

Strengthening of Controls and the Reduction of Costs: A Case of Rai Plywoods (K) Ltd

James Arasa Agwata

Jomo Kenyatta University of Agriculture and Technology

Email address: jaragwata@gmail.com

Abstract—The strengthening of internal controls with the aim of cost reduction is a strategy employed by many firms. This paper analyzes this control approach to determine its effectiveness by looking at a manufacturing firm in Kenya, Rai Plywoods (K) Ltd, which implemented a number of control measures aimed at cost minimization. The study compares the lubricant costs of a one-year period prior to the implementation of the controls and a one year period after the implementation of controls using a paired sample t-test approach. It was found that the control measures were effective in lubricant cost reduction. This study also sought to determine whether the control measures were cost efficient and economical and this was analyzed using a cost-benefit approach. It was also found that the control measures were efficient and economical. The study concludes by making relevant recommendations which could be adopted by similar sized firms.

Keywords— Cost-control, lubricant-costs, Internal-Controls, Raiply, VFM, Cost-Benefit.

I. INTRODUCTION

This chapter covers the statement of the problem, the objectives of the research, specific objectives, the research hypotheses, significance of the study, scope and limitation, and the conceptual framework.

1.1 Statement of the Problem

Manufacturing costs, both direct and indirect, affect the pricing decisions and the competitiveness of producing firms. Fleet related costs make up a bulk of a manufacturer's cost. Vehicle maintenance costs refer to the cost of maintaining a fleet. Fuel and related costs account for the biggest bulk of an entity's fleet running costs (American Transportation Research Institute [ATRI], 2015). Rai Plywoods (K) Ltd is a wood and household products manufacturer in Eldoret, Kenya running a fleet of heavy trucks, Caterpillar Skidders, loaders and bulldozers, lifting cranes, and other moving self-propelling factory machinery. Fleet related costs make up the second largest company expenditure in the firm and from the year 2010, these costs have been steadily increasing.

A continuous and sustained annual increase in these costs, holding revenue constant would eventually result in a net loss position for the company within the foreseeable future and this will be in direct contravention of the company's main objective of increasing its profitability year on year. In the short term, the company would experience increased fleet costs and this may be passed on to its customers resulting into a decrease in the company's competitiveness and in immediate fall in the demand of its products.

In the long run, this fall in demand would manifest into a number of undesirable effects such as an adverse liquidity

position, the taking of drastic cost cutting measures such as retrenchment decisions thereby aggravating the problem further, defaults in the company's various legal and financial obligations may also occur, and so on.

In March 2014, the management of the company made a decision to rein in these costs through a raft of measures introduced to strengthen the controls related to fleet costs, particularly lubricant costs. There was a belief that the fleet related costs were escalating due to inefficiencies in the procurement process and the existence of fraudulent activities in this function. The rate of lubricant purchase and consumption was seen to have almost doubled within the last 2 years before the changes. The following measures were taken, first, all purchase orders were subsequently scrutinized and analyzed before authorization. Second, the goods receipt process was enhanced to incorporate separation of duties; now two stations namely gate entry and goods receipting were introduced to replace the old system where one clerk was responsible for goods receipting entirely. In the old procurement cycle, one clerk had the authority to receive and issue goods in the ERP system. This was disallowed through authorization controls. The company has a high functioning weighbridge system which was being underutilized. It was decided that all supplies into the company be accompanied by a weighbridge ticket detailing the time of goods entry and where appropriate, the weight of goods brought into the stores. There was also a requirement that the company's guards confirm the weighing of supplies trucks and commit themselves by signing on the weighbridge ticket that the ordered goods were duly received. The company installed a CCTV system in and around the premises. Lastly, The Company upgraded its ERP to the more robust SAP system which has better process and user controls. All these and other measures taken were meant to tighten controls on the procurement process in the company. No vendor payment would be processed if the process is not followed as highlighted above. The introduction of these measures came at a significant financial cost to the company. These costs include the hiring of more staff, ERP upgrade costs, and CCTV installation and manning costs.

