









based measures such as returns on assets (ROA) and return on equity (ROE) (Al-Matari & Al-Swidi, 2014).

Other accounting measures of performance include return on invested capital earnings before interest, taxes, depreciation, and amortization (EBITDA) margin. These measures give an indication of the profitability of a company. Bogicevic, Domanovic, and Krstic (2016) justifies the use of these profitability ratios as measure of financial performance by claiming that profits are bottom line for all commercial businesses and summarizes the activities of all business functions. However, proponents of broader understanding of financial performance advocate for the inclusion of solvency, liquidity, and activity indicators in the analysis of company performance. The proposed study employed accounting measures of financial performance.

### **Manufacturing Firms Listed at the Nairobi Securities Exchange**

The manufacturing industry is the prop of the economies of numerous countries as it plays a fundamental role in the establishment of productive jobs, promoting sustainable growth of the economy, and instituting structural changes (Herman, 2016). The manufacturing sector also has a multiplier effect on other sectors of the economy such as service, agriculture, transport, wholesale, and retail because it creates backwards or forward linkages with these sectors. The economic spill-over effects of the manufacturing industry are alleged to be more robust than that of other sectors (Su & Yao, 2016).

The manufacturing sector in Kenya has not been so vibrant. Data from the Kenya National Bureau of Statistics (2018) indicating that the role of the sector to the country's GDP declined from 10% to 7.7% between 2014 and 2018. The performance of the manufacturing sector in the country is also reflected in the NSE where there are 9 listed firms, which is about 7% of the total number of companies listed in the NSE (NSE, 2021). As at March 2021, the NSE had a total of 66 listed firms organized into five economic sectors namely: manufacturing, banking, telecommunication, energy and petroleum, insurance, and construction.

The NSE is dominated by Safaricom PLC stocks under the Telecommunication sector with data indicating that the Telkom commanded 48.3% of total turnover at the NSE in 2020 (Nairobi Securities Exchange, 2020). In March 2021, the Sterling Capital Limited (2020) gave the manufacturing sector an index of 46.17 against 134.21 for telecommunication sector, 60.60 for

the banking sector, and 56.34 for the energy and petroleum sector. The index implies that the manufacturing sector's performance was below that of these three sectors (Sterling Capital Limited, 2021).

### **Statement of the Problem**

The manufacturing sector plays a central role in the economic and social transformation of countries. The sector contributed to the industrialization of the western countries by creating jobs, increasing income, and enhancing the balance of trade of these nations (Su & Yao, 2016). The manufacturing sector has also been instrumental in assisting emerging economies such as China and India to pull a significant section of its population from low to the middle-income status.

Despite its huge manufacturing potential, the manufacturing sector in Africa is least developed. The contribution of this sector to the continent GDP remains below 10 percent. This has denied many African countries the opportunity to create jobs, eradicate poverty, and increase exports. In Kenya, the manufacturing sector had stagnated at 11% of GDP for decades and declined to 7% of GDP in 2018 (Kenya National Bureau of Statistics, 2018). Although most studies examining the performance gap in this sector have focused on macro-level factors, recent studies show that the performance challenges could also be linked to internal factors. One of these factors is financial leverage.

Numerous studies have delved into the link between financial leverage and performance of manufacturing organization, but results have not been consistent. On one hand, the study by Egbunike and Okerekeoti (2018) found that financial leverage has a significant and positive effect on the performance of manufacturing organizations. On the other hand, Ramadan (2015) found that there was a significant and negative relationship between financial leverage and financial performance of manufacturing organizations. The inconsistency in literature warrants further investigations. Therefore, the study sought to examine the relationship between financial leverage and the performance of listed manufacturing firms in Kenya.

### **Research Objective**

To examine the relationship between the financial leverage and the financial performance of listed manufacturing firms in Kenya.

