Effect of Standard Costing on Financial Performance of Manufacturing Industries in the North Rift Economic Block, Kenya

Helen OTIENO[1*], Caroline AYUMA[1], Christine NGARI[1]

1) School of Business and Management Sciences, Department of Management Sciences, University of Eldoret, P.O. Box 1125-3010, Eldoret, Kenya

Corresponding Author

Hellen OTIENO,
hellenakoth679@gmail.com

ABSTRACT

The aim of this study was to examine the effect of standard costing on financial performance. The study adopted explanatory research design and stratified sampling technique for data collection on a questionnaire with closed ended questions. The sample size for the study was 220 consisting of 63 auditors and 157 accountants from 48 manufacturing industries. Cronbach's alpha and factor analysis were used to test for reliability and constructs validity of research instrument respectively while hypothesis was tested by use of regression analysis. The result of the study revealed that standard costing ($\beta = 0.216$, P>0.000) with $R^2 = 0.662$ had positive significant effect on financial performance of manufacturing industries. The study concluded that there is significant correlation between standard costing and financial performance and that one unit change in standard costing would cause one unit change on financial performance. Likewise, the study recommended need for proper costing records and application of standard costing by manufacturing firms to help them in financial performance assessment and gain control over costs. Further research study should consider targeting the operation managers and financial managers. The scope of the study was limited to manufacturing industries hence future study should focus on service industries to establish whether the study would yield the same results.

I. INTRODUCTION

Globally, standard costing (special decisions, outsourcing, make or break decision pricing and previous actual costs) is traced back to industrial revolution. This tool was promoted by industries to as a means of operations control and waste reduction during the late ninetieth century as production of large volume of homogeneous product, increased and attracted regular use (Fleischman & Tyson,2002). Regionally, standard costing effect on profitability has proved to be a challenge to manufacturing sector in Nigeria. This has been attributed to hard economic and rising of production cost which has been on the rise eventually resulting to high price of manufactured goods (Ngozi,2013).

Kenya to date manufacturing industries have been seeking for effective methods to minimize cost of production, maintain and improve efficiency at their plants, however the end result is reduction in profitability due to dissatisfaction of customers who stop purchasing their products due to quality compromise. Another challenge faced by manufacturing sector is hard economic times which has affected the purchasing power of consumers thus reducing return on investment (ROI) of many manufacturing companies due to low sales. This raises concern how this sector can survive during hard market conditions. (Chege et al, 2020). Primary objective in manufacturing goods and products is basically to minimize unit cost while at the same time meeting particular quality specification. Any product may be manufactured by use of substitute or alternative inputs at the same time give similar output of the same quality. Choices taken affect the standard which is already set (Kinney & Raiborn,2011). Globally, Marie et al, (2010) did a study entitled "Is standard costing currently relevant? A case study of Dubai. Random sampling technique was adopted in collecting data by use of survey questionnaire from a sample size of 57 companies. The finding of the study revealed that standard costing up to date valued as a costing tool in Dubai.

In Africa Rachael et al, (2019) conducted study on effect of standard costing on manufacturing companies' profitability in Nigeria Benin state. The study applied survey design with stratified random sampling technique using questionnaire on a 5-point Likert scale to collect primary data. Study sample size involved 99 staff from both production and accounting departments from selected companies. The result of the study established that there is positive significant effect of standard costing on reduction of cost. Locally Waihenya, (2019) carried out a study on managerial accounting practices and their effect on manufacturing companies' performance in Nairobi. Descriptive research design was adopted with simple random sampling technique using questionnaire to collect primary data. Sample size of 54 staff from top, middle and low management level were involved in in the study. The result of the study showed that standard costing among other costing techniques were commonly used by manufacturing firms.

As observed, existing literature tends to major only on profitability as financial performance measurement and leaving out other determinants such as liquidity ratio, efficiency ratio and leverage ratio which to large extent determines the financial strength of manufacturing industries in terms of assets, equity ratio and ability of the firm to settle debts (Husain &Sunardi,2020). Objective of this study was to establish the effect of standard costing on financial performance of manufacturing industries in the North Rift Economic Block while the hypothesis was Standard costing has no significant effect on financial performance of manufacturing industries in the North Rift Economic Block.

