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EFFECT OF FUNDING STRUCTURE AND LIQUIDITY ON THE FINANCIAL PERFORMANCE OF THE SUGAR INDUSTRY IN KENYA

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Abstract:
The main objective of this study was to establish the effect of liquidity on the financial performance of the sugar industry in Kenya. The correlation between financial performance and liquidity in the Kenyan sugar industry is significant, ensuring the sector can meet immediate obligations and maintain smooth operations. Low liquidity can disrupt profitability and long-term stability, while high liquidity improves operational efficiency. Applying Stockholder and Liquidity Preference Theories to guide the study while employing correlational research design on a target population of 16 sugar companies operational in Kenya, sampled for 9 sugar companies, a total of 324 secondary data points from 2014 to 2022 were collected. Data was collected on the cost of the current ratio, acid test ratio, and economic value added, all derived from financial statements and cash flows. The results revealed a significant and positive relationship between liquidity and Economic value added (coefficient 0.939539, $p=0.000<0.05$); implying that liquidity has a significant relationship with economic value added. The findings are relevant for investors, policymakers, and factory managers. The study recommends that factory managers and policymakers ensure healthy liquidity within the sugar industries.

JEL: M41, G30, G32

Keywords: financial performance, liquidity, economic value added, sugar industry

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1. Introduction

The performance of Kenya's sugar industry has been shaped by various structural, policy, and economic factors. Throughout history, this industry has played a crucial role in supporting livelihoods and promoting rural development as a key part of the nation's agricultural sector. However, it has faced challenges such as low-cost import competition, outdated infrastructure, inefficiencies, and high production costs. Performance, measured by financial and non-financial metrics, reflects goal attainment (Lebans & Euske, 2006). Financial performance, as defined by Mishra, Wilson, and Williams (2009), assesses a firm's income generation and asset utilization from core operations. Key indicators for the sugar industry's financial health include cost structure, profitability ratios, revenue, debt, liquidity, and market trends (Sugar Industry Stakeholders Task Force Report, 2019). Liquidity pertains to the ability of a business to meet its short- and long-term financial obligations as they arise (Akenga, 2017).

As defined by the International Financial Reporting Standards (2006), liquidity represents the residual cash after the settlement of financial commitments. Operating liquidity is characterized by the relationship between current assets and current liabilities (Goel & Sharma, 2015). The Basel Committee on Banking Supervision (2013) describes high-quality liquid assets as those that can be readily converted into cash with minimal loss in value, while market liquidity denotes the ease of selling assets without significant losses to fulfill obligations. The liquidity of a company is pivotal in fulfilling short-term obligations and mitigating financial distress. Inadequate liquidity may result in adverse credit ratings and potential business cessation (Bhunia, & Uddin, 2011). Conversely, excessive liquidity leads to unutilized assets that do not yield income, thereby diminishing market performance and profitability (Ngira, Oluoch & Kalui, 2014). Therefore, the maintenance of optimal liquidity is indispensable for ensuring financial stability and operational efficiency. The global sugar industry employs over 100 million people, with major producers including Brazil, India, and Thailand (Global Market Report Sugar, 2019). In Africa, Egypt and South Africa lead production, contributing 40% of the continent's output (Kenya Association of Manufacturers, 2020).

Kenya's sugar industry began in 1902, with significant production in counties like Kakamega, Kisumu, and Bungoma (Sugar Industry Stakeholders Task Force Report, 2019). Despite contributing significantly to the economy and supporting 8 million livelihoods, the industry faces challenges such as high debt, inefficiency, and competition from imports (Kenya Sugar Directorate, 2021). From 2014 to 2021, Kenya's sugar industry saw fluctuations in area harvested, total production, and yield (KNBS Economic Survey, 2019-2022). The sector plays a crucial role in food security, employment, and regional development, aligning with Kenya's Big 4 Agenda and Vision 2030. Despite government interventions, the industry struggles with financial instability, high production costs, and aging infrastructure (Kenya Association of Manufacturers, 2020).

The annual demand for refined sugar surpasses local production, necessitating imports. Maintaining a healthy level of liquidity is crucial for enhancing Kenya's financial

performance in the sugar industry. The findings provide valuable insights for stakeholders, emphasizing the need for strategic financial management to sustain the industry's growth and stability.