## **LITERATURE REVIEW**

### **Theoretical Review**

#### **Modigliani and Miller Theorem**

This theorem was first developed by Modigliani and Miller (1958), who opined that in an environment where there is no taxation, the type of financing deployed by an organization has little impact on the firm value. Although the theory explains the relationship between financing and firm value, it has also been applied to explain the relationship between firm financing and performance. This is because the issue of performance is closely interrelated with the value of the firm. High performance is expected to drive firm value upwards and vice-versa. In 1963, the authors observed that their proposition was unrealistic because taxes are present in most environments where business operates. Consequently, they came up with another proposition that captures the impact of taxation on the relationship between type of financing and firm value.

Modigliani and Miller (1963) proposed that in an environment where there is taxation, there is a linear and positive connection between debt financing and the value of firms. This proposition implies that there a positive relationship between debt financing and financial performance of firms. It suggests that high levels of financial leverage will always ameliorate performance and that the optimal capital structure is one that comprises 99.999% debt (Ahmeti & Prenaj, 2015). However, this proposition assumes that there is bankruptcy cost, no transactional cost, no tax exhaustion, and no agency costs. In most business environment, these assumptions are not realistic. Aleksanyan and Huiban (2016) observed that in France, 3500 manufacturing organizations file for bankruptcy every year suggesting that bankruptcy is a hard reality in the manufacturing sector.

This theorem was relevant to the study as it helps to explain the relationship between financial leverage and performance. The theory was instrumental in the interpretation of the statistical findings that were obtained in this research. The quantitative method deployed in the study was useful in establishing the magnitude of the relationship (whether significant or not) between financial leverage and performance as well as the direction of the relation (whether positive or negative). However, the statistical explained why these relationships exist. Theories such as the Modigliani and Miller (1963) theorem helped to answer the why questions regarding these

relationships. The main explanation given by the theory revolves around deduction in tax expenses.

### **Trade-Off Theory**

The Trade-off theory was proposed by Kraus and Litzenberger in 1973, who took into consideration the need to balance between the taxation accorded offered by debt financing and the cost of bankruptcy. The theory suggests that there was connection between debt financing and the profitability of the firm, but this connection is inverted U-shaped rather than linear (Negesa, 2016). This implies that increasing debt will increase profits up to a certain point where performance will level out and eventually begin to decline due to increase in bankruptcy risk. The theories consider the point at which profits begin to level out as the optimal leveraging level. At this point, a firm should consider going for equity financing rather increase its debt burden.

According to Kraus and Lizenberger (1973), firms should combine different debt and equity financing in order to balance between the cost and benefits of each of these financing options. This theory appreciates that of the two financing options have costs and benefits. Benefits of debt financing include tax deduction, low transaction costs, low agency costs, and retention of ownership. Agency costs are expenses that arise from having an agent act on behalf of principals. In equity financing, the investor gains ownership of the company assuming the role of principals while the company's management become the agents (Moyo, Wolmarans & Brummer, 2013). Agency cost often arises when there is conflicting interests amongst the shareholders and the management and shareholders have little information on what takes place in the company.

The trade-off theory was useful in interpreting outcome of the research. This theory attributes a positive relationship between financial leverage and performance to tax shield offered by having a high level of debt. On the other hand, the study links a negative relationship between financial leverage and firm performance to the financial distress associated with having a significant portion of company resources being directed towards debt repayment.

### **Pecking Order Theory**

The pecking order theory was coined by Myers and Majluf (1984) to describe the influence of financing decisions on firms (Negesa, 2016). The authors opined that the cost financing increases as the level of information asymmetry between internal stakeholders (managers) and external



providers of fund increase. Information asymmetry refers to a situation where one party (either the firm or the financier) has more information than the other (Moyo *et al.*, 2013). This proposition implies that the relationship between financial leverage and profitability was determined by factors that influence information symmetry such as type of financing, level of maturity, and transparency in the market.

The pecking order theory further proposes that in most cases firms prefer to finance their activities using retain earnings because this option minimizes asymmetry of information (Myers & Majluf, 1984). When internal sources are exhausted, the next preferred mode of financing is debt. Debt issuance signals that the company's management is confident that the investment that they are planning to pursue will be profitable enough to repay the debt plus the accrued interest. Even when it comes to debt, the type of debt (for example bond versus loan) and maturity period also matters. The theory posits that companies often go for the debt type that minimizing information asymmetry.