The aim of this research was to find whether the control measures stated above were effective in the reduction of fleet costs at Rai Plywoods (K) Ltd.

1.2 Objective of the Study

To determine whether the strengthening of control measures resulted in the reduction of costs at Rai Plywoods (K) Ltd

1.2.1 Specific objectives

- To determine whether the strengthening of control measures resulted in significant decrease in lubricants costs
- To determine whether the strengthening of controls was a cost effective method in the management of lubricant costs.

1.3 Research Hypotheses

As to the question of whether the strengthening of control measures resulted in a significant decrease in lubricant costs, the following hypotheses were tested:

H₀: Strengthening of control measures resulted in a significant decrease in lubricant costs

H_A: Strengthening of control measures did not result in a significant decrease in lubricant costs

The Second objective of this research was to determine whether the strengthening of controls was a cost effective method in the management of costs and in this context, the following hypotheses were tested:

H₀: Strengthening of controls was a cost effective method in the management of lubricant costs

H₁: Strengthening of controls was not a cost effective method in the management of lubricant costs.

1.4 Significance of the Study

This study is useful to the management similar manufacturing firms mulling over the idea of strengthening their controls with a view to reduce costs. It provides a case analysis of the effectiveness of this cost controlling approach. The research is also useful to students undertaking the Management Accounting unit in studying a practical real-life example of controlling activities in a manufacturing unit.

1.5 Scope and Limitation

This research was limited to the fleet related costs of the company. The research should not be construed as an industry analysis and a blind endorsement of cost control measures discussed herein.

1.6 Conceptual Framework

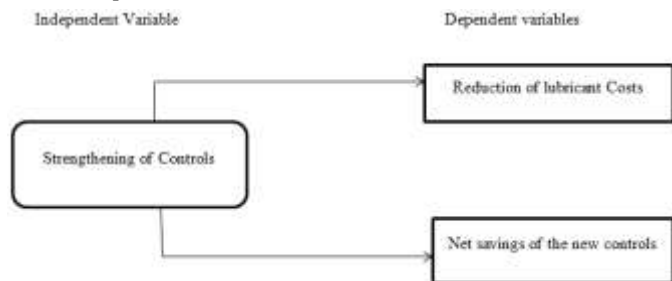


Fig. 1. Conceptual framework.

II. LITERATURE REVIEW

2.1 Strengthening Internal Controls and Reduction in Costs

Bana and Sgârdea (2009) analyzed the cost management and cost control in decisional processes of organizations in Romania and Europe and found that managerial control and analytical accounting is a tool used widely by enterprises engaged in price and cost competition.

Barbole et al. (2013) did a study on the impact of cost control and cost reduction techniques on the manufacturing sector and concluded that cost reduction is a strategic imperative pursued by firms including market leaders in order to enhance and maintain their competitiveness and so as to redeploy resources to pursue profitable growth.

Hermanson, Smith and Stephens (2012) studied the effectiveness of internal controls in 500 American firms and stated that public companies tend to have better and effective internal controls than those of other firms.

Chen and Shi (2012) did an empirical study on the correlation between Internal controls and enterprise value in the Chinese manufacturing sector based on Information systems and found that Internal controls play a positive role in the achievement of company goals and the improvement of enterprise values.

Deloitte (2010) produced a report on strategic cost management for steel companies in China and advocated for the building of a competitive advantage through cost reduction, efficiency improvement and profitability management.

Dahan and Srinivasan (2005) did a study on the impact of unit cost reductions on gross profit and advised that unit manufacturing cost reduction is a potential tool not only for increased profitability but also in the pricing of new products for market success.

Tunji and Mojeed (2013) did a study on the impact of cost control on manufacturing industries' profitability basing their study on the West African Portland Cement plc. (WAPCO), and concluded that a good cost control system begins with changing the behaviour of workers in the organization and that there is a positive correlation between cost control and industries' profitability.