Table 1.1: Performance of Kenya's Sugar Industry (2014-2021)

Year	Area under cane (000Ha)	Area harvested (000Ha)	Total production (000 tonnes)	Average yield (tonnes/Ha)	Average yield (Ksh000)
2014	211.3	72.2	6409.9	61.4	6,385
2015	223.6	77.8	7164.8	66.4	6,905
2016	220.8	85.8	7151.7	62.2	6,468
2017	191.2	67.7	4751.	55.3	5,751
2018	202.4	73.1	5262.2	55.1	5,730
2019	197.3	71.9	4606.1	51.0	5,304
2020	200.5	89.8	6799.9	61.6	6,406
2021	223.0	92.4	7783.3	72.0	7,488

Source: KNBS Economic Survey (2019-2022).

2. Statement of the Problem

The sugar industry is a cornerstone of Kenya's economy, supporting around 8 million livelihoods and providing 15% of agriculture's contributions to GDP. Despite its importance, the sector faces significant challenges, including financial instability, outdated manufacturing practices, intense competition from low-cost imports, and declining profitability. These issues, compounded by inadequate working capital and liquidity, lead to substantial debts totaling Kshs 58 billion by the end of 2018, with nearly half of the companies experiencing annual financial distress, often resulting in closures. The Kenya Sugar Directorate highlights that high debt levels and liquidity constraints disrupt operations, reduce productivity, and negatively impact financial performance, emphasizing the urgent need for effective liquidity management and an optimized funding structure. However, many Kenyan sugar companies continue to struggle in these areas, exacerbating their financial difficulties. This study aims to empirically examine the impact of liquidity on the financial performance of Kenyan sugar companies, offering insights for improved financial management and long-term sustainability within the industry.

3. Literature Review

3.1 Theoretical Review

This study draws on two key theories: Stockholder Theory and Liquidity Preference Theory.

3.1.1 Stockholder Theory

Stockholder Theory, advocated by Milton Friedman (1962), emphasizes that the primary goal of corporations is to maximize shareholder value. Executives have a fiduciary duty

to manage investor funds to achieve this objective, focusing on financial performance metrics such as return on equity, profitability, and return on assets. The theory also highlights the importance of sufficient liquidity to maintain operational efficiency and mitigate risks, thereby protecting shareholder interests.

3.1.2 Liquidity Preference Theory

According to John Maynard Keynes's (1936) liquidity preference hypothesis, the desire to maintain liquidity rather than borrow money drives demand for money. According to him, the interest rate represents the cost of Money. The hypothesis demonstrates the relationship between the interest rate and the amount of money that the public wants to hold. Keynes contends that people's preference for liquidity affects their saving and spending decisions and that the three factors that drive the need for liquidity are transactional, precautionary, and speculative. According to the hypothesis, cash is the most widely recognized liquid asset, more liquid investments may be quickly redeemed for their entire value, and investors give up liquidity in favor of greater interest rates when provided. Along with aiding in the understanding of the current ratio and acid test ratio, this theory will direct the study's analysis of the sugar companies' financial systems. The acid test ratio, also known as the quick ratio, is calculated by dividing the current assets minus the inventories by the current liabilities. The current ratio is calculated as current assets divided by current obligations. Thus, the price of money, or interest rate, as proposed by Keynes in 1936, is connected to the ratios of the acid test and current. The examination of the impact of funding structure and liquidity on financial performance can employ the Liquidity Preference Theory to: evaluate the influence of funding selection on liquidity and, consequently, the financial health of sugar companies. Provide valuable insights into the optimal combination of debt and equity that strikes a balance between liquidity requirements and profitability objectives and develop strategies for enhanced liquidity management to improve financial performance, particularly when addressing industry-specific challenges.

3.2 Empirical Literature Review

Arabsalehi, Beedel, and Moradi (2014) examined the relationship between stock market liquidity and economic performance using data from Iranian-listed companies. For ten years, between 2003 and 2012, 97 companies listed on the Iranian stock exchange were chosen using panel data and a systematic sampling technique. Tobin's Q, return on assets, and economic value added were used to gauge performance. The results demonstrated that, while stock liquidity had no significant effect on return on asset, it did have a significant positive impact on Tobin's Q and economic value added. Chukwubuikem, Okoye, and Ugochukwu (2022) examined the impact of liquidity management on the financial performance of manufacturing companies listed on the Nigerian Stock Exchange. Regression analysis was used in conjunction with an ex post facto research design involving 39 companies over ten years from 2010 to 2019.

