Inventory Conversion Period and Financial Performance of Selected Firms Listed at Nairobi Securities Exchange

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Abstract

Managers strive to achieve strategic objectives of firms, which include maximum returns on equity and assets. However, unanticipated macro and micro environmental factors may cause a firm to fall into financial distress which may negatively influence its financial performance. Manufacturing, Construction and Allied sectors play an important role in the implementation of vision 2030 and contribute immensely to the country's economic growth. Declining returns and repeated losses reported by firms under these sectors have resulted in a slow growth by individual sectors as well as overall national economic growth. Poor performance has been attributed to cycles of financial distress problems affecting firms under manufacturing and construction sectors in the recent past. Identified knowledge gaps prompted the study to mainly determine the effect of financial distress on financial performance of selected firms listed at NSE. Independent variable which form the basis for specific research objective and research hypothesis is inventory conversion period while dependent variable is financial performance. The study which may be of value to financiers, policymakers, investors and researchers was supported by economic order quantity model. Panel research design was employed by the study and census adopted due to the small population size. Secondary panel data collected from published financial statements of the entire 4 financially distressed firms listed under manufacturing, construction and allied sectors covering 10 years (2009-2018) were utilized. Descriptive and inferential statistics was used to analyze panel data with the aid of statistical software (STATA, V.14). Panel regression analysis approach was used to test the hypothesis at 95% confidence level and diagnostic tests was performed before conclusion was drawn.

Findings were presented in table format and supported by narrations. Research ethics were observed while conducting the study. The study revealed that inventory conversion period has an inverse and significant effect on the financial performance (return on assets and return on equity) in the selected firms listed at Nairobi Securities Exchange. The study recommends that low inventory conversion periods should be maintained by firms in order to improve profitability which can be done by improving efficiency in the production processes.

Keywords: *Inventory, Conversion period, financial performance, Return on Asset, Return on Equity, Listed firms, NSE.*

1.1 Background to the Study

Companies keen on their financial health and prudent financial management have financial distress being one of the salient topics. Financial distress is a situation where an organization is unable to generate adequate revenue to cover its long term and short term financial obligations upon maturity or they are met with a lot of difficulties (Schmuck, 2013). It is a universal phenomenon encountered by developed and developing economies, happening both in an economic downturn and upturn. Contrary to a boom period, financial distress during a recession is more adverse to a firm and may lead to bankruptcy. Many companies worldwide have succumbed to financial distress regardless of their size, to face corporate failure, bankruptcy or even liquidation (Hotchkiss & Altman, 2010).

Financial distress plays an integral part in the overall performance of an organization and it happens gradually with major signs being constant cash shortage, falling margins and poor profits, revenue decline, extended payment days and non-compliance to legal and contractual terms (Hotchkiss & Altman, 2010). Financial distress prediction is of essence and aid in the development of appropriate mitigation measures and rescue of a firm before a destructive encounter. The assessment of losses expected to occur as a result of financial distress is emphasized, as opposed to the focus on the probability of bankruptcy occurrence (Beaver, Correia & McNichols, 2011). According to Altman, Hotchkiss, & Wang (2019) corporate financial distress and its consequences in the United States of America became an economic reality during 1970s with considerable revelations during the recession years, post-dotcom period and economic crisis period that happened within the years between 1980 and 2003. During this period an explosion of defaulters and an unprecedented increase in the interest rate were experienced, which caused 34 corporations to file bankruptcy protection. United States lost assets worth USD 74,777.8 billion due to the collapse of 486 banks that happen between the years 2009 to 2015 (Federal Deposit insurance corporation, 2015).

Financial crisis that happened in East Asia within the years 1997 and 1998 caused severe financial distress that lead to the manifestation of large-scale corporate defaults within the region and beyond. Most hit countries include; Thailand, Malaysia, South Korea and the Philippines. Firms got in either economy-wide or firm-level financial distress chose mitigation measures in the order of; liability restructuring, asset restructuring, mergers, and liquidation (Sengupta & Faccio, 2011). Exogenous shocks created by financial crisis cause deterioration of firms performance and lead to the introduction of unfavorable government policies that increase the negative correlation between financial distress and financial performance (Tan, 2012).

Zimbabwean banking sector encountered financial related challenges that lead to the discontinuation of 6 banks and 11 of them declared financially distressed. Depositors' money worth USD 52.3 million were lost in the process (The African Report, 2014). Ghana reported corporate failures that affected companies in various sectors such as aviation, textile, banking and mining. Accumulated cost of asset worth USD 38.2 million got lost at the collapse of the firms under banking sector alone. Inability to meet liquidity and capital requirements, regulatory laxity and fraud led to the closure of some banks while the majority collapsed. Corporate failure was attributed to among other reasons poor corporate governance practices that resulted in financial distress (Anisom-Yaansah, Oware & Samanhyia, 2016).

