OPERATIONAL AUDIT AND COST ALLOCATION ON ORGANIZATIONAL PERFORMANCE IN SELECTED INDUSTRIES - KIGALI, RWANDA

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ABSTRACT

This study on “operational audit and cost allocation on organizational performance in selected Rwanda industries” was conducted with the purpose of highlighting the role of operational audit and cost allocation in organization for the improvement of organizational performance.

The study was a descriptive correlational survey and an ex post-factor design. The research findings stated that operational audit and cost allocation are indispensable to improve organizational performance. The assessment of effectiveness and efficiency of organization’s units teamed up with maximum utilization and optimum allocation of resources help management to improve organizational performance. This was stated by Pearson’s Linear Correlation coefficient whose calculation gave a positive and significant relationship between operational audit, cost allocation and organizational performance.

The Researchers recommended to establish a system of trainings on cost allocation in Rwanda industries and gave emphasis to operational audit and cost allocation as tools of maximizing profits in all organization with business mind instead of increasing selling price.

Key words: operational audit, cost allocation, organizational performance.

1. INTRODUCTION

The traditional economic theory holds that the prime purpose of any business set up, especially for the commercial minded, is profit maximization. Profit is the source, income and means to ensure the continuation of the company’s existence. It is true that the business undertaking has the right to make profit as it established by owner(s) as a means of survival, however it is important to realize how and at what cost are these profits made.

Therefore, the business needs the resources for operating and then gaining profit. However, those resources are scarce and the environment in which it operates is uncertain and unpredictable. The managers need reliable and accurate information that enables them to manage these scarce resources and environment which influence organization’s activities. In this case, they need information for decision making and planning. For this purpose, organizations of all types and sizes engage in the task of cost allocation and this strategy is used as tool for planning and keeping within a budget.

On the other hand, allocation implies that the assigning of the cost is somewhat arbitrary. The cost allocation is described as the spreading of cost, because of the arbitrary nature of the allocation. Efforts have been made over the years to improve the bases for allocation. The operational audit has become a necessity for testing and improving cost allocation processes (Malcolm Tatum, 2011). Cost allocation processes are an important step in the operational audit process as well.

According to Alvin and James (1997), operational audit is a review of any part of an organization’s operating procedures and methods for the purpose of evaluating efficiency and effectiveness. The effectiveness and efficiency of organization’s operations lead to its performance.

Operational audit reports are intended primary for management. It is useful for evaluating the relevancy and sufficiency of the information used by management in making decision to acquire new fixed assets, evaluating the efficiency of the paper flow in processing sales etc. In operational auditing,
the reviews are not limited to accounting. They can include the evaluation of organization structure, computer operations, production methods, marketing, and any other area in which the auditor is qualified (Alvin and James, 1997). Benefits from operational audits include objective opinions, improved cost allocation processes and quicker turnaround times (Malcolm, 2011).

Concerning this study, operational audit is oriented to evaluate the efficiency, effectiveness of organization’s units which facilitate maximum and optimum utilization of resources, the work that cost allocation deals with in order to improve organizational performance.

Rwanda industries

With the goal of improving the economic condition of Rwanda, measures have been taken by the government for development of Rwanda Industries. Rwanda being a landlocked country has limited access to other countries. Besides, the 1994 genocide too had a negative impact on the country’s economic development.

Today, Rwanda Industries have seen growth due to the initiatives of the government coupled with the foreign aid and the help received from other countries. Rwanda industries have also been developed with the help of support from the World Bank. Rwanda has established trade relations with countries like Kenya, Germany, Belgium, Switzerland, Uganda, and Tanzania. Rwanda Industries include chemical industries, rubber industry, plastic, metal goods. Rwanda Industries have also seen growth due to the liberalization and privatization policy of the government. Rwanda Industries also include within its sphere mining on a small scale. Consumer products that are produced include soap, matches, pharmaceuticals, textiles and cement. GDP(Gross Domestic Product) - composition by sector: (1) Agriculture: 41.7% (2)Industry: 14.1% (3) Services: 44.2% (2009).