Effective management of finances and costs is crucial to performance of any business. Firm's ownership should adapt methods of balancing debt, expenses and income to ensure financial sustainability and expansion of an organization (Okello, 2015). Basically, accounting has got key financial performance indicators known as Financial KPIs which various manufacturing industries can use in measuring its financial health. These are categorized in terms of ratios which are profitability, liquidity, efficiency and leverage ratios. These ratios clearly express the relationships among financial statements items and also give historical data which point out at the internal strength and weaknesses of companies (Nandy,2022).

This technique was innovated to cater for the needs of volume manufacturing of products which had features like high fix investment, machinery and plant cost involving manufacture of mass uniform input (Rao & Bargerstock, 2011). Standard costing is an assessment tool of performance which is used when doing a comparison between actual performance and standard performance covering every area of operations within the company (Iliemena & Amedu, 2019). The concept of standard costing can be applied efficiently to industries which are manufacturing standardized goods and are recurrent in nature. Examples are cement industry, steel industry, and sugar industries. It is used as a cost control instrument. An organization can do comparison of actual costs in regard to standard costs and employ corrective action to maintain control over cost. It evaluates predetermined estimates of the cost of finished goods or services, collects actual costs and output data, predetermining estimates or cost known as standard cost (Vassall, et al., 2017). In theory standard costing systems may be used in various purposes, the process of standard production and manufacturing overheads can be combined and applied when deciding on the product's cost and also selling price. During production process, actual use and costs may be compared by forecasting the standard output for actual levels (Bowhill & Lee, 2002).

Standard costing is considerably seen to be associated with the past when large volumes with a set of characteristics units of standard goods requiring similar inputs of overhead costs, material costs and labor costs was required in every stage of the process of standard production (Bowhill & Lee, 2002). However, Sulaiman et al. (2005) in their study; Is standard costing obsolete, Empirical evidence of Malaysia observed that despite all the criticisms imposed on standard costing, their empirical findings suggested that large majority of companies in Malaysia still use standard costing. Lyall et al. (1991), as cited by Sulaiman et al. (2005) gives an apparent valid reason that high rates of adoption could be as a result of modification of standard costing systems to be compatible with today's manufacturing environment.

II. METHODOLOGY

A. Research Design

The study adopted an explanatory research design because it is suitable where a study intends to establish the cause effect relationship between independent and dependent variables by giving a description of behavior of one variable towards the other. (Sherri, 2009). This study intended to establish the relationship between standard costing and financial performance while describing the behavior of predictor variable towards the response variable. Leavy, (2022) suggests that this design gives an evidence for relationship which are casual while at the same time it is appropriate where correlation between independent and dependent variables are to be evaluated. In this case P-value is the evidence against null hypothesis.

B. Study Location

The study was carried out in the North Rift Economic Block in the Rift Valley part of Kenya, targeting manufacturing industries from 8 counties in the region. This study was done from 5th December,2021 to 10th February, 2022. Rift valley part of Kenya was chosen as study location because it is an industrial region with several categories of manufacturing firms listed in Table 2.1 above. NOREB aims at leveraging economies of scale and expanding market across these counties (NOREB, 2019). This is seen as an effort in assisting companies like manufacturing industries in cutting down cost of doing business. It also seeks to abolish double taxation between the member counties therefore assisting manufacturing industries in reducing the cost of transporting raw materials and finished products.

Table 2.1:

Categories of Manufacturing Industries, Target Population and Sample size.

Strata	Target population	Sample Size $n_i = \frac{(n\ N_L)}{N}$
Grain Millers	40	18
Steel Millers	14	9
Textile and Leather	12	5
Plastic	50	23
Wood	70	31
Beverage and Drinks	100	45
Animal feeds	75	34
Dairy products	20	9
Paints	15	5
Cosmetics	14	6
Building and Construction	30	14
Sugar	15	6
Tea	25	11
Iron Sheet	10	5
Total	**490**	**220**

Source: Adopted from NOREB Website, (2020) and Modified by the researcher

C. Target Population

Target population of 490 consisting of 118 auditors and 372 accountants from 67 manufacturing industries were involved which included production and processing industries such as grain millers, steel millers, Dairy processors, wood and plastics, beverages and water, textile and leather, building and construction, Animal feeds, cosmetics, paint, iron sheets, sugar and tea factories. The target population distribution is as listed in the *Table 2.1* above.