There has been an upward trend on the number of companies listed at NSE experiencing financial distress since independence (Ong'era, Muturi, Oluoch & Karanja, 2017). Kenya Meat Commission, Uchumi Supermarket, Webuye Paper Millis, Mumias Sugar Company and Muhoroni Sugar Company have all encountered corporate failure (Kanyugi, 2016). This was attributed to problems related to solvency, profitability and liquidity experienced by the firms which led to the appointment of statutory and receivership management (Mweta & Kipronoh (2019). Financial difficulties by Uchumi supermarket were so severe that the company had to close some of its branches and employees rendered redundant (Mbai,2018). Inability to meet requirements by NSE on capital asset, liquidity, corporate governance resulted in the suspension of ARM Cement, Deacons (East Africa) Atlas African Industries, National Bank of Kenya and Kenya Airways (www.nse.co.ke). Some Firms under manufacturing, construction and allied sectors which form the unit of analysis for this study has also been badly affected by financial distress, evidenced by their poor performance in the recent past. Table 1 below indicates the selected firms.

Table 1: Profit Before Tax of the Selected Firms

Company Name	Athi River Mining	E.A.Cables Ltd	Eveready East Africa	Mumias Sugar Company.
Years	Kes '000'	Kes '000'	Kes '000'	
2009	645,774	296,033	28,271	1,609,972
2010	792,011	183,850	8,703	1,572,383
2011	1,150,498	314,730	-123,994	1,933,225
2012	1,245,638	522,060	70,084	2,012,679
2013	1,348,803	398,202	45,092	-1,660,406
2014	1,493,393	341,149	-177,589	-33,359,595
2015	-2,890,841	-741,204	-201,509	-4,644,801
2016	-2,800,175	-582,602	-206,505	-4,731,026
2017	-6,549,812	-662,835	267,173	-3,188,146
2018		-568,384	-116,395	-15,141,253
Total	-5,564,711	-499,001	-406,669	-55,596,968
Avarage	-556471	-49,900	-40,667	-5,559,697

Source: (Companies' Financial reports,2020)

Financial distress express financial unfavourable circumstance to identify failure, default and bankruptcy (Pozzoli & Paolone, 2017). Platt (2014) argued that financial distress as no explicit definition, he believes that firms are financially distressed if they exhibit the following features

in two consecutive years; negative earnings before interest, tax, depreciation and amortization (EBITDA) and negative net income before special items. On the other hand, Palinko and Svoob (2016) describes the steps that a firm goes through before it reaches liquidation. Their model singled out persistent lack of wealth creation as the starting point of bankruptcy followed by high indebtedness and finally liquidity of the firm.

Altman (1968) developed Z-score model which is the most preferred tool to predict and measure financial distress. The model uses a combination of five ratios; working capital, retained earnings, earnings before interest and tax, and sales are all measured relative to total assets while market values of owners' equity are measured relative to total liabilities. Companies with less than 1.81 Z-score are considered financially weak and distressed, a Z-score of more than 2.99 is considered strong financially, and those with Z-score between 1.81 and 2.99 falls under the grey areas that require close observation. Scholars globally postulated various endogenous and exogenous variables that act as proxies for financial distress and affect firms' performance. These include technological innovation and operational efficiency (Altman *et al.,* 2019), capital adequacy, asset quality, leverage and liquidity (sporta,2018), firm size, age and Meso and Macro level (Kibuchi, 2018), profitability (Pozzoli & Paolone, 2017), inventory conversion/collection period (Onchangwa, 2019), and debt service coverage (Ufo, 2015). Current study measured financial distress using liquidity, leverage, firm size and inventory conversion period.

Brigham and Houston (2012) recognize inventory conversion period as a measuring tool that informs a firm the period taken in days from the date of acquiring new inventory through purchase or manufacturing, to the date when the product is sold to a customer. Sitienei and Memba (2015), believes that the capability of a firm to convert its inventory to sales within a short period enhances its financial performance. They further argued that optimum inventory level of a firm is achieved when there is growth in sales that results in an upward trend of profit. Inventory turnover ratio was utilized to measure inventory conversion period by dividing the firm's inventory on the balance sheet by the average sales of a given financial period.

Financial performance is a parameter used by firms to measure the milestones on the achievement of strategic financial objectives (Kang & Kinyua, 2016). Mulwa (2015) relates financial performance to periodic achievements in monetary terms expressed in form of returns and losses, and linked to firm's financial statements. The productivity, profitability and market premium are three perspectives to evaluate financial performance (Almajali, Alamro & Al-Soub, 2012). Yahaya and Lamidi (2015) believe financial performance to be an instrumental element, especially to profit-oriented firms as it determines its competitiveness and financial sustainability which in return influence its capability to meet its financial obligations. They describe financial performance as a measure of effectiveness and efficiency in the utilization of obtainable resources in the core operations of a firm to generate revenue.

Relevance, objectivity, timeliness, balance and data integrity are the major guidelines that aid in choosing and developing performance measures. These enable firms to determine current financial status and future projections that aid in the establishment of appropriate measures to advance the achievements of the objectives (Alexander, 2018). Operating income, return on asset net profit margin, sales growth, cash flow, return on investment and return on equity are accounting measures also referred to as traditional measures that are commonly used to measure financial performance of an organization (Busch, Bauer & Orlitzky, 2016). Studies by Marte *et*

al. (2012) and Sporta (2019) supported the use of both ROE and ROA to measure financial performance which was adopted by the current study.