Uwaoma and Ordu (2015) highlighted the impact of internal controls on financial management and concluded that internal controls enhance a firm's financial management, and that management should ensure the adequacy of internal controls and should communicate this adequately. They added that the internal controls in a firm should be remoulded, strengthened and re-evaluated periodically and should also tested for weaknesses so as to reduce the chance of fraud perpetration and loss of organizational funds.

Olagunju, Imeokparia and Afolabi (2014) did an analysis on budgetary control as a tool for cost control in manufacturing firms in Nigeria. They found that budgetary cost control contributed to the profitability of manufacturing firms and advised that manufacturing firms can reduce their costs whilst improving their quality using realistic forecasts in order to enhance their operational efficiency and effectiveness.

Azeez and Adelabu (2015) analyzed the relationship between cost management and profitability by studying selected manufacturing firms in Nigeria and concluded that the relationship between cost management and profitability is statistically significant.

Kamau (2014) did a study on the effects of internal controls on the financial performance of manufacturing firms in Kenya and found that manufacturing firms with effective internal control systems showed improved financial

performance compared to those with weak internal control systems.

Namu et al. (2014) studied the impact of cost reduction strategies on the performance of tea factories in Embu Kenya and concluded that the rate of annual returns increased from a mean of 67.47% to 72.6% after the introduction of a number cost reduction measures such as controlled staffing, efficient energy utilization and technology improvements.

Nekesa (2012) researched on cost controls and profitability of manufacturing firms, by analyzing a case of Hima Cement Ltd in Uganda. She found that there existed a strong positive relationship between the implementation of cost control measures and profitability. She determined that cost control had a Pearson correlation of $r=0.723$ with profitability.

2.2 Cost Benefit Analysis and the Value of Traditional Cost Accounting Interventions

Badewi and Shehab (2013) studied the cost, benefit, and financial risk of ERP implementation and concluded that there existed interrelated impacts of ERP implementation decisions to the financial value of the organization. They advised that decision makers should look at the ERP implementation process as a financial value creation process.

Gillespie and Kragt (2012) advocated for the adoption of a cost-benefit analysis approach when evaluating individual project decisions in order to come up with the right choice.

Oluwagbemiga, Olubenga and Adeoluwa (2014) studied the cost management practices and firm's performance of 40 Nigerian Manufacturing firms listed on the Nigeria Stock Exchange and concluded that there is a positive significant relationship between cost management practices the performance of firms in the manufacturing sector. The researchers recommended a cost reduction strategy which placed emphasis on production and administrative overhead costs in order to achieve profit maximization and wealth creation.

Nasieku and Oluyinka (2016) contrasted the postulation that traditional cost accounting techniques have lost their relevance and concluded that the usage of various cost accounting techniques depend on the situation on the ground referring to the level of technology, organizational culture, the size of the company, and the stage of the product.

Uyar (2010) did a study on Cost and Management Accounting practices in Turkey and found that the pricing decision is the most important area where costing information is needed. The author also reinforced the continued importance of traditional cost accounting techniques in the controlling aspect.

Esezobor et al. (2015) stated that the cost-benefit analysis was a reliable technique in the determination of the viability of most financial investment projects.

Gichaaga (2014) did a study on the effects of management accounting practices on the financial performance of manufacturing companies in Kenya and concluded that manufacturing firms should identify the key factors that influence performance and risk areas and that the Return on Equity of the studied manufacturing firms have increased due to the application of management accounting practices.

2.3 Value for Money

Glendinning (1988) defined the concept of value for money as not paying more than the quality and availability of a good or service justifies. This entails looking at the three E's of VFM which are described as Effectiveness, Efficiency, and Economy. Effectiveness refers to the full attainment of the results intended. Efficiency refers to output maximization i.e. producing more output from the inputs. Economy is concerned with cost minimization.

