques of forecasting demand. Concluded from this research that MRP has positive and significant relationship with performance of commercial State Corporation. (Qu et al., 2019) investigated the effect of inventory management factors on technical universities. These factors were made up of accuracy, capacity, investment, shrinkage, performance and turnover. Data was collected by the use of Likert scale questionnaire from 399 various units in the technical universities in Ghana. The Smart PLS was employed to analyze the data. A well-organized inventory control system does not deal in the same way with all products, but it applies methods of control and analysis in agreement with the economic importance related to each of the product. Inventory management derives from the importance of stock for the company, and therefore, the need to manage and control them is essential to maintain a level of inventory that allows at a minimum cost and maximum service to customers. The basic reasons for inventory management are: protect against uncertainties, allow production and purchase under economically advantageous conditions, cover anticipated changes in demand and supply and maintain transit between production and storage points. H1: There is a direct significant relations H2: There is a direct relationship between inventory turnover and organizational performance H3: There is a direct relationship between inventory accuracy and organizational performance H4: There is a direct relationship between inventory shrinkage and organizational performance H5: There is a negative relationship between inventory investment and organizational capacity H6: There is a negative relationship between inventory turnover and organization capacity. H7: There is a negative relationship between inventory accuracy and organizational capacity. H8: There is a positive relationship between inventory shrinkage and organizational capacity. (Atnafu & Balda, 2020) aimed to examine the impact of inventory management practice on firms' competitiveness (price, quality and delivery) and organizational performance. Data for the study were collected from 188 micro and small enterprises (MSEs) operating in the manufacturing sub-sector in Ethiopia and the relationships and hypothesis proposed in the conceptual framework were tested using structural equation modeling (SEM). Inventory management was measured

by ABC, EOQ, JIT and vendor managed inventory. Firm performance was measured by profitability, level of output, cost efficiency and market share. The results indicate that higher levels of inventory management practice can lead to an enhanced competitive advantage and improved organizational performance. Also, competitive advantage can have a direct, positive impact on organizational performance. (Riza et al., 2016) tested inventory turnover (IT) as a performance measure in manufacturing processes because IT ratios are critical in the manufacturing industry and publicly available objective measures. Using the data of 421 manufacturing companies in Korea from 2010 to 2018, it conducted an extensive analysis of the factors affecting it by segment and its correlation with other financial ratios. They Compared performances between the top and bottom companies determined by Altman's Z score approach. it found that, for the overall manufacturing industry, IT ratios were negatively correlated with gross margin and debt cost, but positively correlated with capital intensity, although the results varied by segment. (Sunday & Joseph, 2017) examined the inventory management on SME's profitability. Listed in Nigeria. Descriptive research design and stratified random sampling methods were used to investigate the study and also multiple regression analysis was used to test the model established using these variables: profitability (PFT), inventory turnover (IT), inventory conversion period (ICP) and inventory leanness (ILN). They found that the inventory turnover had a positive relationship with the financial performance of SME's and also found that there was a negative relationship between inventory leanness and profitability. (Thai & Jie, 2018) investigated the influences of total quality management (TQM) and supply chain integration (SCI) practices on firm performance (FP) of container shipping industry in Singapore. Methodology used was survey it was conducted with 159 container shipping companies in Singapore to examine the interrelationships between SCI and TQM practices and FP. The results suggested that both TQM and SCI practices have positive effects on service quality and FP but at different extents, while TQM also contributes positively to SCI. (Elking et al., 2017) investigated the impact of focal firm and supplier financial dependence on focal firm financial performance using the lens of resource dependence theory. Listed in United States of America. They used an innovative supply chain structure data set provided by Bloomberg, which allows implementation of unique measures for focal firm and supplier financial dependence within a supply chain Focal firm financial dependence is calculated by identifying the percentage of the focal firm's cost of goods sold spent with each supplier in 2012. Taking a sample of 3,638 buyer-supplier relationships in the U.S. manufacturing firms that are presented in both Composted and Bloomberg's SPLC supply chain database module during 2012. Their analysis found that both buyer and supplier financial dependence impact a buyer firm's

