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Economic Growth and Financial Performance of Manufacturing Companies Trading at Nairobi Securities Exchange (NSE) Pre and during Covid-19

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ABSTRACT : *The government of Kenya's broad target under enhancing manufacturing is to increase the manufacturing share gross domestic product from 8.4% to 15% to create more jobs but the target remains a mirage owing to the poor performance of the manufacturing sector over years where for instance, sector performance declined to 3.5% in 2019 compared to 4.4% in 2018. The purpose of this study was to establish the influence of economic growth on financial performance of manufacturing firms registered at Nairobi Securities Exchange (NSE) pre and during Covid-19. The study was guided by efficient market hypothesis, purchasing power parity and arbitrage pricing theory. This study adopted descriptive research design grounded on panel data spanning 6 years from 2015 to 2020 with a target of 8 listed manufacturing firms. Panel data analysis was deployed to establish the influence of economic growth on financial performance. Economic growth was established to have a positive significant influence on financial performance with coefficients 0.358. However, intervening variable COVID-19 reduced influence of economic growth on financial performance by 0.185%. The study recommends formulation of prudent macroeconomic policies including bail outs during pandemics are geared towards enhancing performance of manufacturing firms as envisaged under the Big four agenda and Vision 2030 blue print.*

Keywords –*Covid-19, economic growth, financial Performance, manufacturing companies.*

I. INTRODUCTION

A firm exists as a body that optimizes available scarce resources to produce goods and services to be sold to customers at a profit. Increased or decreased profits indicate improved or declining financial performance of the firm (Haider,Anjum,Sufyan,Khan and Khan,2018). Measurement of financial performance as noted by Haider et al. (2018) is by profits, size, market share, worker and client satisfaction, societal and conservational performance where diverse ratios such as return on asset (ROA), liquidity and turnover ratios among others are commonly used to measure the financial status of firms. Challenges of competition in globalization period have influenced several firms to realize the significance of financial performance that aid sustainability of businesses. Undoubtedly, the firms' performance is informed by both inside factors and outside factors considered to be macro (Dewi, Soei and Surjoko, 2019).

Internal and macroeconomic dynamics affect the performance of firms either positively or negatively, inside factors occur within the business which management can control such as; production capacity, reduced costs, structural culture, governance, production quality, demand and production factors while macro factors are exogenous such as; economic conditions, political, social, environmental, competition, government regulations and policies making it impossible for the management to control(Egbunike and Okerekeoti, 2018). It is therefore vital that firms understand these factors for the sake of controlling their effect on the future financial performance (Issah & Antwi, 2017). According to KIPPRA (2020), gross domestic product (GDP) growth rate, overall inflation, population size, poverty level, labour productivity growth, exchange rate and unemployment rate were the key Kenya's macroeconomic and inclusive growth indicators in year 2020. Studies investigating the effect of macroeconomic variables have been conducted globally and locally focusing on different sectors of the economy. For instance, Issah and Antwi.

1.1 Problem Statement

In the medium-term, the republic of Kenya plans to realize all-encompassing progress by warranting growing industrial sector to generate employment (KIPPRA, 2020). Broader target under enhancing manufacturing within the five-year plan from 2018 to 2022 is to grow the manufacturing share of GDP from 8.4

% to 15 % (Government of Kenya, 2020). The target remains a mirage owing to the poor performance of the manufacturing sector over years where for instance, according to KIPPRA (2020) report, progress in the industrial division declined to 3.5% in 2019 in relation to 4.4% in 2018. This decline is attributed to a slump in production of consumption goods and global recession due to Corona virus disease 2019 (COVID-19) among other macroeconomic challenges that have made 42% of manufacturing firms to operate at less than half their production capacity (KPMG & KAM, 2020) which has led to poor financial performance. KNBS reported that from the year 2017 to 2018 there was a massive job loss from 910,000 to 841,000 employees which negatively affected financial performance. Reduced financial performance has led to many companies shutting down such as; Webuye pan paper, East African Portland cement, Raymonds and even some operating at half capacity such as Mumias sugar company.