D. Sampling Technique and Sample Size

Stratified sampling method was applied because this technique ensures that all strata in the population are fully represented (Sherri, 2009). The study applied this technique because the target population was heterogeneous. Stratified sampling is where the population is first splitted into group known as strata on the ground of some known pattern (Hanneman *et al*, 2012). This

population was divided into homogeneous groups referred to as strata. The study involved a sample size of 220 consisting 53 auditors and 167 accountants. Appropriate sample size is usually acquired using various methods or formulae and in this case the researcher applied the Israel formula to calculate the sample size:

$n=N/ [1+N (e)^2]$
Where n = Sample size
N = Population size
e = confidence level (0.05)
Thus n = 490/ $[1+490(0.05)^2]$ =220

The sample size for each strata was derived by multiplying the proportion for each stratum by sample size of the total population and dividing it by the number of total target population (Hanneman et al, 2015). The results are illustrated in the *table 2.1* above.

E. Data Collection Instrument

This study used primary data as a way of acquiring information and data collection instrument was questionnaires with closed ended questions guided by the objectives of the study and adopted from (Bowhill and Lee, 2002) and (Kinney and Raiborn, 2011) with modifications in line with the current study. The study adopted 5-point Likert scale in expressing the opinion of the respondent to express to what extent they agreed with the statements on the questionnaire. (Quinlan *et al* ,2015).

III.   RESULTS

Table 3.1:

Response Rate Analysis

Response	No. of questionnaires	Percentage % rate
Returned questionnaires	220	95%
Unreturned questionnaires	12	5%
Total	232	100%

Source: Research, (2022).

A. Response Rate

The researcher personally distributed the questionnaires to accountants and auditors of manufacturing industries in their respective member counties of NOREB. Data collection took a period of 2 months from 5th December, 2021 – 10th February, 2022. A total of 232 questionnaires were distributed but only 220 questionnaires were completed and returned translating to 95% response rate. This implied that there was adequate representation of the research study population (Simiyu, 2019). This information is presented above on *Table 3.1.*

Table 3.2:

Demographic Characteristics of Respondents

Demographic items		No. of Respondents	% No. of Respondents
Designation	Accountants	167	75.9
	Auditors	53	24.1
	Total	220	100
Education	Diploma level	42	19.1
	Undergraduate	108	49.1
	Masters level	17	7.7
	Others	53	24.1
	Total	220	100
Tenure	Less than a year	12	5.5
	1 to 5 years	65	29.5
	6 to 10 years	113	51.4
	Above ten years	30	13.6
	Total	220	100

Source: Research Data, (2022)

B. Demographic Information

The respondents in this study were the accountants and auditors whereby the study finding indicated that majority of the respondents were the accountants with 75.9% while the auditors were 24.1% of the total number of respondents. This results indicated that the respondents were professionals and therefore assured the researcher of the reliability of data acquired. The respondent's education qualification according to the finding were as follows, respondents with diploma were 19.1%, undergraduate were 49.1%, master's level were 7.7% and finally those with other credentials were 24.1% of the total number of respondents. The results are a clear indication that respondents were learned and well conversant with costing techniques therefore boosting the reliability of the data. This study sought to establish the number of years the respondents had work for manufacturing industries in the 8 counties. The finding indicated that 5.5% had worked for less than a year, 29.5% for 1 to 5 years, 51.4% had worked for 6 to10 years, and lastly above 10 years were 13.6% of the respondent. This indicated that the respondents were experienced enough to give a reliable data to the questionnaire. This information is well captured in the *Table 3.2* above.