Statement of the problem

Companies must accurately allocate all production costs to goods and services in order to earn the highest possible profits. Poor quality materials, untrained labor and inefficient production processes are significant factors that can skew a company’s cost allocation process. Cost allocation is generally based on using similar materials and labor to consistently produce goods and services. However, operational audit by the assessment of effectiveness and efficiency of operations helps to avoid waste and inefficiency use of resources. Department managers operate outside these guidelines may slow the company’s performance.

From this point of view, a number of problems are surely to arise in organization. These include: (1) no understanding the necessity of operational audit in organization which can consequently cause the lack of units’ performance and increasingly weakness of operations, (2) arbitrary cost allocation process which can cause some confusion and rejection of units/operations because some are considered as more productive and others more costly, (3) as a result of above problems, organization’s objectives are not fully realized due to poor performance of various components within the organization.

For those reasons, this study came to highlight the role of operational audit and cost allocation in organization for the improvement of organizational performance.

The purpose of this study is to assess the role of operational audit and cost allocation process on organizational performance.

Hypothesis

Ho; there is no significant relationship between operational audit, cost allocation and organizational performance in selected Rwanda industries.

This study was conducted in five Rwanda industries: Sulfo Rwanda Industries, Reco&Rwasco, Rwanda color, Ocic Coffee, and Rwanda foam SARL (Société par Actions à Responsabilité Limitée: joint stock company limited). All of them are located in Kigali city, the capital of Rwanda.

This study was guided by game theory initiated by James Waldegrave in 1713; especially non cooperative game theory was applicable to this study. This study focused on operational audit and cost allocation. It assessed whether the evaluation of effectiveness & efficiency of organization’s operations and maximum utilization of resource provides information useful to management in making decision regarding organizational performance.

The study intended to examine the correlation between operational audit, cost
allocation and organizational performance. The study intended to determine the profile of respondents, extent of operational audit (assessment of efficiency and effectiveness of operations) and cost allocation (assignment of costs to cost object), and level of organizational performance.

Operational definitions of key terms

Operational audit: assessment of the efficiency and effectiveness of a company's business operations for its performance.

Efficiency: the relative amount of resources used to achieve a predetermined objective.

Effectiveness: the degree to which a predetermined objective target is met.

Cost allocation: the assignment of indirect cost to the particular cost object.

Cost allocation base: a factor that is the common denominator for systematically linking an indirect cost or group of indirect costs to a cost object.

An actual cost: the cost incurred (a historical cost) as distinguished from budgeted or forecasted costs.

Cost object: anything for which a separate measurement of costs is desired.

Cost pool: a grouping of individual costs items.

Organizational performance: a broad construct which captures what organization do, produce, and accomplish for the various departments with which they interact.

1. REVIEW OF RELATED LITERATURE

1.1. Concepts, opinions, ideas from authors/experts

Operational audit

Operational audit is a review of any part of an organization’s operating procedures and methods for the purpose of evaluating efficiency and effectiveness (Alvin & James, 1997).

The term operational auditing refers to a comprehensive examination of an operating unit or a complete organization to evaluate its systems, control, and performance, as measured by management’s objectives (O-Ray & Kurt, 2001). An operational audit focuses on the efficiency, effectiveness, and economy of operations.

Effectiveness and efficiency

Effectiveness refers to the accomplishment of objectives, whereas efficiency refers to the resources used to achieve those objectives. An example of effectiveness is the production of parts without defects. Efficiency concerns whether those parts are produced at minimum cost.

Effectiveness: before an operational audit for effectiveness can be performed, there must be specific criteria for what is meant by effectiveness. An example of operational audit for effectiveness would be to assess whether a governmental agency has met its assigned objective of achieving elevator safety. Before the operational auditor can reach a conclusion about the agency’s effectiveness, criteria for elevator safety must be set.