To ensure sustainability of the manufacturing sector it is imperative to identify the main macroeconomic aspects that affect financial performance. Several studies; globally, regionally and locally have been conducted to establish how macroeconomic factors affect financial performance of firms. However, mixed results have been reported pointing to positive, negative, significant and insignificant influence of economic growth, inflation and exchange rate on financial performance, more importantly, studies conducted in Kenya rarely focused on manufacturing firms listed at the NSE, this makes it unknown as to how; economic growth, inflation and exchange rates affect performance of manufacturing companies. To bridge the knowledge gap, it was necessary to conduct research on influence of economic growth on the financial performance of manufacturing companies trading at NSE pre and during Covid-19.

1.2 Objective of the Study

The study sought to assess the influence of economic growth on the financial performance of listed manufacturing companies in Kenya pre and during Covid-19.

II. LITERATURE REVIEW

2.1 Theoretical framework

This paper was guided by two theories of efficient market hypothesis, Arbitrage Pricing Theory (APT) and theory of Purchasing Power Parity. The Efficient Market Hypothesis was propounded by Fama (1970) stating that earnings as a result shareholder's rivalry due to profit-maximizing actions makes it impossible to attain increased profits. He differentiated three systems of the hypothesis that is weak, semi-strong and strong. Majority of empirical studies have been based on the semi-strong system. The hypothesis assumed players in the economy have everything required in regards to evidences connecting fluctuations in macroeconomic indicators and stock prices.

Changes in stock prices are determined by macroeconomic indicators including money supply, inflation, growth and exchange rate amongst others (Fama, 1981; Mayasami & Sims, 2002). Efficient market hypothesis assists in making inferences that variation in macroeconomic factors certainly impacts stock prices either negatively or positively. The study was consequently aimed towards determining the anticipated link between macroeconomic indicators and performance of Kenyan stock.

Arbitrage Pricing Theory (APT) was originated by Stephen-Ross in 1976. He advanced this hypothesis by postulating that an asset's yields can be projected using direct association of assets probable yields and macroeconomic indicators that affect the asset's risk. APT provides policy makers and investors with a security pricing function, built on connection between a financial asset's return and risk. APT, purposes to identify prices of securities which might be erroneously priced. ATP accepts that trading act is not constantly seamlessly well-organized, hence sometimes causes assets to be overvalued or undervalued. Saeed and Akhter, (2012) suggested that projected yield of an asset depends on regular risks that include macroeconomic issues, which are not diversifiable practice measures.APT, offer traders a function to determine the hypothetical value of an asset where after obtaining the value, traders identify slight deviations from the fair market price, and trade accordingly. The study was geared towards determining various macroeconomic variables in stock market in relation to financial performance of firms.

Theory of Purchasing Power Parity was developed by Cassel in 1918. He came up with the hypothesis which postulates that exchange rate of currencies ought to equate with the ratio of total price levels between two nations, such that one unit of currency of a nation will have an equal purchasing power in a foreign nation. Coakley, John & O'Reilly (2005) suggested that the theory could also be stated as inflationary theory of exchange rate as it shows variations in cost levels as the key element of exchange rate developments. PPP can either be absolute or relative where absolute defines the situation where local currency retains the same purchasing power when exchanged to international currency.

Purchasing power parity is relevant to the study because it is commonly used metric for measuring gross domestic product (GDP) and by comparing the GDP values in different time periods we can tell the level of growth for a country which impacts financial performance of firms either positively or negatively**.**

2.2 Empirical Review

Egbunike and Okerekeoti (2018) explored the relationship between macroeconomic indicators, company features and performance of quoted consumer goods manufacturing companies in Nigeria by investigating how interest rate, inflation rate, exchange rate and the gross domestic product (GDP) growth rate affect performance. The dependent variable financial performance was measured as return on assets (ROA). Using ex-post facto design, all listed manufacturing companies on the Nigerian Stock Exchange and multiple linear regression findings indicated positive effect GDP growth rate on ROA. Similarly, Ahmad *et al.*(2020) focused on listed Nigerian companies and the firm value which established that GDP had significant negative effect on firm value and the firm performance.