Efficiency is measured using the formula: $\frac{\text{Actual Output}}{\text{Total Output Possible}} \times 100\%$

On the other hand,

Effectiveness is measured using the formula: $\frac{\text{Actual Output}}{\text{Expected Output}} \times 100\%$

2.4 Fleet Cost Management

Gitahi and Ogollah (2014) studied the influence of fleet management practices to service delivery in Kenya and recommended that fleet management costs and decisions affected the service delivery capacity of an organization.

Shukri et al (2013) did an overview of fleet maintenance and operating costs and concluded that all the costs of fleet maintenance and operation must be considered in every angle so as to determine whether it will be economical to maintain the fleet or otherwise.

2.5 The SAP ERP

According to the Amity (2014) SAP installation program manual at Rai Plywoods (K) Ltd, the SAP ERP system was installed in the company in 2014. The installation comprised four modules namely Materials Management (MM), Finance and Controlling (FICO), Sales and Distribution (SD), and Human Resource (HR). The changes in the procurement cycle were effected through the MM module and the FICO module. Through the SAP system, the procedure of goods receipt practically changed. The new system required that a gate entry sheet be prepared before a goods receipt posting is made and this necessitated the separation of duties requiring an additional receiving clerk. On the other hand, the FICO module in SAP could not allow the making of a payment without a valid invoice posting which in turn would not be possible without a Good Receipt (GR) posting in the system. In the old ERP system, the payment system was not automatically linked to the procurement system hence faulty GR notes could be raised without many limitations.

III. RESEARCH METHODOLOGY

3.0 Introduction

This chapter covers the study subject, research period, research design, data collection, data analysis, and conclusion.

3.1 Study Subject

The study subject is a large wood manufacturer in Eldoret Kenya with an annual turnover of about \$35 million [FY 2016]. The company has branches in Nairobi (approx. 321 km away) and Mombasa Cities (Over 600 km away). All production takes place in the Eldoret plant and finished goods are transported by road via company owned trucks to the branches. The trucks also bring back raw materials from

Mombasa and Nairobi and also from the various forest stations where lumbering activity occurs. Transportation costs make up the second largest company expenditure after raw material costs.

3.2 Research Period

The research period for which data is collected and analyzed is the pre-implementation period of April 2013 to March 2014 and the post-implementation period of April 2014 to March 2015.

3.3 Research Design

To test the first hypothesis of whether the strengthening of internal controls resulted in a significant decrease in lubricant costs, the lubricants monthly purchases data was compared from the period before the control measures were put in place and afterwards. That is before and after March 2014. The monthly purchases between the two periods were compared using the t-statistic at a significant level of 0.05 to test whether a change in monthly lubricant consumption was significant after the introduction of internal control measures.

The second hypothesis as to whether the control measures introduced were efficient was tested through a cost-benefit approach. The costs of implementing the new system was weighed against the benefits in terms of savings generated after the system implementation.

3.4 Data Collection

Lubricant consumption and expenditure data was collected from the company's old ERP system before the commencement of the control measures and from the new system after the introduction of the new measures. Details of the implementation costs and progress were derived from the CCTV and SAP systems vendor invoices. Needed payroll data was obtained from the company's ERP system.

3.5 Data Analysis

Data analysis was conducted through the Statistical Package for Social Sciences (SPSS) and also through the use of spreadsheet software.

3.6 Conclusion

A conclusion as to whether the strengthening of the internal controls resulted into a decrease in lubricant costs and as to whether the measures implemented were efficient was made after further analysis.

IV. DATA PRESENTATION, EVALUATION AND ANALYSIS, AND DISCUSSION.

4.0 Introduction

This chapter includes data presentation, evaluation and analysis, and a discussion.