Financial distress results from a myriad of many factors that are either not addressed appropriately or promptly hence negatively affecting performance of a firm. Financial indiscipline, technological failure, over-investment on fixed assets, inadequate internal control systems, high levels of leverage and poor working capital management are financial distress factors that negatively influence the profitability (Ifeanyi &Wokeh, 2015). The ideal level of financial performance is an uphill task to be attained and maintained by financially distressed firms (Shaukat & Affandi, 2015). With the use of leverage as a proxy for financial distress, Tan (2012) argued that financial distress enhances underperformance, and the effect intensifies with the raise on leverage levels of an organization, hence resulting in ultimate economic downturn. He added that demand for products of financially distressed firms drops as customers, as well as investors, lose confidence in the firm, resulting in low profitability.

Financial distress pushes companies into situations of cashflow shortages and operational insolvency that increases the default risk of a company. It exposes firms to systematic risks that arise from financial distress' macroeconomic factors not well managed (Habib, Costa, Huang, Bhuiyan & Sun, 2020). Molina and Preve (2012) in their study noted that firms that mitigate financial distress by increasing trade payables, experience deterioration of sales and profitability growth by at least 11% and 21% respectively. Lohe and Calabro (2017) associated corporate financial internal crisis with hard decline and deviation from financial performance which could result in financial and economic distress. Static economic growth, massive job losses and non-payment of taxes are among the negative effects of financial distress (Bender, 2013).

1.2 The Statement of the Problem

Positive financial health and sustainability are strategic objectives that ensure firms to promptly meet their financial obligations and enhance loyalty among stakeholders (Wesa & Otinga, 2018); (Altman & Hortchkiss, 2010). However, financial distress hinders the achievement of such goals to portray an overall poor performance of a firm (Bender, 2013). NSE annual bulletin (2016) reports of Kenyan listed corporations that have been subjected to either statutory management, financial restructuring or delisted from NSE due to financial distress since the establishment of NSE. KNBS Economic survey (2019) confirms a declining trend on the market capitalization of firms listed at NSE.

Manufacturing and construction sectors are largely relied upon by the government of Kenya in the realization of Vision 2030. The industries are core enablers that will ensure Kenya becomes an industrialized country with the muscle to compete globally (Republic of Kenya, 2007). However, slow industrial growth and poor performance registered in the recent past by firms under construction and manufacturing sectors may derail the attainment of this goal. Table 1 above shows that in the year 2017 alone ARM and E.ACables losses after tax rose by 134% and 14% respectively. Additionally, Eveready East Africa and Mumias sugar Company losses hit the highest increase in the year 2018 at 144% and 375% respectively (www.nse.co.ke).

Kibuchi (2018), evaluated the effect of three financial distress factors on financial performance of Kenyan insurance firms and concluded that leverage and productivity has a negative

relationship with performance while firm size possess a positive relationship with performance. The study adopted descriptive research design and was supported by entropy theory, cash management theory and credit risk theory. These bring out methodological and theoretical gaps to be addressed by this study. Sporta (2019) investigated the relationship between financial distress factors and financial performance of commercial banks in Kenya adopting panel regression models and model specification tests and concluded that operational efficiency liquidity, capital adequacy, asset quality and leverage were critical in explaining changes in financial output of firms. Firm size and inventory conversion period were however not featured by the study.

Local studies on financial distress were not specific to financially distressed firms under construction, manufacturing and allied firms but instead focused on various sectors that include commercial banks (Kimathi, 2018; Kariuki, 2013), insurance firms (Kibuchi, 2018; Cheluget, 2014), non- financial firms (Muigai, 2016), and service industry (Mbai, 2018). Studies that focused on Construction, manufacturing and allied firms majorly focused on how financial performance is affected by working capital management (Mweta & Kipronoh, 2019), macroeconomic forces (Makori, 2015), Liquidity (Njoroge, 2015) and capital structure (Mwangi, 2016). The reviewed empirical studies have diverse findings based on the scope, theories, variables and methodology, hence, their results could not be generalized and considered to represent the current study's context because of the distinctiveness of each study. The study sought to fill the research gaps identified by exploring the effect of inventory conversion period on financial performance of selected firms listed at Nairobi Securities Exchange.

1.3 Objective of the Study

To explore the effect of inventory conversion period on financial performance of selected firms listed at Nairobi Securities Exchange.

1.4 Research Hypotheses

Ho: Inventory conversion period has no effect on the financial performance of selected firms listed at Nairobi Securities Exchange.

2.0 Literature Review

2.1 Theoretical Framework Review

Economic Order Quantity Model

Ford Whitman Harris initially developed economic order model in the year 1913. R.H. Wilson picked up where Harris left and conducted an in-depth analysis of the model and applied it. The model assists in the determination of an ideal quantity to be purchased or manufactured in such a way that the ordering and inventory holding costs are minimized. Holding costs also known as carrying costs refer to the amount firms incurred to hold inventory before the sale. Ordering costs relate to the cost incurred by a firm to acquire more inventories (Mathew, Nair & Jenson, 2013).