Alali, Hussain and Ahmad (2018) in exploring the effect of macroeconomic indicators on profitability of insurance companies in Kuwait over the period 2011 to 2017, they used panel data analysis and proved that GDP insignificantly affected on the performance of the Kuwaiti insurance enterprises. Investigating influence of macroeconomic indicators on productivity of commercial banks listed at NSE, Simiyu (2015) used data from 2001 to 2012 based on panel analysis which showed that GDP positively but insignificantly influenced productivity of commercial banks.

2.3 Conceptual Framework

This study was steered by a conceptual frame work in Figure 1. The independent variable was economic growth measured by nominal Gross Domestic product. Financial performance the dependent variable was measured by return on assets.

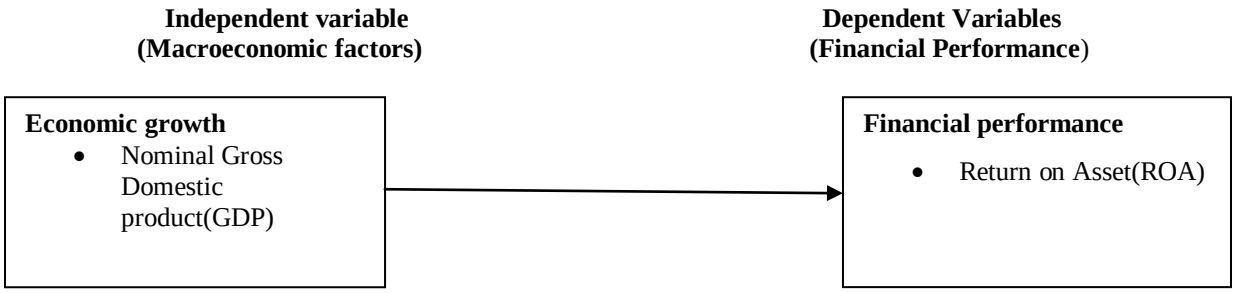

Figure 1: Conceptual framework

III. METHODOLOGY

Descriptive research design based on quantitative research paradigm was employed. The design was therefore suitable as it established influence of economic growth on financial performance of manufacturing companies trading at NSE pre and during Covid-19.

3.1 Target Population

Population for this study consisted of eight trading manufacturing companies at the NSE by 2020. The study employed quarterly panel data spanning six years from 2015 to 2020 on economic growth, inflation, exchange and return on assets (ROA) as this provided sufficient information and covered scope period of study as most firms had published their financial reports. Data on economic growth: GDP growth rate, inflation, and exchange rate was obtained from published financial statistics reports of CBK and KNBS while ROA information was obtained from published financial records of the NSE trading manufacturing companies.

3.2 Data Analysis and Presentation

The Hausman test was conducted to select random or fixed effect model based on the null hypothesis that the random model is appropriate. A panel regression model 3.1 was relied upon to get the influence of economic growth, inflation and exchange rate on financial performance of trading manufacturing companies' pre and during Covid-19. T-Test was used to test hypothesis on individual parameter.

$ROA_{it}=\alpha+\beta_1 GDPit+\beta_2 CVD_{it}+\varepsilon$ ……3.1

Where;

$ROA =$ Return on assets a measure of financial performance

$GDP =$ Gross Domestic Product growth rate, a measure of economic growth

$CVD = \begin{cases} 1 \\ 0 \end{cases}$, 1 during Covid-19 while 0 when no Covid-19

$\varepsilon =$ Error term capturing other factors

$t =$ Time period, from Quarter 1 2015 to Quarter 4 2020

$i =$ Eight manufacturing firms

$\beta_i =$ Panel regression coefficients

$\alpha =$ Constant

The study conducted multilinearity, autocorrelation, and residual normality and Heteroscedasticity tests. To ensure that the regression meet the classical assumptions of no multicollinearity, no autocorrelation and no Heteroscedasticity. The study adopted Wooldridge autocorrelation test, Breusch-Pagan Heteroscedasticitytest, variance inflation factors (VIF) for multicollinearity and Shapiro-Wilk W test for residual normality.