financial performance. Specifically, they found that higher levels of buyer dependence on supply chain partners negatively affect the financial performance of the focal firm, while supplier dependence on the focal firm positively affects the financial performance of the focal firm. Interestingly, they found that the buyer's dependence has a much greater magnitude of impact than the suppliers' dependence. (Golas & Bieniasz, 2016) determined the relationships between the results of inventory management and the financial performance of enterprises. Listed in Poland between 2005 and 2010. The research was based on the econometric analysis of the influence of the length of inventory cycles on financial performance of branches measured with return on sales, assets and equity, although the effectiveness of inventory management was measured with the length of inventory cycles. Regression analysis was applied to determine the strength and direction of the influence of the results of inventory management, measured with the length of cycles. Concluding from this research that the inventory management was directly correlated with financial effectiveness of enterprises and it should be subject to optimization. (Elzamly et al., 2019) examined the relationship between inventory management and company's performance. Listed in Malaysia between 2008 and 2012. The relationship was determined based on inventory days and return on asset (ROA) analysis, and inventories days can be defined as to measure how many days on average it takes for the inventory to turnover and also they made sure that the cost of over or under stocks are always low. Concluded that the company had a few inventory problems such as unorganized inventory arrangement, large amount of inventory days / no cycle counting and no accurate records balance due to unskilled workers and also proved that there was a significant relationship between return on asset (ROA) and inventory days. (Nawaz et al., 2016) empirically evaluated the impact of inventory performance on firm performance in Pakistan for non-financial firms listed on KSE-100 index for the period 2010-2014. Correlation indicated that firm performance was measured by ROA and ROE and both have weak positive relationship with Inventory turnover ratio which measured inventory performance. ROE has a positive weak relationship with Inventory turnover, total assets and Leverage ratio. Total Asset has positive impact and Financial Leverage has significant negative impact on ROA. Inventory performance has positive impact on ROE significantly and Total Asset has positive impact and FLR has significant negative impact on ROE. (Prempeh, 2015) evaluated the impact of efficient inventory management on the profitability of manufacturing firms in Ghana. A cross sectional data from 2004 to 2014 was gathered for the analysis from the annual reports of four manufacturing firms listed on the Ghana Stock Exchange. Financial performance was measured by return on assets. And the

Measures of profitability were examined and related to proxies for efficient inventory management by manufacturers. The study revealed that the main variable raw materials inventory management designed to capture the effect of efficient management of raw material inventory by a company on its profitability is significantly strong and positive and impacts on the profitability of the manufacturing firms in Ghana. (Lwiki et al., 2013) examined the impact of inventory management practices on the financial performance of sugar manufacturing firms in Kenya. The research survey was conducted in all the eight operating sugar manufacturing firms from the period 2002- 2007. The primary data was collected using structured and semi- structured questionnaires administered to key informants in the organizations. Secondary data was obtained from annual financial performance statements available in the year Book sugar statistics. Descriptive statistics was used to test the impact of inventory management practices and Correlation analysis was used to determine the nature and magnitude of the relationship among inventory management variables. The results indicate that there exists a positive correlation between inventory management and financial performance which was measured by Return on Sales and with Return on Equity. (Panigrahi, 2013) examined the relationship between inventory conversion period & firms profitability. The dependent variable, gross operating profit is used as a measure of profitability & the relation between inventory management & profitability is investigated for a sample of five top Indian cement companies over a period from 2001-2010. This study employs regression analysis to determine the impact of inventory conversion period over gross operation profit taking current ratios. The relation between firm size & production was positive so as firm size increases profitability increases. The relative between current ratio & GOP was negative. (Sahari et al., 2012) this study empirically examined the relationship between inventory management and firm performance and capital intensity on a sample of financial data for 82 construction firms in Malaysia for the period 2006–2010. By employing regression and correlation techniques. Inventory management is measured by JIT and inventory days' techniques, firm performances measured by ROA. It was found that inventory management is positively correlated with firm performance. In addition, the results indicate that there is a positive relationship between inventory management.

According to our literature review that was constructed from the previous studies, we concluded that 56% of the articles estimated the relationship between inventory management and firm performance including only one negative relationship which was examined by (Aljaaidi & Bagais, 2020). Also we found that 28% of the articles estimated the relationship between inventory management and profitability we conducted that the ratio of negative relationships to positive

relationships is 2:4. The remaining percentage is 16% which belongs to the impact of inventory management on financial performance which was the least percentage. According to the previous percentage, the impact of inventory management on financial performance is the most suitable topic to be examined in our research.

Data Analysis:

The analysis was done for both descriptive statistics and multiple regression models using the (Eviews 12). The first section presents the descriptive statistics for some selected variables which are: the minimum (Min), maximum (Max), mean (M), standard deviation (SD), and coefficient of variation (CV). In the second section, we provided guidelines for reporting the results of hypothesis testing using the multiple linear regression analysis including regression coefficients and coefficient of determination and that was carried out by investigating the effect of Debt to Assets Ratio, Inventory Turnover, log assets on ROA, and ROE.

Descriptive Statistics

Some descriptive statistics for the selected variables were calculated and reported in table (1). These statistics are the minimum (Min), maximum (Max), mean (M), standard deviation (SD), and coefficient of variation (CV).