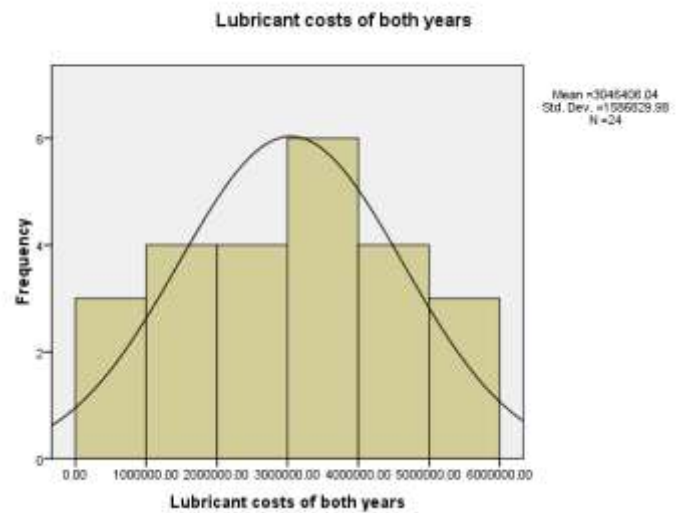
4.1 Data Presentation

The following is the monthly lubricants payment data derived from the company's ERPs. The data is categorized in two years. The financial year 2013/2014 represents the period before the internal control intervention changes and the year 2014/2015 provides data for the period after the intervention.

TABLE 1. Lubricant costs.

Apr-13	1382137.18	Apr-14	1946557
May-13	5660752.14	May-14	786950.5
Jun-13	2600416.64	Jun-14	3462788
Jul-13	4264421.05	Jul-14	2674727
Aug-13	4474558.81	Aug-14	0
Sep-13	4065006.83	Sep-14	3169568
Oct-13	3495167.81	Oct-14	1631264
Nov-13	3341487.88	Nov-14	4934488
Dec-13	5381404.91	Dec-14	1897383
Jan-14	5271935.35	Jan-15	2857191
Feb-14	2714762.03	Feb-15	8294
Mar-14	3253515.85	Mar-15	3838967
	45905566.48		27208178

The distribution of the lubricants costs in the two years is shown in the table below. The distribution appears to follow a normal distribution.



To confirm whether the cost distribution is approximately normal, the Shapiro-Wilk test was performed for each of the individual years and the results are shown below:

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Year 2013/2014 Costs	.121	12	.200*	.967	12	.876
Year 2014/2015 Costs	.106	12	.200*	.967	12	.877

At a significance level of 0.05, the cost distributions in the two years appeared to be normal given that the p-value for both years is above 0.05 i.e. Year 2013/2014 p = 0.876 and year 2014/2015 p = 0.877. The Kolmogorov-Smirnov test is relevant for paired samples where the sample size is more than 2000, i.e n>2000.

4.3 Evaluation and Analysis

4.3.1 Strengthening of Internal Controls and the Reduction of lubricant costs

The paired T-test is used to compare the lubricant costs in the two years. For the paired samples T-test to be used, the test data must meet certain threshold requirements which are:

- The distribution of the dependent variables (in this case lubricant costs) must be normal or approximately normal
- The dependent variables must be measured at intervals (in this case monthly intervals)

- Repeated measures of data must be collected from one group of subjects (in this case the same company)
- The difference between the paired scores must be independent.

Data from Table 1 above meets these basic requirements of the paired samples T- test. The paired samples compared are

those from the period before the Internal Control Interventions and after the Intervention.

Using a 0.05 significance level the following results are obtained from SPSS:

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Year 2013/2014 Costs - Year 2014/2015 Costs	1.55812E6	2.14652E6	6.19647E5	1.94282E5	2.92195E6	2.515	11	.029

A paired sample t-test computed on lubricant costs before the implementation of strengthened internal controls and after the implementation of these controls at Rai Plywoods (K) Ltd revealed that the new control measures had significantly lowered the lubricant costs, $t(11) = 2.515, p = 0.029$; mean = 3.8255E6 versus 2.2673E6. Therefore the new intervention measures decreased the lubricant costs.