IV. RESULTS AND FINDINGS

Both descriptive and inferential statistics were used for analyzing data and the findings were as follows;

4.1 Descriptive Statistics Results

Mean, standard deviation, minimum and maximum were run to understand the distribution of the variables used that included return of assets (ROA), inflation rate (INF), exchange rate (EXR) and economic growth (ECG).

Table 1: Descriptive statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
ROA	42	6.5	10.82452	-34.3	36.7
ECG	42	4.633333	2.280957	-.3	6.3

Results in Table 1 for the study period 2015 to 2020, we had 42 observations arising from the multiplication between 6 years' study and 7 firms producing a panel of 42 observations where the average return on assets (ROA) for the manufacturing sector and economic growth (ECG) were 6.5 was 4.6% respectively. The standard deviation of 10.82 for ROA which was greater than the mean showed that during the study period there was a wider variability in the performance of the various manufacturing firms as it can be noted that the minimum ROA was at -34.3 while the maximum return on assets was 36.7 The year 2020 was marred with wide spread of COVID 19 that led to lockdowns but the situation seems to have affected many firms. Economic growth had standard deviation value less than the mean of $2.3 < 4.6$ an indication that the variability in the variables over time was small. The smallest economic growth rate of -0.3% and maximum economic growth of 6.3 % were record in 2020 and 2018 respectively.

4.2 Variables Normality Distribution

The study conducted normality test for the variables to ascertain their distribution over time. Shapiro-Wilk W test was employed with the null hypothesis that the variable is normally distributed at 5% level of significance.

Table 2: Shapiro-Wilk W test for normal data

Variable	Obs.	W	Z	Prob.
ROA	42	0.99370	-0.509	0.81030
ECG	42	0.94227	1.486	0.70342

Normality test for variables guides us on whether to apply parametric or non-parametric tests if the variables are normality or not normally distributed. Shapiro-Wilk W test results in Table 2 depicted all W-values being approximately 1, probability values greater than 0.05 and z-values less than the z-critical value of 1.96. This implied the acceptance of the null hypothesis that variables of financial performance (ROA) and economic growth (ECG) were normally distributed at 5% level of significance.

4.3Stationarity Test

The study employed Levin-Lin-Chu stationarity test based on null hypothesis that the variable is not stationary and alternative hypothesis that the variable is stationary.

Table 3: Levin-Lin-Chu stationarity test results

Variable	Panels	Periods	Test Statistic	P-value
ROA	7	6	-22.7608	0.0000
ECG	7	6	-4.0217	0.0002

The critical value for the test static is -1.9470. Test results in Table 3 showed probability values less than 0.05 while all the test statistic values for the variables were less than the critical value -1.9470. This implied the rejection of the null hypothesis that the variables were not stationary at 5% level of significance an indication that financial performance (ROA) and economic growth ECG) were stationary hence their usage for analysis would yield valid and reliable results.

4.4 Correlation Analysis

This was conducted to establish association between the variables of ROA, INF, EXR and ECG with COVID-19 as an intervening variable. Since the variables were normally distributed, the study employed Pearson correlation analysis a parametric test whose correlation coefficients (r) value range between -1 and 1 ($-1 \le r \le 1$). A negative value shows negative association while a positive value signifies a positive association between the variables.

Table 4: Pearson Correlation Coefficients without COVID 19

VARIABLE	ROA	ECG
ROA	1.0000	
	(0.0416)	
ECG	0.2442*	1.0000
	(0.0191)	

Note. Values in parenthesis ( ) are p-values and * indicate statistically significant given p-value < 0.05 Test results in Table 4 depicted correlation coefficients of $r = 0.3063$ for financial performance (ROA) and economic growth (ECG) with a p-value 0.0191 < 0.05, $r = -0.8243$ for economic growth (ECG). < 0.05. The Pearson correlation coefficients with p-values < 0.05 indicated that there was a significant positive association between; financial performance (ROA) and economic growth (ECG)

An analysis involving COVID-19 (CVD) as an intervening variable produced varying results in comparison to when COVID-19 was not considered as a variable.