The model assumes that; the amount paid toward the processing of purchase orders will remain constant, the lead time is stable, discount based on quantity is not expected, Restocking is carried out promptly without delay, and the fact that the exact quantity requested will be delivered (Ziukov, 2015). However, the argument by Senthilnathan (2019) indicates that EOQ

model assumptions become the model's limitations. He believes that demand for most inventories is not constant throughout the year, due to the dynamics of a product lifecycle. The model does not factor the influence of changes in selling price and the effects of promotional activities on demand.

The model is a useful inventory control tool, applicable when handling inventories at varous stages; raw materials level, work in progress level and finished goods level (Kumar, 2016). The model was relevant to the current study as it addresses the issue of proper management of inventory which helps a firm to avoid unnecessary costs such as overtime, sub-contracting, and backorder penalties. This enhances efficiency and boosts the overall performance of the firm. This theory, therefore, addressed the inventory conversion period as a financial distress factor that determines the financial performance of a firm.

2.2 Empirical Review

2.2.1 Inventory Conversion Period and Financial Performance

Ahmed, Modibbo, Modu and Muhammad (2016) investigated the effect of inventory management on the financial performance of Nigerian conglomerate companies quoted at the stock exchange market. The researchers used ex-post facto research design. Pearson correlation and multiple regression techniques were used to analyze five years' data (2010-2014). Ahmed *et al.* (2016) established that inventory management has a significant positive relationship with the firm's financial performance. They proposed the development of inventory policies that put on check the inventory cycle to prevent capital tie-down by non-moving stock. The study however failed to capture the concept of financial distress and based the analysis on Nigerian firms.

Ondimu, Rotich and Kipkirui (2018) looked at the effect of inventory management on financial performance of manufacturing firms quoted at NSE. The study used descriptive and quantitative research design with the help of the STATA, 13 to analyze five years' panel data obtained from secondary sources. A strong negative correlation was found to exist between the inventory conversion period and the financial performance of manufacturing firms in Kenya. Ondimu *et al.* (2018) suggested the adoption of technologically advanced inventory management techniques that will inform with certainty the required levels of inventories at any given time. The study demonstrates the significance of inventory conversion period among manufacturing firms but fail to highlight the importance of the variable as a factor of financial distress that is dominant among firms under construction and manufacturing sector.

Another study was carried out by Muturi and Wachira (2015) about the effect of inventory conversion period on profitability of tea factories in Kenya using a case study of Meru County. Under conclusion and recommendations, the study discovered the existence of a negative correlation between inventory conversion period and profitability thus endorsing maintenance of low inventory period to enhance profit generation. Ex-post factor research design was adopted by the study and data analyzed using simple linear regression model. Nevertheless, the study focused on tea factories that are in Meru and could not be generalized to represent the firms under NSE.

Sunday and Joseph (2017), investigated three variables (inventory turnover, inventory inversion period and inventory leanness) intending to determine the effect of inventory management on

the profitability of 30 sampled SMEs in Nigeria for a period of five years from 2014 to 2018. The data on variables were collected through self-designed questionnaires and analyzed using descriptive statics regression and econometrical approaches. Results portrayed a negative association between inventory conversion period and profitability. Moreover, they argued that less profit is made by firms with a long inventory conversion period. The author endorsed the adoption of modern technology in the production and management of inventory to lessen the inventory conversion period. The study was limited to SMEs in Nigeria and base its analysis on primary data.
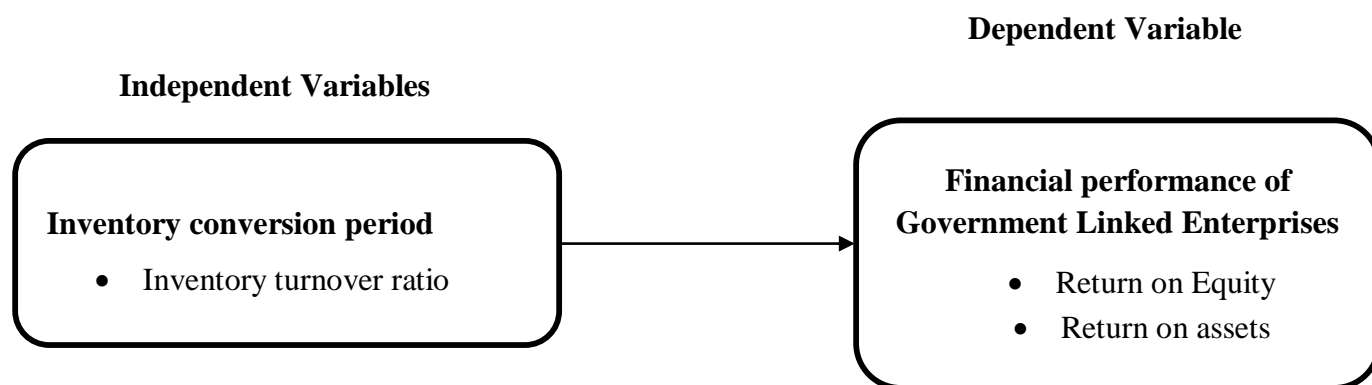
2.2.2 Financial Performance

Otieno, Namusonge and Mugambi (2018) conducted a study to identify the effects of strategic planning process on the financial performance of professional service SMEs in Kenya. Cross-sectional research design was adopted. The researcher utilized both secondary and primary data which was subjected through descriptive and inferential statistical analysis. Krejcie and Morgan table aid in sampling 381 respondents from a target population of 51287. The study found strategic planning practices to significantly affect financial performance. Otieno et al. (2018) supported the idea of SMEs development and implementation of strategic planning practices that include; strategy evaluations, strategy implementation, strategy formulation and environmental scanning to improve its performance financially. Financial performance was however measured using annual profit and sales.