Efficiency: like effectiveness, there must be defined criteria for what is meant by doing things more efficiently before operational auditing can be meaningful. It is often easier to set efficiency than effectiveness. For example, if two different production processes manufacture a product of identical quality, the process with the lower cost is considered more efficient.

Objectives of operational audit

Operational audits are often performed by internal auditors for their organizations. The major users of operational audit reports are managers at various levels, including the board of directions. Top management needs assurances that every component of an organization is working to attain the organization’s goals. For example, management needs the following (O-Ray & Kurt, 2001): (1) Assessments of the unit’s performance in relation to management’s objectives or other appropriate criteria. (2) Assurance that its plans (as set forth in statements of objectives, program, budget, and directives) are comprehensive, consistent, and understood at the operating levels. (3) Objective information on how well its plans and policies are being carried out in all areas of operations and on opportunities for improvement in effectiveness, efficiency, and economy. (4) Information on weaknesses in operating controls, particularly as to possible sources waste. (5) Reassurance that all
operating reports can be relied on as basis for action.

Cost

According to Kamukama (2006), cost is the amount of expenditure, actual (incurred) or notional (attributable), relating to a specific thing or activity.

Cost is the cash or cash equivalent value sacrificed for goods and services that are expected to bring a current or future benefit to the organization (Hansen D. R & Mowen M.M, 2003).

Classification of cost

There are two major classification of cost (Horngren & al., 2000): According to cost behavior pattern: (1) Variable cost: costs that change in total proportion to changes in the related level of total activity or volume. (2) Fixed cost: costs that remains unchanged in total for a given time period despite wide changes in the related level of total activity or volume.

According to assignment of cost to cost object: (1) Direct cost: are costs which are easily traceable or identifiable with product: traceable usage of materials and labor. (2) Indirect cost: are costs which cannot be identified with or traced to a single product because they are incurred for several products: all of the other production costs, referred to as overhead.

Cost allocation

Horngren & al., (2000) define cost allocation as the assignment of indirect cost to the particular cost object. Cost allocation is an inescapable problem in nearly every organization and in among every facet of accounting.

Purpose of cost allocation

Horngren & al., (2000) gave four purposes of cost allocation: to provide information for economic decision, to motivate managers and other employees, to justify costs or compute reimbursement, and to measure income and assets for reporting to external parties.

Organizational performance

Organizational performance comprises the actual output or results of an organization as measured against its intended outputs (or goals and objectives).

According to Richard et al. (2009) organizational performance encompasses three specific areas of firm outcomes: (a) financial performance (profits, return on assets, return on investment, etc.); (b) product market performance (sales, market share, etc.); and (c) shareholder return (total shareholder return, economic value added, etc.). The term Organizational effectiveness is broader.

Specialists in many fields are concerned with organizational performance including strategic planners, operations, finance, legal, and organizational development. In recent years, many organizations have attempted to manage organizational performance using the balanced scorecard methodology where performance is tracked and measured in multiple dimensions such as: financial performance (e.g. shareholder return), customer service, social responsibility (e.g. corporate citizenship, community outreach) and employee stewardship.

Key Performance Indicators (KPI)

Key Performance Indicators, also known as KPI or Key Success Indicators (KSI), help an organization define and measure progress toward organizational goals. Once an organization has analyzed its mission, identified all its stakeholders, and defined its goals, it needs a way to measure progress toward those goals. KPI are those measurements.