The results suggested that the debtor collection period had a significant but negative impact on the return on capital employed and, conversely, a significant but weak negative impact on the return on asset. Niresh (2012) examined the trade-off between profitability and liquidity through a study of a subset of Sri Lankan manufacturing companies. The study covered 31 Sri Lankan listed manufacturing companies from 2007 to 2011 over five years. In the research analysis, correlation and descriptive statistics were employed. While net profit, return on equity, and return on capital employed were regarded as indicators of profitability, the current ratio, quick ratio, and liquid ratio were considered indicators of liquidity. The findings showed there is a negative relationship between the return on capital used and the quick, current, and liquid ratios, which are indicators of liquidity. Additionally, it proved that the liquid ratio has a negative correlation with the net profit ratio, return on equity, and return on capital employed. Kaysher, and Akter (2016) examined the trade-off between liquidity and profitability in Bangladesh's chemicals and pharmaceutical industries. The study used regression and correlation models for data analysis, looking at 10 companies over ten years from 2005 to 2014. The working capital ratio, quick ratio, and current ratio were the components of liquidity, and return on equity, return on capital employed, and return on assets were the indicators of profitability. The results imply that the working capital ratio, quick ratio, and ROA, ROE, and ROCE are positively correlated. Regression analysis, however, revealed no significant association between liquidity and profitability in Bangladesh's chemical and pharmaceutical industries.

4. Methodology

4.1 Research Design

The study employed a correlational research design, a non-experimental quantitative approach situated within the post-positivist paradigm (Asamoah, 2014). Correlational research examines relationships between variables to understand how they interact and influence each other. This approach is suitable for analyzing the relationship between liquidity components (current ratio, and acid test ratio) and financial performance metrics (Economic Value Added) in sugar companies. The study population comprised 16 sugar factories in Kenya, as per the Kenya National Bureau of Statistics Economic Survey 2020. Using purposive sampling, nine sugar factories provided quarterly data from 2014 to 2022, resulting in 324 observation points. Secondary data were collected from financial statements, including income statements, balance sheets, and cash flow statements. The Auto Regressive Distributed Lag (ARDL) model was used to analyze the data. Panel ARDL models allow for the analysis of short-term and long-term relationships across different groups, capturing temporal dynamics and individual heterogeneity (Pesaran, Shin, & Smith, 2001). This model can handle variables integrated into different orders I (0), I (1), or cointegrated) and includes an error correction term to estimate both short-term dynamics and long-term equilibrium relationships. Below is a generalized ARDL regression model that was utilized.

$$y_{it} = \sum_{j=1}^{p} \delta ij y_{i,t-j} + \sum_{j=0}^{q} \beta ij X_{i,t-j} + \varphi_i + \varepsilon_{it} \quad (1)$$

Where,
y_{it} is the dependent variable,
X_{it} is a k*1 vector that is allowed to be purely I (0) or I (1) or cointegrated,
δ_{ij} is the coefficients of the lagged dependent variable called scalars,
β_{ij} are k*1 coefficient vectors,
φ_i are the unit-specific fixed effects,
I =1, 2……N; t=1,2……,
T. p, q, q are optimal lag orders,
ε_{it} is the error term.

The re-parameterized ARDL (p, q, q……q) error correction model is specified as

$$\Delta y_{i,t} = \theta_i \left(y_{i,t-1} - \mu_{iX_{i,t}}\right) + \sum_{j=1}^{p-1} \alpha_{i,j} \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \beta ij \Delta X_{i,t-j} + \varphi_i + \varepsilon_{it} \quad (2)$$

Where,
θ_i =-(1-δ_1), group-specific speed of adjustment coefficient (expected that θ_i< 0);
μ_i= vector of long-run relationship,
ECT= ($y_{i,t-1} - \mu_i X_{it}$), the error correction term;
α_{ij} β_{ij} are the short-run dynamic coefficients.

It is the error correction model that is important when running a panel ARDL. This study model will take the following form from the generalized model.

$$Fp = f(Fs, Lq), \quad (1.1)$$

When Eq (1.1) is log linearized, we have the following:

$$inFp_{it} = \alpha_0 + \alpha_1 inFs_{i,t-1} + \alpha_2 inLq_{i,t-1} + \alpha_3 (inFs_{i,t} x inLq_{i,t}) + \varepsilon_{it} \quad (2.1)$$

Financial performance is a function of funding structure, liquidity, and the interaction of funding structure and liquidity.
Where,
Fp = financial performance,
Fs = funding structure,
Lq = liquidity,
Fs x Lq = interaction variable (funding structure and liquidity),
In = natural logs,
I = 1, 2……N; denotes the industries in our sample being equal to 9,
t = 1, 2……, T; indicates the period in this case 9 years,

The model estimated is an ARDL (p, q, q….., q).