The Pecking order theory was relevant in interpretation of study findings. According to the theory, the relationship between financial leverage and firm performance can be explained by asymmetry of information and transactional cost. A positive relationship between financial leverage and performance would mean that debt financing by the listed manufacturing firms tend to lower information asymmetry and transactional costs. A negative relationship would suggest the opposite.

### **Empirical Literature**

The financial leverage-financial performance linkage is captured in the study by Aleksanyan and Huiban (2016), which examined determinants of firms' bankruptcy in the food manufacturing industry in France. One of the determinants that were examined was the companies' indebtedness as measured using the debt ratio. The study employed a longitudinal design where financial data for a ten-year period spanning between 2001 and 2012 were analysed. Results showed that higher debt burden increased the probability of a firm filing for bankruptcy. Results also showed that higher cost of credit as measured using the ratio of interest expenses to total debt increased the risk of bankruptcy. However, this study was conducted in France where the business environment differs significantly from Kenya in terms of availability of financing (both equity and debt), cost of financing (interest rates and investors' rate of returns), and taxation

policies among others. The findings may not reflect the relationship between financial leverage and financial performance of Kenyan manufacturers.

In another study, Legesse and Guo (2019) examined the link between debt financing and the efficiency of manufacturing firms in Japan, Germany, China and India,. The study used longitudinal research design where 10-years (2011-2020) secondary financial data of listed manufacturing companies from the four countries was analysed. Three indicators of debt financing were used namely long-term debt ratio, short-term debt ratio and total debt ratio. Results showed that the firms' efficiency was positively and significantly connected with total debt and short-term debt but inversely and significantly connected with long-term debt. The findings suggest that the type of debt has an impact on firm outcomes and thus the need to breakdown the debt typology during the analysis of the influence of debt financing. However, the study was also conducted in highly industrialized countries with advanced financial markets and thus findings may not reflect the situation in the Kenyan manufacturing sector.

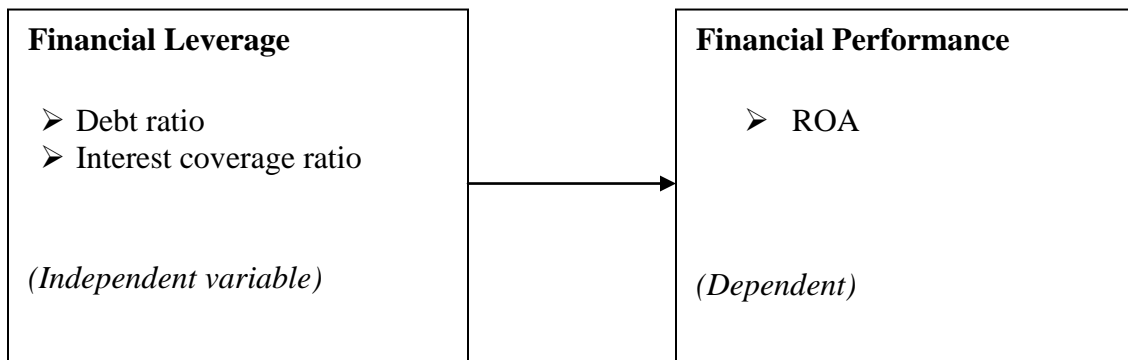
In Jordan, Ramadan (2015) examined the relationship between profitability and financial leverage among manufacturing organizations. This study also utilized longitudinal research design that entailed analysing five-year data (2000-2014) resulting in 975 firm-year observations. Financial leverage was gauged using the interest coverage ratio while the profitability of the enterprises was assessed using the return on asset (ROA) ratio. Results showed that there was a statistically significant and positive relationship between ROA and financial leverage. The study observed that more profitable companies had little leverage in their capital mix as they preferred to finance their operations through in-house finances and equity funds. These outcomes are in harmony with the pecking order theory that suggests that company preferred source of financing is internal funds. However, the study did not delve into the link between interest payments and enterprise financial performance and thus does not provide information on how cost of leverage relate to performance. The study also used performance as the independent variable and interest coverage ratio as the dependent variable. The focus of the proposed study was to examine how financial leverage influence performance by examining multiple indicators of the financial leverage.