Al-Musali & Ku Ismail (2014) carried out a study on the effect of intellectual capital on financial performance of banks based in Saudi Arabia. Added intellectual coefficient (VAIC) was used to measure intellectual capital while ROA and ROE were used to measure financial performance. Results identified Human capital efficiency to greatly influence the financial performance of commercial banks in Saudi Arabia. The study suggested that banking sector being a service sector that relies heavily on human capital should capitalize on the empowerment of its key employees to improve their competence and service delivery and in return increase their output to boost profitability. The study was however limited to intellectual capital construct but not financial distress to be addressed by the current study.

Kangogo(2019) did a study to examine the effect of enterprise resource planning (ERP) on financial performance of financial institutions in Kenya. The Unit of analysis was 56 licensed financial institutions using ERP within the study period between 2013-2017. Descriptive research design was adopted to analyze secondary and Primary data collected. Independent variables; firm size, management efficiency, enterprise resource planning and capital adequacy were found to possess a positive influence on performance. The research is important in highlighting the role of ERP on the performance of financial institutions but through investment in software but not the management of factors of financial distress that is the focus of this study.

2.3 Conceptual Framework

Independent Variables

Dependent Variable

Inventory conversion period

- Inventory turnover ratio

Financial performance of Government Linked Enterprises

- Return on Equity
- Return on assets

Figure 1: Conceptual Framework

3.0 Research Methodology

Panel research design was adopted in the present study to explore whether financial distress factors affect financial performance of the selected financially distressed firms under Manufacturing, Construction and Allied sectors listed at NSE. It is a non-experimental approach that involves observation and interpretation of the subject matter without interference. The target population of this study consisted of all four financially distressed firms under manufacturing, construction and allied sectors quoted at NSE, operating within the study period of 10 years (2009- 2018). These included; Athi River Mining and East Africa Cables, Eveready East Africa and Mumias Sugar company. The researcher utilized quantitative secondary data, which cover panel data for selected firms to be sourced from audited annual financial reports posted on firm's official websites, NSE handbook and submitted to CMA. The ratios relating to the variables; inventory conversion turnover and financial performance were computed and converted into panel data that consist of cross-sectional and time series. All firms had an equal time period (balanced panel). Time series data encompassed 10-years, 2009 to 2018 while cross-sectional data covered 4 financially distress firms listed at NSE.

The use of panel data enhances the credibility of data through its features such as low collinearity, controlled heterogeneity and greater capability to estimate and identify effects on variables (Hsiao, 2014). Data relating to independent variables and the dependent variable of this study were extracted from the audited financial statements of firms, necessary ratios computed and converted into panel data. Analysis was conducted using descriptive statistics tools (mean, standard deviation, minimum and maximum) and inferential statistics (multiple panel regression analysis), analysis of variance (ANOVA) and correlation analysis). Analysis of Variance (ANOVA) and F-test aided in the determination of the significance of the regression which were conducted at 95% level of confidence while correlation analysis determined the strength and direction of the relationship between variables. STATA (version 14) Statistics software was used to perform data analysis within the multiple panel regression model framework. The study used tables and narrations to present the outcome of the data analyzed. Multiple Panel data regression models were utilized to analyze the data. quity were

expressed as a mathematical function of inventory conversion period as stated in the model below.

Where

$$Y_{1it} = \beta_0 + \beta X_{it} + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(1)$$

$$Y_{2it} = \beta_0 + \beta X_{it} + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

X_{it} - Inventory conversion period.

$Y1_{it}$ –-Return on Assets

$Y2_{it}$ - Return on Equity.

βo – Constant.

$_{it}$ – i refers to the firm and t is the time

ε – Error term.

4.0 Research Findings and Discussions

4.1 Descriptive Statistics

The descriptive statistics results revealed that the average Inventory Turnover Ratio for the four companies during the study period was 5.007725 and the standard deviation was 3.749386. The minimum Inventory Turnover Ratio was 0552 and the maximum was 16.432. The average natural log of total assets for the period between 2009 and 2018 was 8.977197 and the standard deviation was 1.397271. The minimum natural log of total assets during the study period was 6.352629 and the maximum was 10.85779. The financial performance of the four companies was expressed in terms of return on assets and return on equity. The average return on assets for the period between 2009 and 2018 was -0.062315 and the standard deviation was 0.2653913. The minimum return on assets was -1.4158 and the maximum was 0.3443. In addition, the average return on equity for the period between 2009 and 2018 was -0.179661 and the standard deviation was 0.5969614. The minimum return on equity among the four companies during the study period was -3.1348 and the standard deviation was 0.4842.