KPI reflect the organizational goals

An organization that has as one of its goals "to be the most profitable company in our industry" will have KPI that measure profit and related fiscal measures. "Pre-tax Profit" and "Shareholder Equity" will be among them. However, "Percent of Profit Contributed to Community Causes" probably will not be one of its KPI. On the other hand, a school is not concerned with making a profit, so its KPI will be different. KPIs like "Graduation Rate" and "Success in finding employment after Graduation", though different, accurately reflect the schools mission and goals.
Identifying Indicators of Organization

Performance indicators differ from business drivers & aims (or goals). A school might consider the failure rate of its students as a KPI, which might help the school understand its position in the educational community, whereas a business might consider the percentage of income from return customers as a potential KPI. But it is necessary for an organization to at least identify its KPIs. The key environments for identifying KPIs are (Carol Taylor Fitz-Gibbon, 1990): having a pre-defined business process, Requirements for the business processes, having a quantitative/qualitative measurement of the results and comparison with set goals, and investigating variances and tweaking processes or resources to achieve short-term goals.

A KPI can follow the SMART criteria. This means the measure has a specific purpose for the business, it is measurable to really get a value of the KPI, the defined norms have to be achievable, the KPI has to be relevant to measure (and thereby to manage), and it must be time phased, which means the value or outcomes are shown for a predefined and relevant period.

2.2. Theoretical perspectives

This study was guided by game theory initiated by James Waldegrave in 1713; especially non-cooperative game theory was applicable to this study. Non-cooperative game theory deals largely with how intelligent individuals interact with one another in an effort to achieve their own goals. This study used this branch of game theory whereby the two independent variables (operational audit and cost allocation) interact with one another with the effort of improving organizational performance (dependent variable). In practice, the assignment of cost to cost object is characterized by spreading of costs because of arbitrary nature of cost allocation. It seems to be better that the assessment of the effectiveness and efficiency of operations (the work that operational audit deals with) teamed up with cost allocation process helps managers to strongly improve organizational performance.

According to OsmandVitez (2011) an operational audit tests a company’s internal systems and procedures used to produce its goods and services sold to consumers. These audits test production operations for efficiency and effectiveness. Audits may be conducted by internal employees or external auditors with business experience relating to the company’s operational procedures. Operational audits are usually a deeper review of company operations than a financial audit, which is conducted in an after-the-fact audit process. Benefits from operational audits include objective opinions, improved workflow or cost allocation processes and quicker turnaround times.

Staff accountants or accountants from public accounting firms usually conduct operational audits. Using staff accountants for an internal operational audit allows companies to have an objective opinion on how well the company is using their business resources. Department managers may have a tendency to falsify their audit figures since they often receive compensation bonuses or pay increases from improved operations.

An operational audit usually uncovers inefficient use of resources or wasted capital. Auditors can test for wasted resources by reviewing the process used to obtain, warehouse and deliver production materials to the production department. Administrative departments may also be reviewed during the operational audit process. These areas can increase costs by employing too many individuals or having an improper workflow. Slow internal business processes can delay critical wealth-generating operations. Auditors often test cost allocation processes during operational audits to determine the strengths and weaknesses of this system.

Delays in business operations increase business costs and generate fewer consumer sales. Operational audits help companies find these delays and determine solutions to improve these issues. Improved production processes can lead to quicker turnaround times of raw materials to finished goods. Operational audits focus on decreasing the amount of time needed to produce and deliver goods to retailers and wholesalers. These improvements can lead to higher amounts of capital to further improve business operations and then to the performance of organization.

According to Malcolm Tatum (2011), Cost allocation is the process of identifying and assigning the costs of services necessary for the operation of a business or other type of entity. Unlike a cost rating, the allocation is
less concerned with the actual amount of the cost, and more concerned with allocating or assigning the cost to the correct unit within the organization. From this perspective, cost allocation can be seen as a tool that helps track all costs associated with the ongoing operation more efficiently, since each cost is associated with specific departments or groups of departments within the organization.

There are several reasons why cost allocation is important. One has to do with accurately assigning costs within an organization, so that it is possible to know exactly what types of costs were incurred in the operation of a given area in the organization. This is not only important information to consider when creating an operating budget, but is also key in calculating taxes that must be paid to local, state, and federal tax agencies. In a number of countries around the world, the way that costs are allocated can have an impact on how much the organization pays in taxes, making it necessary to comply with any government regulations that have to do with the allocation of costs within the organization.