Table (1): Descriptive statistic for the selected variables

Variable	Symb.	Min	Max	Mean	SD	CV
<i>ROE</i>	Y1	0	0.55	0.2395	0.14397	60.11%
<i>ROA</i>	Y2	0	0.28	0.1233	0.08396	68.09%
<i>Debt To Assets Ratio</i>	X1	0.02	0.86	0.3678	0.25421	69.12%
<i>Inventory Turnover</i>	X2	0.1	9.86	4.3193	3.22836	74.74%
<i>Log Assets</i>	X3	16.47	23.78	20.7621	1.62268	8.13%

The basic descriptive statistics for the dependent variables were as follows: for “*ROE*” we have ($M = 0.2395, SD = 0.14397, CV = 60.11%$), and for the “*ROA*” we have ($M = 0.1233, SD = 0.08396, CV = 68.09%$). The descriptive statistics for the independent variables were as follows: for “*Debt To Assets Ratio*” we have ($M = 0.3678, SD = 0.25421, CV = 69.12%$), for “*Inventory Turnover*” we have ($M = 4.3193, SD = 3.22836, CV = 74.74%$), and for the “*Log Assets*” we have ($M = 20.76, SD = 1.623, CV = 8.13%$).

Regression Analysis

Researchers provided guidelines for evaluating and reporting results of hypothesis testing, including regression coefficients and coefficient of

determination (R^2). Regression coefficients refer to the estimates of the relationships between the model's constructs. Those coefficients range from +1 to -1, where +1 means a strong positive relationship, 0 means a weak or non-existence relationship, and -1 means a strong negative relationship. Coefficient of determination (R^2) refers to the effect of independent variables on the dependent variables which is one of the quality measures of the regression model. R^2 Estimates vary from 0 to 1, in which 0 means low explained variance and 1 means high explained variance.

First Hypothesis: Effect of Debt to Assets Ratio, Inventory Turnover, and log of Assets on ROE

The multiple linear regression analysis was carried out to investigate the effect of Debt to Assets Ratio (X_1), Inventory Turnover (X_2), and log of Assets (X_3) on ROE. The regression equation to be estimated is as follows:

$$ROE = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + u_i$$

The value of F-statistic, which measures the common importance of the explanatory variables, is statistically significant at the 5% level, according to the corresponding value of probability 0.000007. Results show that the coefficient inventory turnover is statistically significant at the 5% level with a probability of 0.0000 and implies a positive correlation between the variables. Keeping all other coefficients constant, an increase of 1 unit in the variable inventory turnover will lead to an increase in the variable ROE by 0.040295 units.

Table (1): Results of the first hypothesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DEBT TO ASSETS RATIO	0.062484	0.082965	0.4597	0.4597
INVENTORY TURNOVER	0.040295	0.006501	0.0000	0.0000
LOGASSETS	0.002799	0.024134	0.9088	0.9088
C	0.017259	0.219296	0.9380	0.9380
R-squared	0.710894	Mean dependent var		0.239520
Adjusted R-squared	0.669593	S.D. dependent var		0.143972
S.E. of regression	0.082757	Akaike info criterion		-2.000172
Sum squared resid	0.143823	Schwarz criterion		-1.805152
Log likelihood	29.00216	Hannan-Quinn criter.		-1.946082
F-statistic	17.21257	Durbin-Watson stat		1.731626
Prob (F-statistic)	0.000007			

The regression analysis shows that the probability of both debts to assets ratio coefficient and log assets is 0.4597 and 0.9088 respectively. Based on the fact that the level of significance is 5 percent, a probability greater than 5 % indicates

that the two variables are not statistically significant. *Adjusted R²* 0.669593 (66.96%) suggests that 67% of the total variation in ROE is explained by the variations in the independent variables. In conclusion the results of the regression analysis show that the correlation between ROE and both debt to assets ratio coefficient and log assets is statistically insignificant and the correlation between ROE and inventory turnover is significant statistically and this correlation is positive.

Second Hypothesis: Effect of Debt to Assets Ratio, Inventory Turnover, and log of Assets on ROA

The multiple linear regression analysis was carried out to investigate the effect of Debt to Assets Ratio (X_1), Inventory Turnover (X_2), and log of Assets (X_3) on ROA. The regression equation to be estimated is as follows:

$$ROA = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + u_i$$

The value of F-statistic, which measures the common importance of the explanatory variables, is statistically significant at the 5% level, according to the corresponding value of probability 0.000000. Results show that the coefficient inventory turnover is statistically significant at the 5% level with a probability of 0.0000 and implies a positive correlation between the variables. Keeping all other coefficients constant, an increase of 1 unit in the variable inventory turnover will lead to an increase in the variable ROA by 0.020784 units.