Trend Analysis
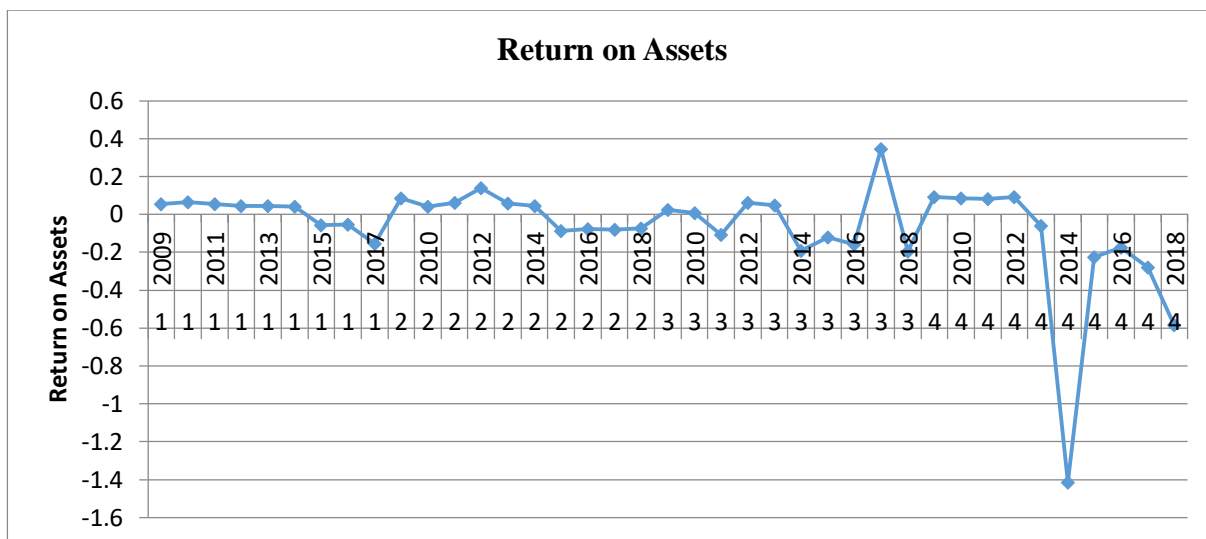
Figure 2: Trend of Return on Assets (2009-2018)

Source: Survey Data (2020)

As shown in Figure 2, the return on assets in the four companies has been fluctuating between the year 2009 and 2018. Between the year 2009 and 2017, the return on assets in Athi River Mining (Company 1) were fluctuating between -0.1536 and 0649. In addition, return on assets in East African Cables (Company 2) ranged between -0.0804 and 0.1405. Further, return on assets in Eveready East Africa (Company 3) ranged from -0.1951 and 0.0609. Also, return on assets in Mumias Sugar (Company 4) was ranging from -1.458 and 0.0931.
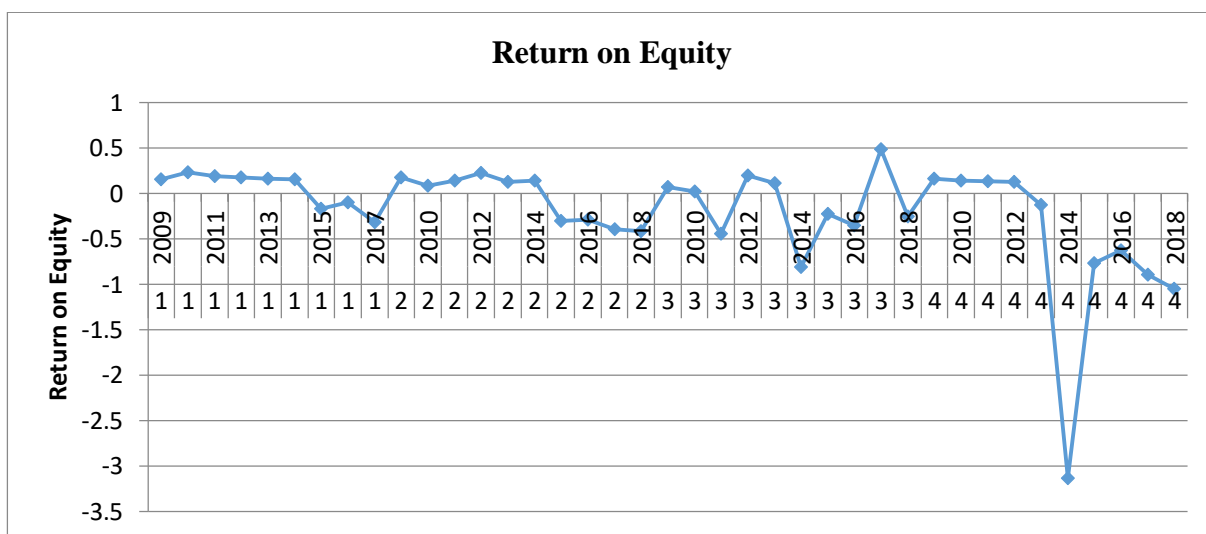

Figure 3: Trend of Return on Equity (2009-2018)

Source: Survey Data (2020)