Another benefit of cost allocation has to do with simply keeping track of expenses for internal planning purposes. While some expenses are indirect costs and benefit more than one area of the operation, there is still a need to allocate direct costs in a manner that is logical and accurate. Even when the costs are incremental, meaning they are stretched out over several accounting periods, making sure the costs are assigned properly can make a big difference in how well each unit within the business or other entity works within their share of the overall budget. When it is apparent that one unit will exceed its assigned budget, steps can be taken to implement cutbacks on non-essential service costs, while finding ways to adjust the overall budget to allow for the continuing support of essential functions.

Organizations of all types and sizes engage in the task of cost allocation. Businesses use this strategy as a tool for planning and keeping within a budget. Non-profit entities utilize the tool as a way of providing as many services to its members as possible, while still making the most effective use of its resources. Even households can make use of the concept of cost allocation when planning the operating budget for the family. As a means of identifying and properly assigning costs, this approach to allocation helps to provide structure and context to financial planning in a way that would be extremely difficult otherwise for organization to achieve its goals.

2.3. Related studies

In reality few studies were exactly related to this study. Some Researchers gave opinions on cost allocation methods and others on operational audit by stressing effectiveness and efficiency in general.

Dr Monir Zaman (2009) in his study on overall firm’s performance declared that cost allocation method, increased efficiency, and increased effectiveness have positive and significant effect on overall firms’ performance in Australia.

However the complexity of the cost allocation problem has led some authors to conclude that there is no economically justifiable way to allocate joint costs (Ransmeier 1942, Thomas 1974).

In 1994 Allstate's internal auditing team for the purpose of maximizing productivity conducted a study on the risk assessment approach to selecting operational audit topics. The team found that a corporation-wide quality initiative, focusing on constant process improvement, has stimulated the acceptance of, and the demand for, operational audits. Today, over 50 percent of the department's resources are devoted to operational auditing (Kurt F. Reding, 2010).

Therefore, Pryor & al. (1998) stated that the measures of efficiency, effectiveness, and capability for rapid adaptation are of great interest to all stakeholders: process owners, internal and external customers and suppliers, and executives. Inefficient processes are costly in terms of dollars, waste, rework, delays, resource utilization, and so on. Ineffective processes are costly as well because they are not reliable. They don't do what they are supposed to do. Processes that are not capable of rapid adaptation (flexibility and innovation) are costly because they are not capable of rapidly responding to customers' needs in terms of customization and rapid decision making.

In contrast, an operational audit would start by reviewing the work process of
construction and contract procedures at the front end of the project, identifying problems like missing controls, etc. and fixing the problems before spending starts. Then, the auditor might run ratios, verify delivery dates, examine how the contractor overhead works that results in billings, etc and usually will find thousands or millions in savings. There is a significant difference in the skill sets required for financial vs. operational audits. Financial audits follow defined standards, while operational audits are performed in an unstructured environment where nothing is routine or defined. Only some people are skilled at working in unstructured work environments and are able to find measurable cost savings.

Vance Jochim, a Certified Internal Auditor, conducted a series of case studies of operational audits in his 18+ years of corporate and government internal auditing. He provided clear examples of how operational audits of unstructured areas differ from standard financial or compliance audits. Furthermore, his findings led him to conclude that operational audit help organization to save a certain amount of $-millions and other resources. A part of examples of his findings is presented: these are from more than 18 years of corporate troubleshooting experience saving clients $1 to 25-million including ARCO (Oil, now part of BP), Nissan Motor Corp., the GAP, the US State Department’s 2004-2005 management of the $22-billion Iraq Reconstruction Program, and other firms including a $200-million software firm, the 80,000 employee County of Los Angeles, and a $160-million 80 location construction materials firm (now part of Rinker Corp.).