Table 5: Pearson Correlation Coefficients with COVID 19

VARIABLE	ROA	ECG	CVD
ROA	1.0000		
ECG	0.2039*	1.0000	
	(0.0404)		
CVD	-0.2481*	-0.6432*	1.0000
	(0.0131)	(0.0000)	

Note. Values in parenthesis ( ) are p-values and * indicate statistically significant given p-value < 0.05

4.5 Fixed and Random Effect Panel Regression Analysis

After conducting Pearson correlation analysis, fixed and random effect panel regressions were conducted to predict the changes in ROA and ECG with COVID-19 as an intervening variable.

Table 6: Fixed Effect Results

ROA	Coef.	Std. Error.	t	$p > \|t\|$
ECG	0.45751	0.27672	1.65	0.751
Constant	149.26718	117.1429	1.27	0.882

Table 7: Random Effect Results

ROA	Coef.	Std. Error.	t	$p > \|t\|$
ECG	0.35751	0.06867	5.21	0.025
Constant	147.9827	114.0604	1.30	0.204

Table 8: Hausman Test Results

ROA	(b)	(B)	S.E.	$p > \lvert Chi^2 \rvert$
	fe	re		
ECG	0.45751	0.35751	1.62	
$b =$ consistent under null hypothesis; random effect appropriate				
$B =$ inconsistent under alternative hypothesis; fixed effect appropriate				

Before the interpretation of fixed and random effect results, Hausman test was run to identify the appropriate model between fixed effect and random effect. The Hausman test was based on the null hypothesis that random effect model is appropriate while the alternative hypothesis was that the fixed effect model was appropriate. Results in Table 8 capture the variables where ROA as the dependent while ECG as independent. Columns b (fe) and B (re) captured the fixed and random effect models coefficients with S.E. denoting the standard errors. Given the chi-square p-value

($p > \lvert Chi^2 \rvert$) of 1.000 which is greater than 0.05 implied the null hypothesis that the random effect model is appropriate was accepted at 5% level of significance.

From the Hausman test results, Table 8 results on random effect were used to extract a regression model (4.1) that establishes the influence of ECG on financial performance of manufacturing companies (ROA) trading at NSE.

$$ROA_{it} = 147.98 + 0.358ECG_{it} \quad \text{…………………………………. (4.1)}$$

Table 9: Random Effect Results (COVID-19 as Intervening Variable)

ROA	Coef.	Std. Error.	t	$p > \lvert t \rvert$
ECG	0.17345	0.02932	5.92	0.019
CVD	-1.79300	0.07165	-25.02	0.000
Constant	149.7622	115.769	1.29	0.196

The random effect test results in Table 9 with COVID-19 as an intervening variable led to the extraction of a regression model (4.2).

$$ROA_{it} = 149.762 + 0.173ECG_{it} - 1.793CVD_{it} \quad \text{……………………………………(4.2)}$$

4.5 Diagnostic Tests

The diagnostic tests of residual normality, Multicollinearity, Heteroscedasticity and autocorrelation were conducted to ensure that the regression results conform to the assumptions of regression that resulted in the confirmation of the reliability of the test results.

4.5.1 Residual Normality

The study conducted normality test for the residuals using the Shapiro-Wilk W test where the null hypothesis was that the residuals are normally distributed at 5% level of significance.

Table 10: Shapiro-Wilk W test for normal data

Variable	Obs.	W	Z	Prob.
Residuals	42	0.98391	-0.875	0.80931

Shapiro-Wilk W test results in Table 4.10 for the residuals indicated W-value approximately equal 1, probability value 0.809 > 0.005 and z-value of -0.875 less than the z-critical value of 1.96. This meant that we accept the null hypothesis that the residuals were normally distributed at 5% level of significance.

4.5.2Heteroscedasticity

Heteroscedasticity is a scenario where the residuals have a constant variance. Breusch-Pagan test for heteroskedasticity was conducted. The null hypothesis for the test was that there is no heteroskedasticity.