Table (2): Results of the second hypothesis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DEBT TO ASSETS RATIO	-0.047835	0.040426	1.183272	0.2499
INVENTORY TURNOVER	0.020784	0.003168	6.561414	0.0000
LOGASSETS	0.008142	0.011760	0.692368	0.4963
C	-0.022342	0.106855	0.209084	0.8364
R-squared	0.798156	Mean dependent var		0.123256
Adjusted R-squared	0.769321	S.D. dependent var		0.083958
S.E. of regression	0.040324	Akaike info criterion		-3.438073
Sum squared resid	0.034147	Schwarz criterion		-3.243053
Log likelihood	46.97592	Hannan-Quinn criter.		-3.383983
F-statistic	27.68029	Durbin-Watson stat		1.558140
Prob (F-statistic)	0.000000			

The regression analysis shows that the probability of both debts to assets ratio coefficient and log assets are 0.2499 and 0.4963 respectively. Based on the fact

that the level of significance is 5 percent, a probability greater than 5 % indicates that the two variables are not statistically significant. *Adjusted R²* 0.769321 (76.93%) suggests that 77% of the total variation in ROA is explained by the variations in the independent variables. In conclusion the results of the regression analysis show that the correlation between ROA and both debt to assets ratio coefficient and log assets is statistically insignificant and the correlation between ROA and inventory turnover is significant statistically and this correlation is positive.