In India, Goel, Chadha, and Sharma (2015) examined the relationship between financial leverage, liquidity, and financial performance in the machinery industry. The study also utilized the longitudinal research design where 10-years (2004-2013) financial data was analysed using

the panel data fixed-effect regression model. Financial leverage was appraised using the interest cover ratio, liquidity was assessed using current ratio and cash conversion cycle, and performance was evaluated using ROA. Results showed that financial leverage was positively connected to both the current ratio and cash conversion cycle. This implies that firm with more debt tend to have better liquidity. However, results further showed that financial leverage was significantly and positively related with the performance of the firm. This implies that the linkage could not be explained by improved liquidity. Although financial leverage had a positive association with liquidity, it had a negative association with firm performance. Nonetheless, the research did not assess the relationship between performance and interest payment. The difference in the maturity of Indian and Kenyan financial markets also implies that findings of this study may not necessarily reflect the link between the financial leverage and the performance of manufacturing enterprises in Kenya. The proposed study seeks to address these gaps.

Ahmad, Salman, and Shamsi (2015) examined the possible financial leverage-profitability linkage among the cement factories in Pakistan. The study used the longitudinal design where five-year data (2005-2010) for 18 cement manufacturing companies was investigated using OLS regression model. Profitability was assessed using the ROA ratio, financial leverage was gauged using the total debt ratio while size was captured by total assets. Results showed that financial leverage was significantly and positively associated with the profitability of the companies. The study further confirmed firm size moderated the relationship between financial leverage and financial performance. Companies that had high leverage were less profitable than their counterparts. However, the study failed to break-down the analysis into specific leverage elements. The study was also conducted in Pakistan where the environment differs from Kenya in terms of cost of credit, availability of credit, and accessibility of other forms of financing such as equity. Consequently, findings may not reflect the reality regarding how financial leverage relates to the performance of manufacturing enterprises in the Kenyan context. In addition, this study confined its analysis on firms operating in a single industry, the cement manufacturing industry, and other association observed between debt financing and performance cannot be detached from industry specific factors. The proposed study seeks to address this gap by incorporating manufacturing organizations from different industries.

## **Conceptual Model**



## RESEARCH METHODOLOGY

### Research Design

The study made use of the longitudinal research design. According to Creswell and Creswell (2017), longitudinal research entails collecting data from the same object over a period of time in order to detect changes. In the proposed study, data was collected from manufacturing organizations listed in the NSE for a 10-year period ranging from 2011 to 2020. According to Wang *et al.* (2017), longitudinal designs are more accurate in testing cause-effect relationship between variables as they tend to trace the relationship over time thus ruling-out reverse causation. Therefore, this design was more accurate in inferring a cause-effect relationship between financial leverage and performance of listed manufacturing firms. The study used of secondary data sourced from the financial records of the establishments.

### Target Population and Sample Size

The study targeted all the nine manufacturing firms listed at the NSE. Since the population was relatively small, all the nine firms were included in the sample. Given that the study traced 10-year annual financial data for each of the nine firms, the study had 90 cases for analysis.

### Data Collection Instrument and Procedure

The data collection exercise was aided by a data extraction checklist. According to Creswell and Creswell (2017), a data extraction checklist was a form that guides researchers about the type of relevant information that should be extracted from the secondary data. A sample of the checklist was presented in Appendix 1. The checklist focused on extracting raw financial data needed to compute the ratios for each of the study variable from the financial statements.