Table 3.3:

Mean & Standard Deviation for Financial Performance

Constructs/Items	Min	Max	M	SD
It is used to evaluate the efficiency of the investment of the company.	1	5	4.40	0.643
It is used to measure how effective the company uses its assets to create profit.	1	5	4.35	0.821
A good liquidity ratio indicates that the company is in good financial health.	3	5	4.62	0.626
Higher liquidity ratio enables the company to get finances from creditors and lenders.	3	5	4.50	0.705
Ability to acquire loans and service the loan shows that a company financial position is stable.	2	5	4.40	0.883
High inventory turnover increases financial performance.	2	5	4.54	0.742
Too low accounts receivable turnover decreases financial performance.	2	5	4.05	0.957
High accounts payable turnover decreases financial performance.	2	5	4.02	1.083
Ability of a company to meet its financial obligations indicate good financial performance.	2	5	4.30	0.926
High debt or equity ratio decreases financial performance	3	5	4.62	0.557
Average Value	2	5	4.38	0.794

Source: Research Data, (2022)

C. Descriptive Statistics for Financial Performance Measurements

Financial Performance in this study is the Dependent Variable which was measured by use of 10 items on 5- Likert Scale. The measurements for this variable were Profitability Ratio (2 Items), Liquidity Ratio (3 Items), Efficiency Ratio (3 Items) and finally Leverage Ratio (2 Items). Each item for this variable was tested and results shows that majority of respondents agree that a good liquidity indicates that the company is in good financial health scoring a mean of 4.62 with Standard deviation of 0.626 and range between 3 to 5.

The study further revealed That the respondents fully agreed that high debt or equity ratio decreases financial performance and this is evident by the highest mean of 4.62 and standard deviation of 0.626 scored by this item. Item 4 (Higher liquidity ratio enables the company to get finances from creditors and lenders.) and item 6 (High inventory turnover increases financial performance) followed closely scoring Mean of 4.50 with SD of 0.705 and mean of 4.54 with SD of 0.742 respectively. Likewise, this indicated that majority of respondent agreed that the two items adequately measured financial performance. The respondents further agreed that profitability ratio is used to evaluate efficiency of investment and that ability to acquire loans and service the loan shows that a company financial position is stable. The two items scored the same mean of 4.40 with Standard Deviation of 0.643 and 0.883 respectively. Items (2,7,8,9) also received almost same opinion implying that the respondents were in agreement with the statements. This results are clearly illustrated in the *Table 3.3* above.

Table 3.4:

Mean and Standard Deviation for Standard Costing

Constructs/Items	Min	Max	M	SD
Low cost of standard direct material increases financial performance.	2	5	4.11	1.047
High cost of standard direct material reduces financial performance.	1	5	3.96	1.236
Direct labor cost reduces financial performance.	1	5	3.25	1.394
High cost of manufacturing overhead reduces financial performance.	1	5	4.15	1.101
Average Value	1	5	3.87	1.195

Source: Research Data (2022)

D. Descriptive Statistics for Standard Costing

Standard costing had 4 items in the 5-Likert Scale. According to the result of the study, the respondents agreed that High cost of standard manufacturing overhead and low cost of standard direct material would have an effect on financial performance. The items scored a mean of 4.15 with Standard Deviation of 1.101 and a mean of 4.11 with standard deviation of 1.047 respectively the respondents also had similar opinion that high cost of standard direct material cost with mean of 3.96, Standard deviation of 1.236 and standard direct cost of labor with mean of 3.25 and standard deviation of 1.394 would moderately affect performance as illustrated in the *Table 3.4* above.

Table 3.5:

Reliability Statistics

Variables	Number of Items	Cronbach Alpha value
Financial Performance	10	0.702
Standard Costing	4	0.810

Source: Research Data, (2022)

E. Reliability Test for Variables

Financial performance had 10 items on a 5-Likert Scale whose determinants were profitability ratio, liquidity ratio, efficiency ratio and leverage ratio with average Cronbach Alpha value of 0.702 above the standard value of 0.7 (Brett, 2016). This result suggested internal consistency for the variable was reliable and acceptable therefore all the items were retained for further analysis.

Standard costing contained 4 items on the subscale. The constructs used in the statements were standard direct material, standard labor cost and standard manufacturing overhead. Likewise, 5-point Likert scale was used to get the opinion of the respondents on what extent they agreed with statements on the Likert scale. The study showed that value of Cronbach alpha was 0.810 indicating that internal consistency of this variable is acceptable and reliable hence all the items were retained for further analysis as illustrated on the *Table 3.5* above.