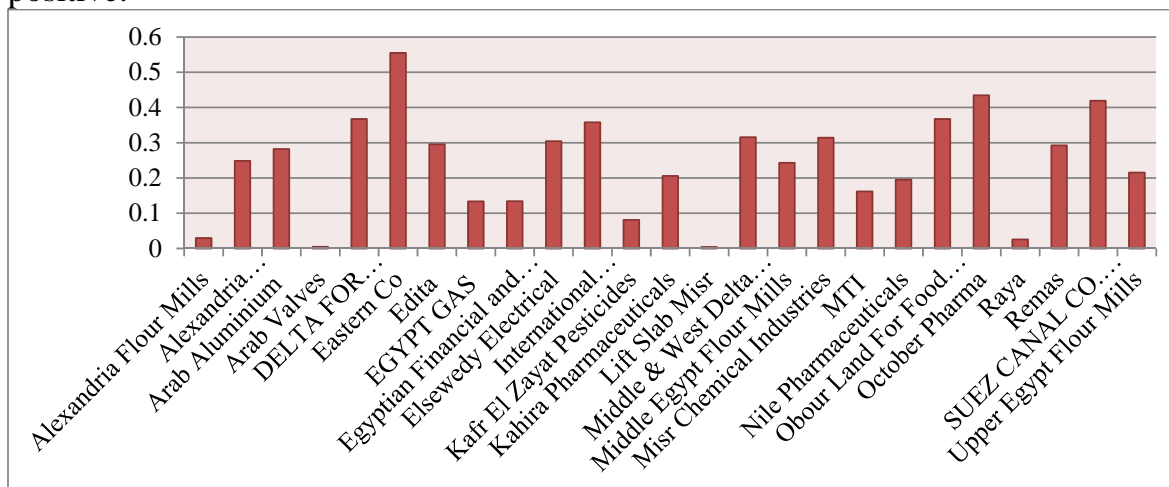


Figure (1): Bar chart for ROE for the selected companies

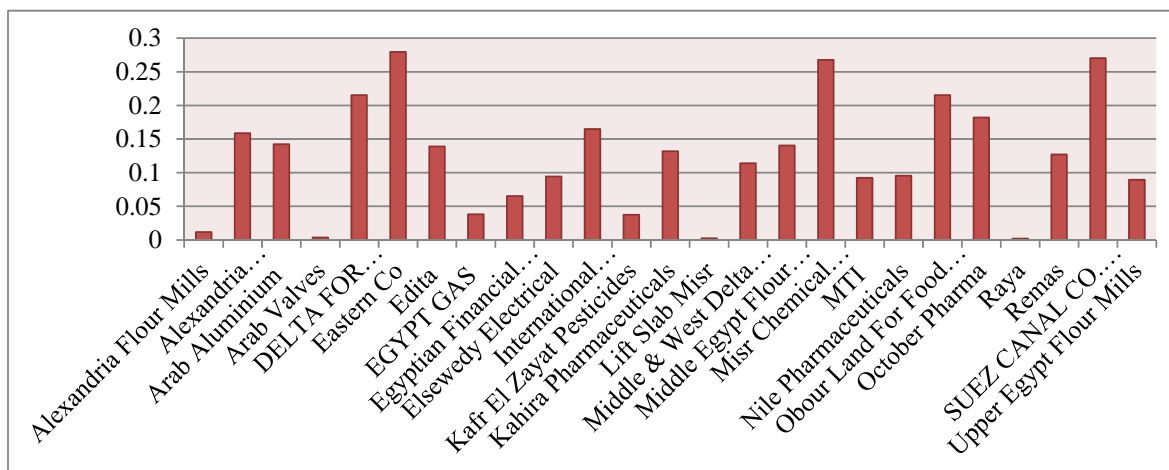


Figure (2): Bar chart for ROA for the selected companies

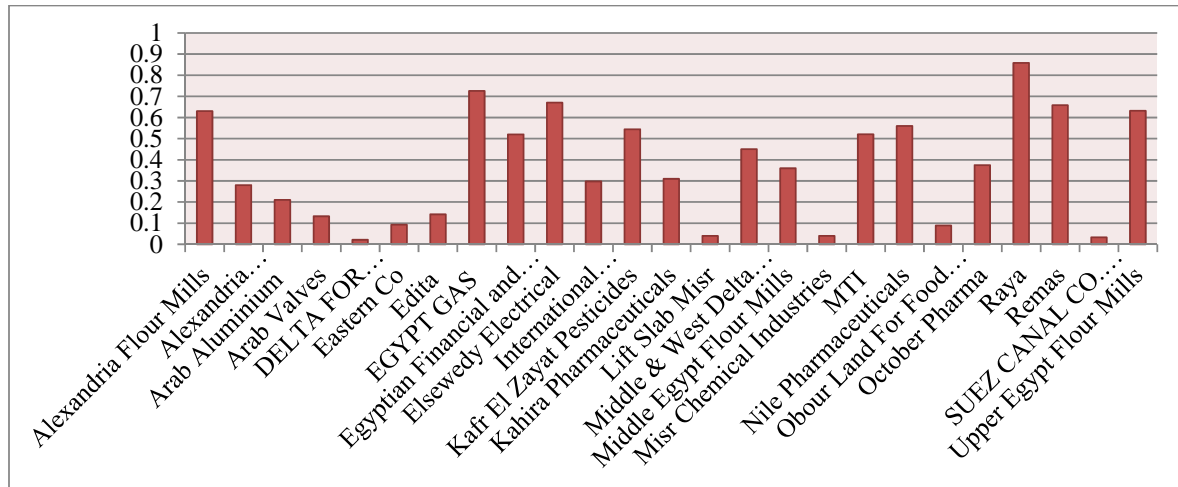


Figure (3): Bar chart for debt to assets ratio for the selected companies