## Empirical Model

For estimation purposes, random effect GLS regression model was used to test the relationship between financial leverage and performance after performing Hausman test as specified below

$$FP_{it} = \beta_0 + \beta_1 DR_{it} + \beta_2 ICR_{it} + \epsilon_{it}$$

Where:

$FP_{it}$  = the firm's financial performance (ROA) of firm  $i$  during period  $t$

$DR_{it}$  = Debt ratio of firm  $i$  during period  $t$

$ICR_{it}$  = Interest coverage ratio of firm  $i$  during period  $t$

$\beta_0$  = the constant

$\beta_1$ , and  $\beta_2$ , = the regression beta coefficients

$\epsilon$  = the error term

## ESTIMATION RESULTS AND DISCUSSION

### Descriptive Statistics

The descriptive statistics took into consideration the mean, standard deviation, minimum and maximum values. The study variables were; return on assets (ROA), debt ratio and interest coverage ratio. The findings of the univariate analysis are as shown below;

### Descriptive Statistics

Variable	N	M	SD
Debt Ratio	90	0.071	0.109
Interest Coverage Ratio	90	0.027	0.106
Return on Assets	90	0.060	0.341

### Source: Research Findings (2021)

The mean score of debt ratio between the years 2011 to 2020 period for the 9 manufacturing firms listed at the NSE was 0.071 which is relatively low inferring that the firms were not financing their assets using more of the non-owner supplied funds (short term and long term borrowings) during the period under the study. Nonetheless, the debt ratio variations were relatively steady with a standard deviation of 0.109 which demonstrated a marginal change of debt ratio value.

The average score for interest coverage ratio between 2011 and 2020 was 0.027 and the corresponding standard deviation of 0.106 which signified a marginal variation of interest coverage ratio during the fiscal period between 2011 and 2020. This suggests that the firms financing expenses were comfortably settled by the firms operating incomes. This implies that the listed manufacturing firms were not susceptible to inherent financial risks. The aggregate mean of return on assets (ROA) between 2011 and 20120 was 0.060 with observations of ROA showing considerable variability of 0.341. This implies that there was considerable variation among the listed manufacturing firms on how these firms utilized their total assets in generating their respective corporate incomes.

#### 4.4 Correlation Analysis

To measure the direction and the strength of a linear association between two variables, Pearson product-moment correlation coefficient denoted by  $r$  was utilized. From the correlation matrix, the Pearson's coefficient ( $r$ ) specifies the direction and degree of the correlation between the variables. The coefficient ( $r$ ) ranges from -1 to + 1 where ( $r = 1$ ) suggest perfect correlation, ( $r = 0$ ) implies that the bivariate variables do not vary implying absence of any association whereas ( $r = -1$ ) reveals perfect negative correlation.

#### Correlations Analysis Results

VARIABLE	DR	ICR	ROA
DR	1		
ICR	0.188	1	
ROA	0.743*	0.274	1

**Source: Research Findings (2021)**

From the correlation analysis findings, there was a weak positive insignificant correlation between interest cover ratio and debt ratio ( $r = 0.188$ ,  $p > 0.05$ ). There was a strong positive and significant correlation between ROA and debt ratio ( $r = 0.743$ ,  $p < 0.05$ ) while interest cover ratio ( $r = 0.274$ ,  $p > 0.05$ ) was weakly positively and insignificantly correlated with ROA.

#### Inferential Statistics

#### Financial Leverage and Financial Performance

#### Estimation Model: Random Effect Generalized Least Squares (GLS) Regression

ROA	$\beta$	SE	z	P>z	(95% Confidence Interval)
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<b>Constant</b>	-0.11	0.03	-3.88	0.00	-0.168	-0.06
<b>DR</b>	2.25	0.22	10.01	0.00	1.81	2.69
<b>ICR</b>	0.46	0.23	2.01	0.04	0.01	0.91
<b>R<sup>2</sup></b>	<b>Within</b>					
	0.45					
<b>Between</b>	0.87					
<b>Overall</b>	0.57					
<b>Observation per group: min</b>	9					
	<b>avg</b>	9				
	<b>max</b>	9				
<b>Wald chi2(1)</b>	115.85					
<b>Prob &gt;chi2</b>	0.00					
<b>Number of Observations</b>	90					
<b>Number of Groups</b>	10					