The mean value results are shown below:

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Year 2013/2014 Costs	3.8255E6	12	1.27663E6	3.68531E5
	Year 2014/2015 Costs	2.2673E6	12	1.52019E6	4.38841E5

The mean lubricant costs for the Year 2014/2015 is lower than that of the year 2013/2014. A significant decrease in the level of activity if derived from the sales volume data could be a possible explanation for this decrease. It was therefore important to compare the sales volume data for the 2 years. From the Financial statements of the company and from the company's ERPs, the sales figures for the 2 years are shown below:

TABLE 2. Sales figures.

Year 2013/2014	Monthly Sales (Kes)	Year 2014/2015	Monthly Sales (Kes)
Apr-13	209,055,276	Apr-14	204,023,669
May-13	205,825,624	May-14	209,974,081
Jun-13	197,660,050	Jun-14	202,991,625
Jul-13	242,540,769	Jul-14	236,316,419
Aug-13	233,704,126	Aug-14	251,763,756
Sep-13	217,784,328	Sep-14	238,727,963
Oct-13	252,785,937	Oct-14	276,653,986
Nov-13	229,344,624	Nov-14	278,685,731
Dec-13	201,655,442	Dec-14	258,620,168
Jan-14	257,729,658	Jan-15	293,438,269
Feb-14	223,670,562	Feb-15	264,745,674
Mar-14	219,297,137	Mar-15	278,665,529
Total Sales	2,691,053,533	Total Sales	2,994,606,870

From Table 2 above, it is evident that sales increased marginally in the Financial Year 2014/2015 compared to the year 2013/2014. This indicates that the activity level in the year 2014/2015 was higher than that of 2013/2014. Therefore a reduced activity level could not account for the decrease in lubricant costs.

4.3.2 Cost-benefit Analysis of the Controls

To determine whether the new control measures were effective in the achievement of total cost reduction, a cost-benefit analysis is performed.

The additional costs of introducing the new system include:

- SAP ERP annual license costs for the specific users involved in the receiving and issuing of lubricants
- Additional labour employed as a result of the new system
- CCTV installation and supervision costs

The annual license fees charged per user account for the year 2014/2015 was 338.00 Euros translating to Kes 37,196. Given that 3 user accounts were needed i.e. one for the gate entry clerk, one for the goods receiving clerk, and one for the goods issuing clerk, the total annual license fees translate to 1,014.44 Euros which was equivalent to Kes 111,589.00 at the prevailing exchange rate at the time.

The additional labour needed was that of a gate entry clerk who was employed at an annual starting salary of about Kes 300,000. The security staff and the existing receiving staff were simply reassigned more duties.

The CCTV installation costs amounted to Kes 898,246 being the Hardware and Systems costs. The CCTV system necessitated the employment of 2 additional supervision staff for which a total of Kes 723,840 is paid annually. A simple cost-benefit analysis for the year 2014/2015 is shown below:

TABLE 3. Cost-benefit analysis.

Benefit	Kes
Gross Savings of lubricant costs	18,697,388
Costs	
CCTV Installation costs	(898,246)
CCTV Controllers annual salary	(723,840)
Gate Entry Clerk annual salary	(300,000)
Additional SAP license fees (3 User licenses)	(111,589)
Net benefit	16,663,714

The cost benefit analysis for the first year gave a net savings of Kes 16,663,714. In subsequent years, the CCTV installation costs would not be incurred hence further cost reductions were expected.

4.4 Discussion

4.4.1 Strengthening of Internal Controls and the Reduction of lubricant costs

The management at Rai Plywoods (K) Ltd introduced a number of internal control measures to curb the escalating