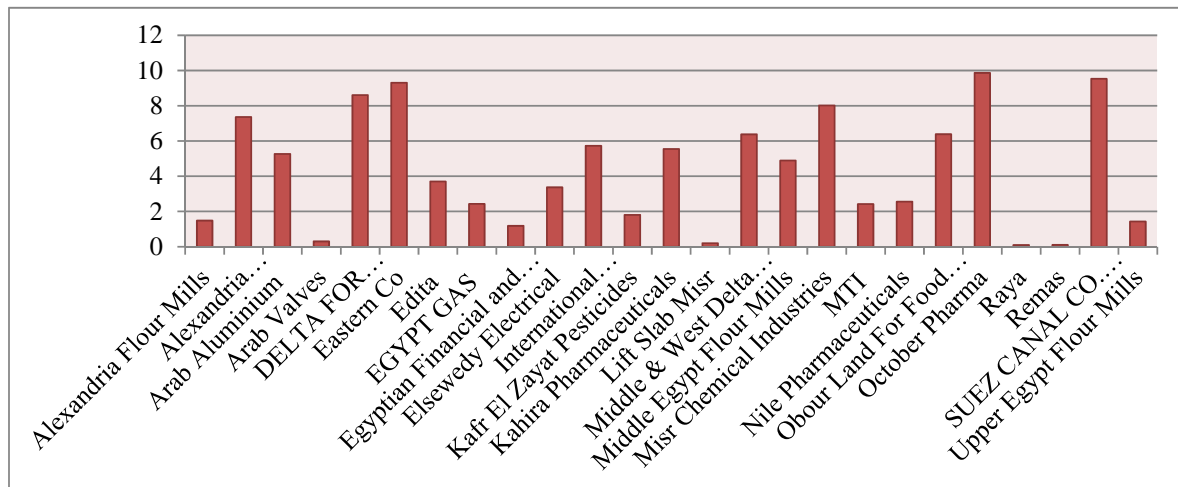


Figure (4): Bar chart for inventory turnover for the selected companies

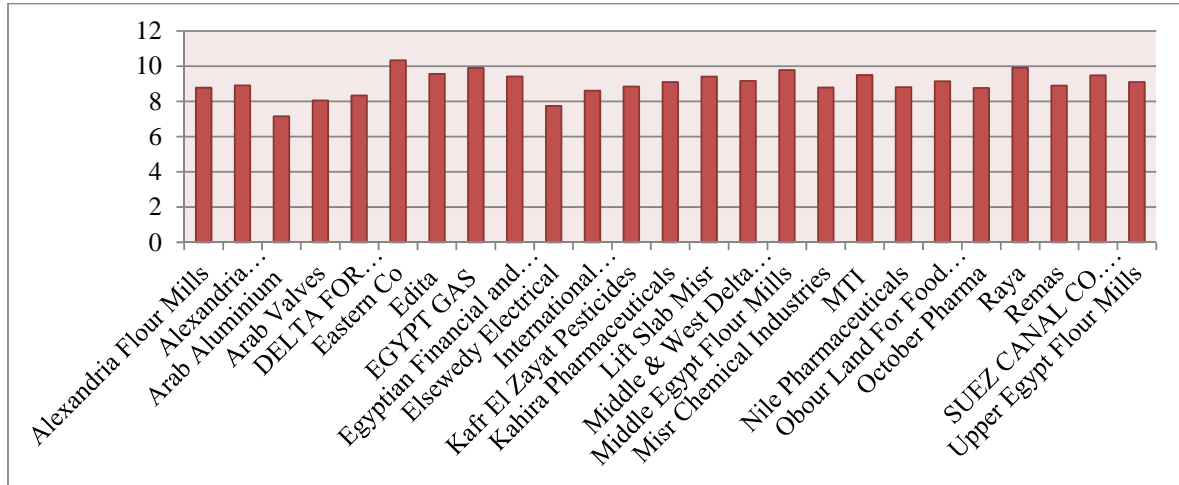


Figure (5): Bar chart for Log Assets for the selected companies

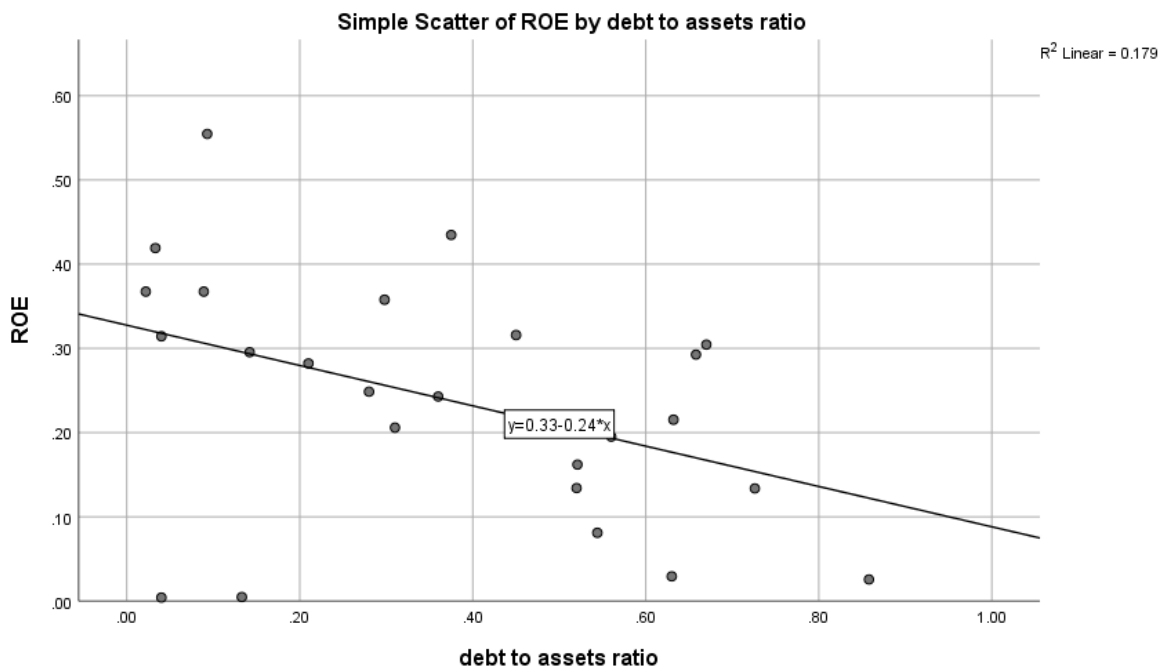


Figure (6): Scatter plot for the relationship between ROE and debt to assets ratio