From the results, as shown in Figure 3, return on equity in the four selected companies had been fluctuating for the period between 2009 and 2018. In Athi River mining, return on equity ranged from -0.3154 and 0.2306. In addition, return on equity in East African Cables increased from 0.1782 in 2009 to 0.2248 in 2012, then it steadily decreased to -0.4129. In Eveready East Africa, the highest return on equity was 0.2248 in 2012 and the minimum was -0.4129 in 2018. Among the four companies, Mumias Sugar Company had the lowest return on Equity as -3.1348 in 2014. The highest return on equity in Mumias Sugar Company was 0.1604 in 2009.
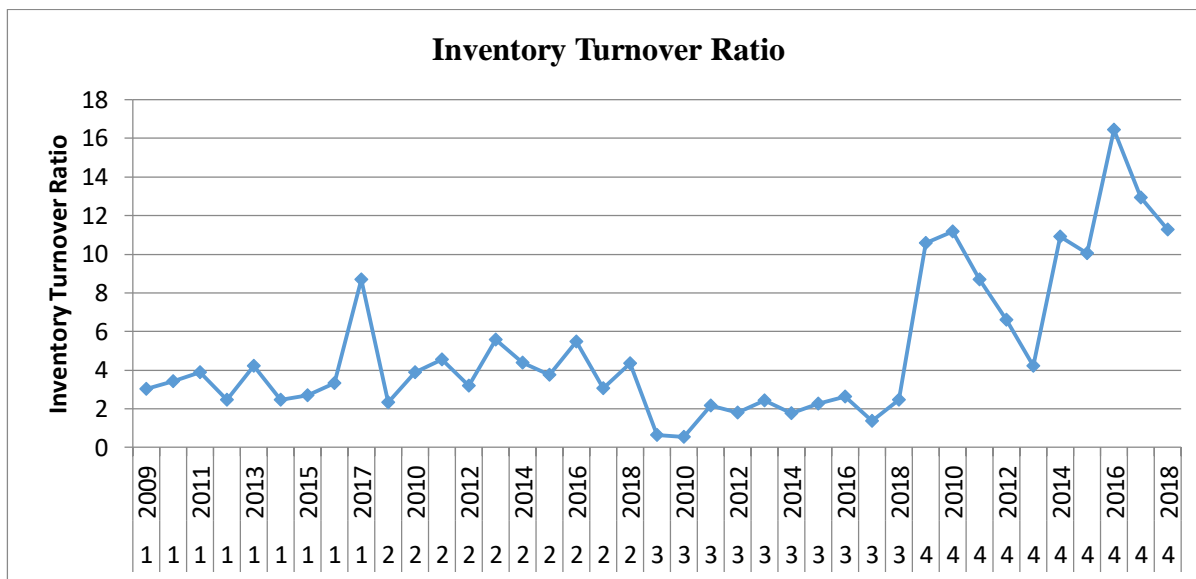
Figure 4: Trend of Inventory Turnover Ratio (2009-2018)

Source: Survey Data (2020)

As shown in Figure 4, inventory turnover ratio in the four selected firms listed at Nairobi Securities Exchange for the period between 2009 and 2018 had been fluctuating. In Athi River Mining, the inventory turnover ratio was 3.034 in 2009, which increased over the years to 8.685 in 2017. In addition, inventory turnover ratio in East African Cables ranged from 2.231 in 2009 to 4.364 in 2018. In Eveready East Africa, inventory turnover ratio ranged between 0.552 and 2.624 during the period between 2009 and 2018. Mumias Sugar Company had the highest levels of inventory turnover ratio. The inventory turnover ratio decreased steadily from 10.586 in 2009 to 4.021 in 2013, before increasing steadily to 16.432 in 2016 and decreasing to 11.287 in 2018.

4.2 Inferential Statistics

Normality Test

To test for normality of data, the research study used Shapiro-Wilk W test. The null hypothesis in Shapiro-Wilk W test is that data is obtained from a population that is distributed normally. Therefore, if p value is greater than alpha value, the null hypothesis is accepted. Otherwise if the p value is less than alpha value, it denotes that data is not normally distributed. Moreover, in case the alpha value is above the p value, then it implies that the data is normally distributed. The results were as presented in Table 2.

Table 2: Shapiro Wilk Test Results

	Obs	W	V	Z	Prob>z
ITR	40	0.8918	11.292	5.459	0.072
ROE	40	0.8628	14.314	5.993	0.177
ROA	40	0.9328	4.096	2.389	0.278

Source: Survey Data (2020)

From the findings, as shown in Table 2, the p-value for the variables inventory turnover ratio, return on equity and return on assets were 0.072, 0.177 and 0.278. These p-values were less than the significance level (0.05), which implies that the data was normally distributed.

Table 3: Breusch and Pagan Lagrangian Multiplier Test using ROA

```
Breusch and Pagan Lagrangian multiplier test for random effects


        ROA[Company,t] = Xb + u[Company] + e[Company,t]


        Estimated results:
                              Var        sd = sqrt(Var)
                _____

                     ROA |    .0704325           .2653913
                       e |    .0522352           .2285501
                       u |          0                   0


        Test:   Var(u) = 0
                            chibar2(01) =      0.00
                          Prob > chibar2 =    1.0000
```

Source: Survey Data (2020)

From the results, the p value 1.000 was more than 0.05 (significant level), and hence the null hypothesis should be accepted. This implies that variances across entities are zero and hence there is no significant difference across units (no panel effect).