Table 3.6:

Factor Analysis Results for all variables

Variables	Scale Items	Factor Loading	Eigen Value	% of Variance	KMO	Chi Square	P-Value
Financial Performance	It is used to evaluate the efficiency of the investment of the company.	0.885					
	It is used to measure how effective the company use its assets to create profit.	0.888					
	A good liquidity ratio enables the company to get finances from creditors and lenders.	0.957	2.053	82.111	0.594	1319.941	0.000
	Good liquidity ratio enables a company Financial performance.	0.822					
	Ability to acquire loans and service the Loan shows that the company	0.759					

	financial Position is stable.					
	High inventory turnover increases Financial performance	0.859				
	Too low accounts receivable turnover decreases financial performance financial performance.	0.803				
	High inventory turnover increases Financial performance.	0.575				
	Ability of a company to meet its financial Obligations indicate good financial performance	0.837				
	A high debt or equity ratio decreases Financial performance	0.900				
	Low cost of direct material increases Financial performance.	0.772				
	High cost of direct material reduces Financial performance.	0.821				
Standard Costing	Direct labor cost reduces financial performance	0.841	2.505	100	0.725	1095.290 0.000
	High cost of manufacturing overhead Reduces financial performance	0.751				

Source: Research Data (2022)

F. Factor Analysis

This technique assists the researcher in representation of large number of associations among connected variables in a simple way. This statistical method allows SPSS program to determine variance which have common score (Leech *et al*, 2005). In this case, factor analysis was conducted to reduce the items in the questionnaire for both predictor and response variables so as to come up with correct measure for Kaiser Mayer Olkin (KMO) and Bartlett test of sphericity and also total sum of variance explained by these components. Kaiser Mayer Olkin (KMO)and Bartlett test of sphericity was used to measure the suitability of research data for factor analysis commencement. The study result indicated that KMO value is 0.594 and 0.725 for financial performance and standard costing technique respectively which is above the suggested minimum value of 0.5. Barlett test of sphericity showed a significant value of chi square to be 1319.941 and 1095.290 for financial performance and standard costing respectively with significance level of *p*=.000 for both variables. These results suggested that factor analysis would give suitable outcome. Factor loading is basically the measure for constructs validity which is done through the process of measurements cleaning. Any item having a factor loading which is less than 0.5 is excluded from further analysis to boost the validity of constructs (Simiyu, 2019). In this case item 1-10 for financial performance attained a factor loading (0.885,0.888,0.957,0.822, 0.759,0.859, 0.803, 0.575, 0.837 and 0.900) respectively as illustrated in *Table 3.6* is above the recommended value of 0.5 thus they were all retained for further analysis. Eigen values scores for financial performance was 2.053 with percentage accumulative variance of 82.111% which means that over 82% of variance commonly shared by the 10 items could be explained by these 10 factors. Similarly, items 1-4 for standard costing scored factor loading (0.772,0.821,0.841 and 0.751) respectively as shown in the *Table 3.6* is above the

significance value of 0.5 and therefore all the items were retained for further analysis. Eigen values for standard costing was 2.505 with accumulative percentage variance of 100% indicating that common shared variance by 4 items can be explained by these 4 factors.

Table 3.7:

Results for Pearson's Coefficient

Variables (N = 220)	1	2
Financial Performance	1	
Standard Costing	0.638**	1

**Correlation is significant at the 0.01 level (2-tailed).

Source: Research Data (2022

G. Correlation Analysis

The researcher used Pearson's coefficient to evaluate the linear relationship between the two variables in the population. Correlation result for the study demonstrated that standard costing and financial performance had a positive correlation of r = 0.638**. This information is well presented on the *Table 3.7* above.

Table 3.8:

Regression Results

Variable	β- Coefficient	P-value
Standard Costing	0.216	0.00
R^2	0.662	
F- Statistics	100.602	0.000

Source: Research Data (2022)
NOTE: Dependent Variable- Financial Performance.