**Source: Research Findings (2021)**

The overall coefficient of determination ( $R^2 = 0.57$ ) indicate that nearly 57% of variation in financial performance is jointly described by debt ratio and interest coverage ratio while the remaining 43 is accounted for by other variables not factored in the panel data estimation model. The overall generalized least squares model was statistically significant in estimating the nexus between debt ratio and financial performance ( $\chi^2 = 115.85$ ,  $p < 0.05$ ). This suggests that the longitudinal data applied in estimation process was appropriate for drawing inferences about the population attributes. Furthermore, the findings revealed that there was a positive and statistically significant influence of both debt ratio ( $\beta = 2.25$ ,  $z = 10.01$ ,  $p = < 0.05$ ) as well as interest coverage ratio ( $\beta = 0.46$ ,  $z = 2.01$ ,  $p = < 0.05$ ) on financial performance.

The findings of the current study significantly corroborate the empirical results obtained by Aleksanyan and Huiban (2016) who while examining the determinants of firms' bankruptcy in the food manufacturing industry in France established that higher debt burden increased the probability of a firm filing for bankruptcy. This suggests that debt ratio significantly influences the financial performance. Similar findings are also documented by Legesse and Guo (2019) who while probing the link between debt financing and the efficiency of manufacturing firms in China, Germany, India, and Japan reported that that the firms' efficiency was positively and significantly associated with total debt and short-term debt.

The findings of this study are consistent with those of Ramadan (2015) who assessed the relationship between profitability and financial leverage among manufacturing organizations using 975 firm year observations. The results confirmed a positive and significant relationship between interest cover ratio and financial performance of the manufacturing firms. Furthermore,

the results of this study equally mirror those of Goel *et al.* (2015) who probed the relationship between financial leverage, liquidity, and financial performance in the machinery industry using panel data fixed-effect regression model.

### **Conclusion**

Several important conclusions were made based on the empirical results. To begin with, debt ratio was found to significantly influence firm's financial performance. The influence was moreover found to be positive which implies that an increase in debt ratio led into extensive amelioration in financial performance. Therefore, from the estimated results, it was concluded that appropriate debt ratio plays an integral role in enhancing financial performance. This is attributed to the fact that maintaining the optimal leverage (debt) in the firm's capital structure that will not negatively impact on its financial performance.

Secondly, interest coverage ratio was found to significantly affect the financial performance of the manufacturing firms listed at the NSE. Furthermore, the effect of interest coverage ratio on financial performance was confirmed to be marginally positive. This suggests that there was a positive association between interest coverage ratio and financial performance. Consequently, from the estimation results, it was concluded that ideal interest coverage ratio enhances financial performance. This can be ascribed to the fact that sustaining an ideal leverage (debt) in the firm's capital structure has positive implication on its financial performance.

### **Areas for Further Research**

The study recommends further empirical studies delving on several mediating factors such as corporate liquidity which outside the scope of the current investigation. This is because the nexus between financial leverage and financial performance is not always straightforward or direct, but is mainly determined by a continuum of the intervening factors. Vast of the past empirical works have been bivariate focusing only on the independent and dependent variables and this partly explains the mixed findings in most of the empirical investigations.

Future studies should consider using diverse constructs or indicators to operationalize both financial leverage and financial performance. This is because both are multi-dimensional constructs with a range of metrics which can be used to operationalize these variables. Future studies can operationalize performance using financial measure such as market based measures



such as market to book ratio, Tobin Q, price earnings ratio as well as non-financial performance metrics such as customer satisfaction, internal business processes and learning and growth.

Furthermore, future studies can utilize cross-sectional data sets and apply other estimation techniques such as cross-sectional and time series instead of the balanced panel data. A longer study period can also be considered as well as larger sample size. This has the potential of giving the credible results. Finally, comparable studies can be simulated in other sectors of the economy such as state owned corporations and other corporate sectors apart from the listed firm. This will aid in explaining whether the institutional and cultural disparities lead into varied empirical findings and conclusions.

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