Table 4: Breusch and Pagan Lagrangian Multiplier Test using ROE

```
Breusch and Pagan Lagrangian multiplier test for random effects

        ROE[Company,t] = Xb + u[Company] + e[Company,t]

        Estimated results:
                              Var        sd = sqrt(Var)
                     ─────────────────────────────────────
                 ROE │     .356363           .5969614
                   e │    .2375314           .4873719
                   u │          0                  0

        Test:   Var(u) = 0
                              chibar2(01) =      0.00
                            Prob > chibar2 =    1.0000
```

Source: Survey Data (2020)

As shown in Table 3, the p value 1.000 was more than 0.05 (significant level), and hence the null hypothesis should be accepted. This implies that variances across entities are zero and hence there is no significant difference across units (no panel effect).

Table 4: Cook- Weisberg test for Heteroscedasticity Using ROA

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of ROA


        chi2(1)      =      29.24
        Prob > chi2  =    0.0000
```

Source: Survey Data (2020)

A shown in Table 4, the results show that the p- value (0.000) was less than the significance level (0.05) and hence the null hypothesis should be accepted showing that there is constant variance in the data set. This implies that the data (independent variables and the dependent variable (ROE)) exhibited homoscedasticity.

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Table 5: Cook- Weisberg test for Heteroscedasticity Using ROE

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of ROE


        chi2(1)      =     26.99
        Prob > chi2  =   0.0000
```

Source: Survey Data (2020)

From the results, as shown in Table 5, the results show that the p- value (0.000) was less than the significance level (0.05) and hence the null hypothesis should be accepted showing that there is constant variance in the data set. This implies that the data (independent variables and the dependent variable (ROE)) exhibited homoscedasticity.

Table 6: Harris-Tzavalis unit-root test

Variable	No. of Panels	No. of Periods	Statistic	Z	P-value
Inventory Turnover Ratio	4	10	0.2792	-3.2510	0.0006
Return on Assets	4	10	0.0656	-4.8007	0.0000
Return on Equity	4	10	0.1482	-4.2018	0.0000

Source: Survey Data (2020)

From the results, the variables; inventory conversion period (inventory turnover ratio) (p-value=0.0006), return on assets (p-value=0.0000) and return on equity (p-value=0.0000) had unit root.

4.3 Correlation Analysis

Correlation analysis results revealed that Inventory conversion period (inventory turnover ratio) had an inverse significant effect with return on assets (r=-0.4279, p-value=0.0066). The results also revealed that inventory conversion period (inventory turnover ratio) had an inverse significant effect on return on equity (r=-0.4586, p-value=0.0033).

4.4 Regression Analysis

The main aim of regression analysis is to show how and the extent to which each variable separately influences the dependent variable. Simply, regression analysis is used in estimating the weight of the influence of the independent variables on the dependent variable. The study used two regression models to cover the effect of the two measures of financial performance (return on assets and return on equity) and the independent variables, liquidity (current ratio), leverage (debt to equity ratio), firm size (natural log of total assets) and inventory conversion period (inventory turnover ratio).

Return on Assets

The regression analysis results show that inventory conversion period (inventory turnover ratio) had an inverse and significant effect on return on assets in the selected firms listed at Nairobi Securities Exchange as shown by a regression coefficient of -0.0273748 (p-value=0.041). This implies that a unit increase in inventory conversion period across time and panels (firms) would lead to a 0.0273748 decrease in return on assets in the selected firms listed at Nairobi Securities Exchange. Since the p-value (0.041) was less than the alpha value (0.05), the effect was considered significant. These findings agree with Ondimu, Rotich, & Kipkirui (2018) findings that the inventory conversion period had an effect on the financial performance of manufacturing firms in Kenya.

Return on Equity

The results showed that inventory conversion period (inventory turnover ratio) had an inverse and significant effect on return on equity in the selected firms listed at Nairobi Securities Exchange as shown by a regression coefficient of -0.0774252 (p-value=0.007). This implies that a unit increase in inventory conversion period across time and panels (firms) would lead to a 0.0774252 decrease in return on equity in the selected firms listed at Nairobi Securities Exchange. Since the p-value (0.007) was less than the alpha value (0.05), the effect was considered significant. These findings are in line with Muturi and Wachira (2015) findings that a negative effects exists between inventory conversion period and profitability thus endorsing maintenance of low inventory period to enhance profit generation.

5.0 Conclusion

The study concludes that inventory conversion period has an inverse and significant effect on the financial performance (return on assets and return on equity) in the selected firms listed at Nairobi Securities Exchange. These findings imply that an increase in inventory conversion period would lead to a decrease in the return on assets and return on equity in the selected firms listed at Nairobi Securities Exchange.

6.0 Recommendations

The study found that inventory conversion period has a negative effect on the financial performance of selected firms listed at Nairobi Securities Exchange. The study therefore recommends that firms should maintain low inventory conversion periods in order to improve profitability. This can be done by improving efficiency in the production processes. Firms should avoid holding onto dead stock as it ties up finances hence negatively impacting on profitability, which can be achieved by adoption of Just in Time purchasing.

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