costs of lubricants at the plant. The monthly consumption of lubricants was analyzed in the one-year period prior to the changes and the one-year period after the changes. This monthly lubricant costs data represented the total costs posted in the ERPs from the vendor invoices. Using a paired samples T-test analysis, it was found that the lubricant costs decreased significantly after the introduction of the new measures. The paired samples T-test was used because the sample data before and after the intervention is known to have come from the same subject. When using the T-test, the assumption of normality is fundamental. An analysis of the lubricant costs in the combined 2-year period formed an approximate normal distribution. The Shapiro-Wilk test for the individual years also indicated that the normality assumption was a valid one. The dependent variables, represented by the lubricant costs, were measured at monthly intervals. This satisfies the third requirement of paired samples t-tests. The difference between the samples can be said to be independent. The computed T-statistic was 2.515 with a p-value of 0.029. The p-value is less than the significance value of 0.05. This demonstrates that there is a significant cost difference between the pre-intervention and post-intervention values. The total lubricant cost in the year prior to the introduction of the intervention measures was Kes 45,905,566.48. The total lubricant cost after the intervention was Kes 27,208,178.43. This was a 40.73% decrease in lubricant costs resulting in gross savings of Kes 18,697,388.05. The average monthly lubricant costs decreased from Kes 3,825,463.87 to Kes 2,267,348.20 which provided an average monthly savings of Kes 1,558,115.67.

To test whether the decrease in costs could be due to a significant decrease in the activity/output levels, the sales figures for the two years under consideration were compared. There was an 11.28% sales increase in the financial year 2014/2015 compared to the year 2013/2014. A reduced activity level could therefore not account for the significant decrease in lubricant costs. The internal control measures were therefore found to be effective in the reduction of lubricant costs.

4.4.2 Cost-benefit Analysis of the new controls

For an intervention mechanism such as the introduction of new internal controls to be efficient, its output must be more than its input. The inputs going into the strengthening of the internal controls were: additional SAP user licenses required due to the restructuring of the procurement process, additional supervision costs requiring the installation and manning of a CCTV system, and the employment of an additional gate entry clerk to enhance the principle of separation of duties. When all the financial costs are included, the benefits from the new system in the first year of operation amounted to Kes 16,663,714. This was expected to increase in subsequent years.

The SAP system is an Enterprise-wide system which is quite costly to install and run. The relevant costs in this project are those that pertain to the procurement procedures that were changed to facilitate the implementation of the new controls.

There are other costs that may not be easily valued but nevertheless exist as a result of the introduction of the new measures such as; increased good receipting time because of the additional steps needed, increased workload on the

security and weighbridge team which if not accompanied by some form of compensation may result in the reduction of staff morale in future and so on. These costs may not have been valued in the analysis above but they are visible in most system changeover processes.

When assessing a project using the value for money criteria, one looks at the 3 Es of Effectiveness, Efficiency, and Economy. As far as the intervention measures were found to have reduced the lubricant costs year on year, they can be said to be effective. This reduction in lubricant costs was more than the additional costs of implementing the controls hence the measures could be regarded as efficient. Lastly, the net savings from the new controls also makes them economical. The introduction of the new controls therefore ranks quite well with Value for Money (VFM) criteria.

V. SUMMARY OF FINDINGS, CONCLUSION, AND RECOMMENDATIONS

5.1 Summary of Findings

In summary, due to an escalation in fleet related costs and particularly lubricant costs, Rai Plywoods management implemented a raft of control measures aimed at curbing the increase in these costs. The measures were aimed at strengthening the good receiving procedures with a view to eliminate procurement malpractices and other events which were costing the company heavily. It was a multi-pronged approach which ended up strengthening the internal controls in the entire organization. This study was therefore aimed at finding out whether the control measures introduced were effective in the reduction of lubricant costs at the company, and secondly, the study aimed at determining the efficiency and economy with which the lubricant cost reduction goal was being met.

To test whether the introduction of the new system of internal controls resulted into a reduction of the lubricant costs it was necessary to compare the monthly costs of a one-year period before the controls were implemented with those of the one year period after the controls were implemented. The paired samples t-test was the most appropriate statistic for this comparison given that the data under study complied with the basic assumptions of the paired sample T-test analysis. To confirm that the lubricant costs distribution was approximately normal, a multi-period histogram with a normal curve plot was extracted using the SPSS software and thereafter, the Shapiro-Wilk statistic was computed for each of the years under study and it was confirmed in both cases that the normality test was passed. The t-statistic was then computed at a significance level of 0.05 and the results obtained indicated $t(11) = 2.515$ with the p-value being 0.029. With these statistics, the conclusion was that the decrease in costs after the implementation of the new control measures was statistically significant. To discount the fact that this decrease could have been due to a decrease in activity/output level, sales data was computed for the two years under review and there was an 11.28% increase in the sales level from the financial year 2013/2014 to 2014/2015.