Table 12: Heteroscedasticity Test Results

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity
Ho: Constant variance
Variables: re
chi2(1) = 1.08
Prob > chi2 = 0.2984

Breusch-Pagan test results in Table 12 indicated a chi-square value of 1.08 that is less than the critical chi-square value of 5.99 and a p-value 0.2984 greater than 0.05. This meant that the null hypothesis of no heteroscedasticity was accepted at 5% level of significance.

4.5.3 Autocorrelation

Autocorrelation arises when the residuals in different time periods are correlated. Wooldridge test for autocorrelation involving the null hypothesis that there is no first-order autocorrelation.

Table 13: Autocorrelation Test Results

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(4, 37) = 0.53
Prob > F = 0.1963

Wooldridge test for autocorrelation test results in Table 13 indicated an F-value of 0.53 that is less than the critical F-statistic of 2.61 and a p-value 0.1963 greater than 0.05. This meant that the null hypothesis of no first-order autocorrelation was accepted at 5% level of significance.

The objective tested the null hypothesis that economic growth had no significant influence on financial performance of manufacturing companies trading at NSE pre and during Covid-19 which was rejected at 5% level of significance. A Pearson correlation coefficient of $r = 0.2442$ with a p-value 0.0191 < 0.05 for financial performance (ROA) and economic growth (ECG) indicated that there was a significant positive association between financial performance (ROA) and economic growth (ECG) without COVID-19 as an intervening variable. That is as the economy grows financial performance improves. Furthermore, it was noted that COVID-19 (CVD) and financial performance (ROA) had a Pearson correlation coefficient of $r = -0.2481$ having a p-value 0.0131 < 0.05 hence COVID-19 significantly reduced financial performance of manufacturing companies. Having CVD as an intervening variable financial performance (ROA) and economic growth (ECG) had a Pearson correlation coefficient $r = 0.2039$, p-value 0.0404 < 0.05. This indicated that even in the presence of COVID-19 economic growth still had a positive significant association with financial performance (ROA) but COVID-19 significantly reduced the magnitude of association between financial performance (ROA) and economic growth (ECG) by 0.0403 from $r = 0.2442$ to $r = 0.2039$.

The random effect results having a regression coefficient of 0.358, 0.025 < 0.05 for economic growth (ECG) implied that without COVID-19 as an intervening variable economic growth (ECG) had a significant positive influence on financial performance (ROA) such that a percentage increase in economic growth (ECG) led to 0.358% increase in ROA of the manufacturing firms. A coefficient -1.793 with p-value 0.000 < 0.05 for CVD implied COVID-19 had a significant negative influence on financial performance (ROA) at 5% level of significance such that as an intervening variable it reduced financial performance (ROA) by 1.793%. In the presence of COVID-19 economic growth (ECG) had a regression coefficient of 0.173, p-value 0.019 < 0.05 showing that economic growth (ECG) had a significant positive influence on financial performance (ROA) such that a percentage increase in economic growth (ECG) enhanced financial performance (ROA) by 0.173%. Therefore, as an intervening variable COVID-19 significantly reduced the influence of economic growth (ECG) on financial performance (ROA) by 0.185% from 0.358% to 0.173%.

V. CONCLUSIONS

Based on the study findings, the paper concludes that economic growth significantly influence financial performance of the listed manufacturing companies in Kenya. Economic growth is indeed a key ingredient in explaining economic development of any economy. As the economy grows, money circulation is enhanced and as such a number of economic activities are likely to increase which may include manufacturing activities.

VI. RECOMMENDATIONS

Management of the manufacturing firms should come up with strong research departments that will monitor the economic growth trends such that in the anticipation of enhanced growth, firms should expand their businesses since consumption and income levels in the economy are bound to increase. This will help firms to reap more from the expanding market as the economy grows and in turn improve financial performance. On the other hand, government policy makers should put in place prudent macroeconomic policies that are geared towards enhancing growth and come up with economic stimulus packages that can enhance the performance of manufacturing firms during pandemics and other calamities which might include bail outs for struggling manufacturing firms for them to be able to remain afloat and improve their financial performance.

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