$$\Delta InFP_{it} = \theta_i \left(FP_{i,t-1} - \vartheta_{i,} X_{i,t}\right) + \sum_{j=1}^{p-1} \beta ij \Delta InFP_{i,t-j} + \sum_{j=0}^{q-1} \alpha ij \Delta InFS_{i,t-j} + \sum_{j=0}^{q-2} \mu ij \Delta InLq_{i,t-j} + \sum_{j=0}^{q-3} \delta ij \Delta In\, FS_{i,t-j} * InLq_{i,t-j} + \omega_i + \varepsilon_{i,t} \quad 3.1$$

Where,
$\theta_{i=} -(1-\delta)$, group-specific speed of adjustment coefficient (expected that $\theta_i < 0$),
ϑ_i = vector of long-run relationship,
ECT = $\left(\left(FP_{i,t-1} - \vartheta i X_{it}\right)\right.$, the error correction term,
$\beta_{ij}, \alpha_{ij}, \mu_{ij}, \delta_{ij}$ are the short-run dynamic coefficients,
ω_i = group-specific fixed effects error term,
ε_{it} = error term.

5. Result and Discussion

The study's objective was to establish the effect of Liquidity on the financial performance of the sugar industry in Kenya. The study used secondary data, which included the current ratio, acid test ratio, and economic value added from the sugar industry's financial statements, to actualize its objective. The original raw data were transformed to their natural logarithms, which led to data standardization. By normalizing the data, data transformation helps to improve its suitability for statistical analysis. By bringing the data into a shared range through normalization, models that are susceptible to variation in the scale of the variables can be made less biased. Additionally, it's critical to lessen the impact of outliers—extreme values that have the potential to distort model parameters and statistical measurements. Data can be made less susceptible to outliers by transforming it using techniques like log transformation. Subsequently, data was analyzed using the ARDL model. The model was chosen due to its versatility in selecting lag lengths, handling non-stationarity, capturing both short- and long-term dynamics, controlling for endogeneity, conducting cointegration analysis, and providing strong forecasting capabilities. It also handles variables integrated into different orders I (0), I (1), or a combination), making them particularly useful in empirical research where ensuring stationary variables can be challenging Pesaran, Shin, and Smith (2001). Additionally, the inclusion of an error correction term in the Panel ARDL model aids in estimating short-term dynamics and long-term equilibrium relationships, offering insights into how quickly variables return to equilibrium following a short-term disturbance. These attributes make the model an invaluable tool in data analysis, particularly in the context of economic and financial research.

5.1 Liquidity and Financial Performance

The study found a significant positive relationship between liquidity (acid test ratio and current ratio) and EVA in the long run. The coefficient is 0.939539 with a p-value of 0.000. Furthermore, a significant and negative error correction term (-0.769742) indicates a long-term relationship, showing that 76.9% of adjustments move from the short to the long run. However, liquidity changes did not show significant short-term effects on EVA. The

findings align with studies by Zulqarnain, Awan, Ahmed, Qureshi, Hasnain, and Khan (2016), Odalo *et al.* (2016), Yameen, Farhan, and Tabash (2019), which found a positive relationship between liquidity and financial performance. However, the results differ from those of Waswa *et al.* (2018), Chukwubuikem, Okoye, and Ugochukwu (2022), and Niresh (2012), who found a negative correlation between liquidity and economic value added of the different sectors.

Dependent Variable: D(INEVA)				
Method: ARDL				
Maximum dependent lags: 5 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (4 lags, automatic): INLQ				
Fixed regressors: C				
Selected Model: ARDL (2, 3)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
	Long Run Equation			
INLQ	0.939539	0.053964	17.41052	0.0000
	Short Run Equation			
COINTEQ01	-0.769742	0.146831	-5.242355	0.0000
D (INEVA (-1))	0.054216	0.128026	0.423480	0.6723
D(INLQ)	-0.247593	0.218944	-1.130850	0.2591
D (INLQ (-1))	0.109350	0.423317	0.258316	0.7964
D (INLQ (-2))	0.311562	0.193930	1.606573	0.1093
C	0.010255	0.002827	3.627179	0.0003
Mean dependent var	6.12E-05	**S.D. dependent var**		0.067014
S.E. of regression	0.039162	**Akaike info criterion**		-3.973391
Sum squared resid	0.412550	**Schwarz criterion**		-3.331599
Log-likelihood	698.6894	**Hannan-Quinn criterion**		-3.717223
*Note: p-values and any subsequent tests do not account for the model selection.				

6. Conclusion and Recommendations

The study concludes that liquidity has a significant positive relationship with economic value added. This finding is relevant for investors, factory managers, and policymakers, as they can develop frameworks and guidelines that encourage better liquidity management practices within the industry.

Conflict of Interest Statement

The authors hereby affirm that there are no conflicts of interest associated with the publication of this article.

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