The second objective was testing whether the introduction of the new control measures was an efficient venture. It was determined that the introduction of these control measures

required additional investment in the form of a CCTV system, the employment of additional staff, and the payment of additional user licenses for the new ERP. To determine the costs of this venture, the various posted amounts of the costs such as that of the CCTV system and the additional ERP licenses costs were obtained from the ERP and from the respective vendor invoices. Additional data was obtained from the payroll module of the ERP.

With all these facts being factored in, the net savings in the year 2014/2015 was Kes 16,663,714. This demonstrated that the new controls were efficient in terms of costs. It also showed that the implementation of the new controls was an economical process.

5.2 Conclusion

This study sought to address the following hypotheses namely:

1) H_0 : Strengthening of control measures resulted in a significant decrease in lubricant costs

H_A : Strengthening of control measures did not result in a significant decrease in lubricant costs

A paired sample t-test demonstrated that the decrease in lubricant costs after the introduction of the strengthened control measures was significant and therefore the null hypothesis is not rejected.

2) H_0 : Strengthening of controls was a cost effective method in the management of lubricant costs

H_1 : Strengthening of controls was not a cost effective method in the management of lubricant costs.

The second objective was to find out whether the introduction of the new control measures was a cost effective method in the management of lubricant costs. A cost-benefit analysis of the relevant system costs and the benefits in terms of savings in lubricant costs demonstrated that the implementation resulted in a net benefit to the company and therefore the second null hypothesis was also not rejected.

It was therefore concluded that the introduction of the strengthened control measures resulted in a decrease in the costs of lubricants purchased at Rai Plywoods (K) Ltd and the implementation of the control measures was a cost efficient and economical process. This implementation passed the Value for Money (VFM) evaluation criteria of Effectiveness, Efficiency, and Economy.

5.3 Recommendations

Following the financial success of the control measures introduced at Rai Plywoods (K) Ltd, the researcher recommends the following:

- That the management of the company should replicate the successes of these internal controls in other areas of the business, especially the sales and dispatch area, where many loopholes exist due to the collusion between staff and outsiders.
- That the company conducts a cost-benefit analysis for the introduction of the new ERP system in other business cycles so as to determine whether the new system meets the value for money criteria of effectiveness, efficiency, and economy given its high acquisition and maintenance costs.

- That the company starts a scheme of staff rotation so as to reduce instances of frauds due to familiarity and inadequate staff reviews and also so as to increase the competency and exposure level of its staff in all cycles.
- The company should also investigate further the actual reason for this drastic reduction in costs seen after the introduction of the new control system since this could be indicative of fraudulent and or other abnormal activities.
- The company should introduce the use of standard costing and budgeting procedures so as to better understand its costs composition through the performance of variance analysis and other related techniques.
- The company should continuously review its entire procurement cycle and processes to ensure robustness and enhance accountability.
- The company should find a suitable compensation mechanism to address the additional workload borne by its staff as a result of the changes in internal controls.
- Other manufacturing and similar companies should also review their internal controls particularly with regard to the procurement cycle since this could realize a better understanding of their costs. The measures recommended above for Rai Plywoods (K) Ltd, also apply to many other firms facing similar circumstances.

5.4 Areas of Further Research

The researcher recommends the following areas for further research:

- The implementation of audit report recommended controls by manufacturing companies in Kenya
- Cost-benefit analysis and ERP value for money assessment by companies in Kenya
- The prevailing credit crunch experienced after the introduction of interest rate capping and its effects in the manufacturing sector in Kenya

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