H. Hypothesis Testing

Regression analysis helps in determining the way changes in the predictor variables are related to changes in the dependent variable. In this case the researcher employed *P*-value to determine whether independent variables have any association with dependent variable. *P*-value is usually the evidence against the null hypothesis in that if the P-value is smaller than the significance level of 0.05, then the null hypothesis should be rejected (Sherri,2009). *Table 3.8* output from SPSS revealed that Standard costing has a significant effect on financial performance scoring (β = 0.216, *P* = 0.000). P-value and Coefficient satisfies the expected significant level thus suggesting that Null Hypothesis in this study should be rejected.

Likewise, R squared in the same *Table 3.8* shows the goodness of fit with R^2 = 0.662 which indicates 66.2% of the variance explained by independent variables in the dependent variable suggesting that there is a strong relationship between Standard Costing and Financial Performance. On the other hand, F- Statistics shows joint effect of variable and must always be combined with *P*-value. F = 100.602 greater than zero implying that the model has a predictive capability, thus it is able to determine the relationship between dependent and independent variables.

Table 3.9:

Hypothesis Testing Result Summary

H_{0n}	Null Hypothesis	β	P-Value	Decision
H_{01}	Standard Costing has no significant effect on financial performance of manufacturing industries in North Rift Economic Block.	0.216	0.000	Rejected

Source: Research Data (2022).

J. Effect of Standard Costing on Financial Performance

Hypothesis H_0 postulates that standard costing has no significant effect on financial performance. According to *table 3.9* the findings reveal that standard costing has positive significant effect on financial performance with β value of 0.216 and P-value of 0.000 below the significance level of 0.05. The null hypothesis therefore was rejected by the study and alternative hypothesis taken.

IV. DISCUSSION

This study aimed at establishing the effect of standard costing on financial performance of manufacturing industries in North Rift Economic Block (NOREB). The finding of the study revealed that standard costing (β = 0.216, *P*> 0.000) has a positive significant effect on financial performance. Similarly, the findings of this study indicated that profitability ratio would evaluate the efficiency of investment of the company and also measure effectiveness of how an industry uses its assets to generate profit. On the other hand, the results established that liquidity ratio is an indication that the company is in good financial health. It was also revealed that high liquidity ratio enables the company to acquire finances from creditors and lenders. ability to acquire loan and service it is an indication that company financial position is stable. It was also established that high inventory turnover increases financial performance while low accounts receivable turnover decreases financial performance. It was noted from the study that high accounts payable turnover and high debt or equity ratio decreases financial performance. The findings of the study further showed that low cost of standard direct material and labor cost would increase financial performance. Finally, it was revealed that high cost of direct material and manufacturing overhead reduces performance.

Seemingly, result of this study revealed that there is a strong correlation between standard costing and financial performance, implying that one unit change in standard costing would cause one unit change in financial performance. Likewise, the key finding of the study established that standard costing had positive significance effect on financial performance of manufacturing industries. This is supported by the finding of Adinoyi, (2019) which indicated that there is significant positive effect of standard costing and cost reduction. The result also concurs with the findings of Ngozi, (2013) and Clue, (2021) which indicated that standard costing is significant on profitability of manufacturing companies.

V.   CONCLUSION

The overall results of this study suggest that standard costing is statistically and positively significant on financial performance of manufacturing industries. Similarly, strong correlation between standard costing and financial performance revealed by the results of this study implies that one unit change in standard costing would cause one unit change in financial performance of these industries. As further indicated by the findings of the study, that low cost of standard direct material and labor cost would increase financial performance, it is therefore clear that cost reduction would cause significant improvement on profitability. This in return would boost financial performance of manufacturing industries.

VI.   RECOMMENDATIONS

Standard direct material and labor cost are among the resources that manufacturing industries can utilize to make profit. It is recommended that these industries should employ standard costing technique in minimizing the available resources to yield maximum returns. This can only be achieved through cost control and reduction. There is also need to accompany standard costing with keeping of clear records to facilitate monitoring of costs. By doing so, cost accountants will be able to identify any adjustments that needs to be done to reduce costs. Such measures will yield returns and thus influence financial performance positively.

VII.   REFERENCES

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