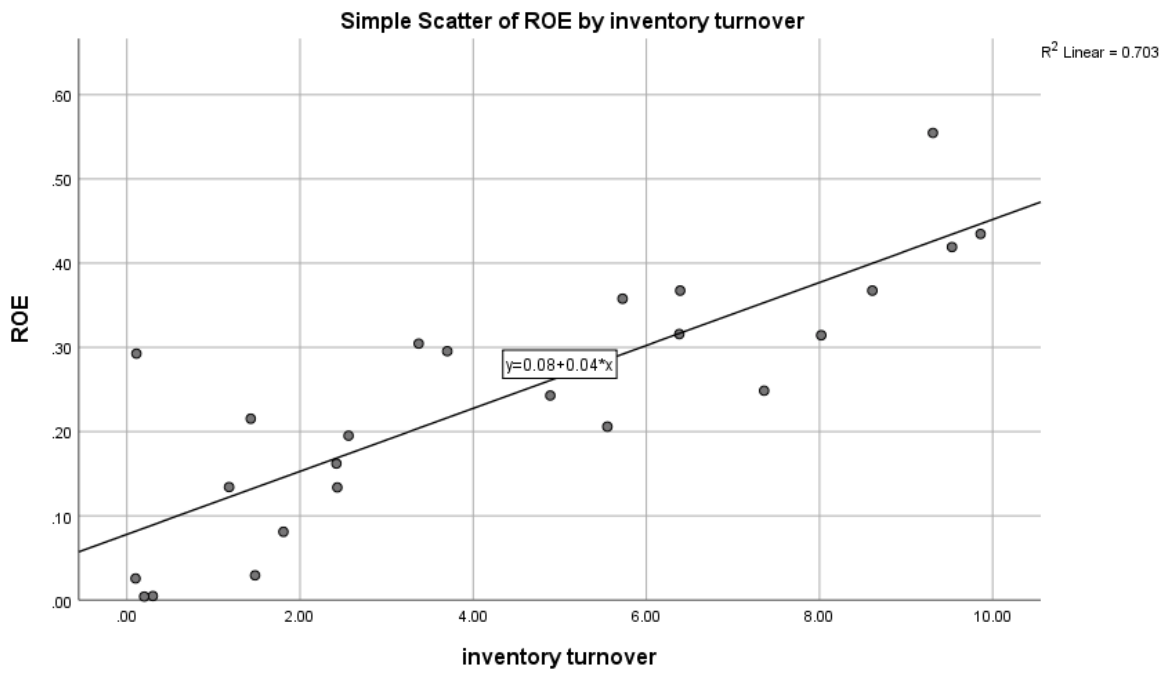


Figure (7): Scatter plot for the relationship between ROE and inventory turnover

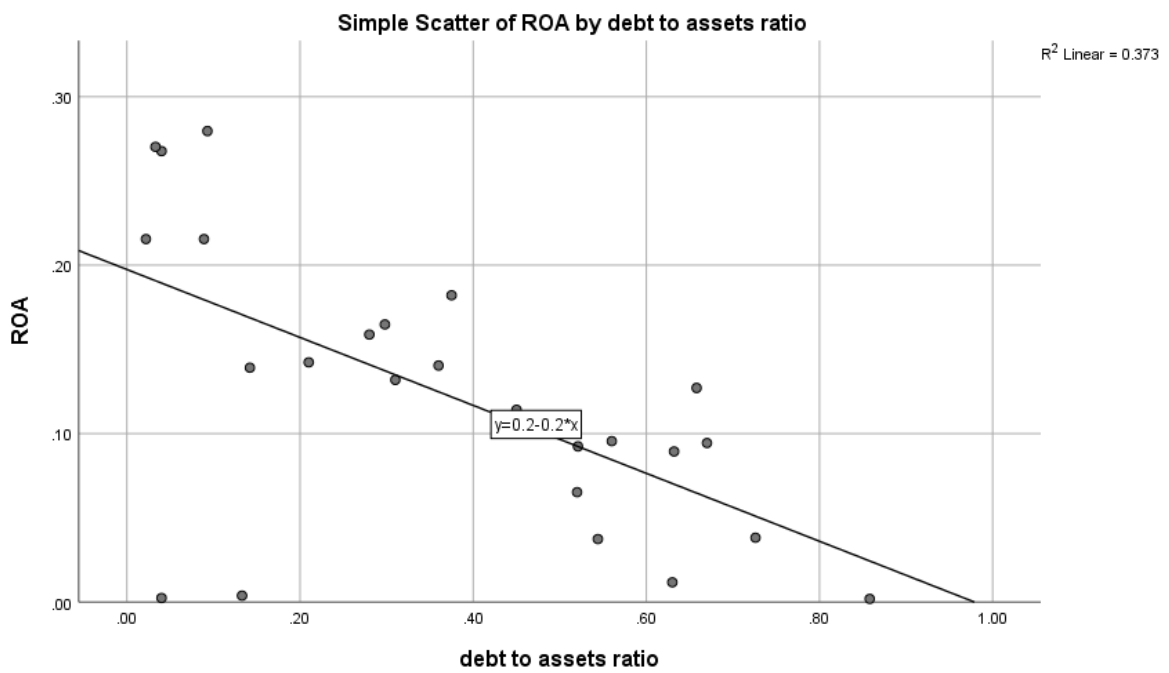


Figure (8): Scatter plot for the relationship between ROA and debt to assets ratio

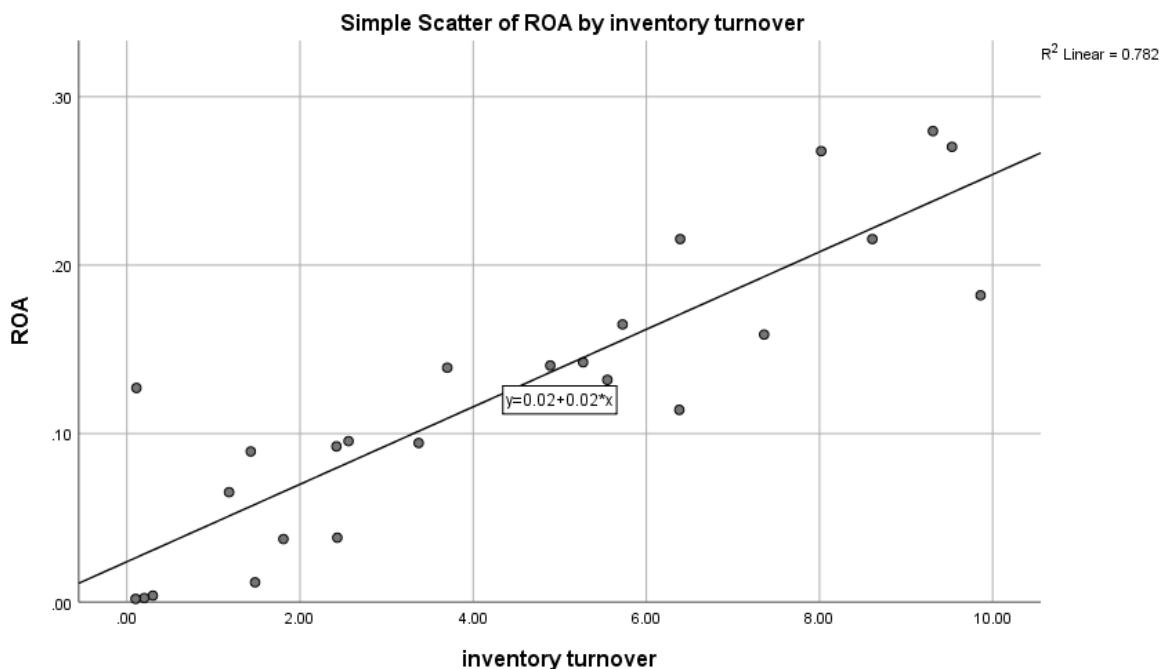


Figure (9): Scatter plot for the relationship between ROA and inventory turnover

Conclusion

After investigating the statistics of both descriptive and multiple regression models, the data analysis showed that we have two dependent variables: ROE and ROA (Y1/Y2) respectively and three independent variables: debt to assets ratio, inventory turnover and long assets (X1/X2/X3) respectively. The value of F-statistic that measures the common importance of the explanatory variables is statistically significant at the 5% level according to the corresponding value of probability 0.000007. Results show that the coefficient inventory turnover is statistically significant at the 5% level with a probability of 0.000007 and implies a positive correlation between the variables. Keeping all other coefficients constant, an increase of 1 unit in the inventory turnover variable will lead to an increase in the ROE variable by 0.040295 units and an increase in the ROA variable by 0.020784 units. Concluding that the results of the regression analysis show that the correlation of the dependent variables; ROA and ROE with both coefficient of debt to assets ratio and log assets is statistically insignificant and the correlation between these dependent variables and inventory turnover is statistically significant and correlation is positive.

According to these results, we proved that our hypothesis fully accomplishes our estimations which were:

H1. Inventory Turnover has positive effect on ROE.

H2. Inventory Turnover has positive effect on ROA.

Since we came up with these positive relations, then the answer of our question

which was “Does the inventory management have an impact on firm performance?” is yes inventory management which was measured by inventory turnover, has positive impact on firm performance which was measured by ROA and ROE using the control variables log assets and debt to assets ratio.

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