The Statement on Audit Standards (SAS) 70 gives the purposes of operational audit. The main purpose for operational audits under Statement on Audit Standards (SAS) 70 is to standardize and optimize business processes that confirm company maturity, show the openness and transparency of the organization’s rules and procedures for its counterparties, and allow consideration of the most diverse interests and needs of business participants.

The purposes of operational audit under SAS 70 are therefore to: assess internal policies and the efficiency of organizational procedures, and determine drawbacks in the existing structure of internal control systems with a view to its improvement. The result of the operational audit is a management letter describing the existing business risk factors, along with recommendations for improving the financial organization’s activity.

3. METHODOLOGY
3.1. Research design

This study used a descriptive correlational survey and an ex-post-factor design. The descriptive correlational survey design was used to describe the relationship between operational audit, cost allocation and organizational performance. It was ex-post-factor since the Researchers were interested in getting the facts as they already exist in the field. It was a survey since it involved quite a big sample.

3.2. Research population

The population of this study included managers of five Rwanda industries: Sulfo Rwanda Industries, Reco&Rwasco, Rwanda color, Ocir Coffee, and Rwanda foam SARL. The total of the population was 180 staff from the five selected industries.

3.3. Sample Size

From the population of 180 managers, the Researchers selected a sample of 124. The Sloven’s formula was used to determine this minimum sample size. This formula states that the minimum sample size is given by:

$$n = \frac{N}{1+N\alpha^2}$$

Where n: sample size, N: population and $\alpha^2$: 0.05 level of significance

These were selected evenly from the five selected industries. Table 1 shows the distribution of the population and sample size.
Table 1: Respondents of the study

<table>
<thead>
<tr>
<th>Rwanda industries</th>
<th>Target Population</th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sulfow Rwanda Industries</td>
<td>31</td>
<td>21</td>
</tr>
<tr>
<td>Reco&amp;Rwascot</td>
<td>37</td>
<td>26</td>
</tr>
<tr>
<td>Ocir Coffee</td>
<td>41</td>
<td>28</td>
</tr>
<tr>
<td>Rwanda Foam SARL</td>
<td>34</td>
<td>23</td>
</tr>
<tr>
<td>Rwanda Color</td>
<td>37</td>
<td>26</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>180</strong></td>
<td><strong>124</strong></td>
</tr>
</tbody>
</table>

Source: Researchers, 2011

3.4. Sampling Procedures

The Researchers used purposive and stratified random sampling to select managers from the five selected industries. The Researchers set a selection criterion, where managers were stratified according to industry and in each industry a specific number of managers had to be selected. When it came to selecting managers from industry, sample random sampling was used. Here managers' lists were obtained and the Researchers selected them according to the random number. Each manager selected was then approached and given a questionnaire to fill.

3.5. Research Instrument

Research made questionnaire was used as tool for gathering data.

Questionnaire

A questionnaire was distributed to the managers of the selected five Rwanda industries. A questionnaire was structured and self administered in order to avoid subjectivity from Researchers and let the respondents fill free of responding. The Researchers could explain respondents how to fill the questionnaire. The questionnaire had four sections. Section one was for profile of respondents, section two was for extent of cost allocation, section three was for extent of operational audit, and section four was for the level of organizational performance. Most questions in questionnaire were closed ended and used four scales where 1= strongly agree, 2= agree, 3= disagree, 4= strongly disagree or five scales where 1= very high, 2= high, 3= moderate, 4= low, 5= very low. Respondents were required to rate each item by ticking the number of their perception.

Validity and reliability of instrument

To establish the reliability of the questionnaire, the Researchers used the method of expert judgment. After constructing the questionnaire, the Researchers contacted the experts in research, to ensure the reliability and validity of the research instrument. After the consultations, the Researchers made the necessary adjustments. This made the instrument more clearly, relevant, specific and logically arranged. In addition a pre-test was conducted in order to test and improve on the reliability of the questionnaire. The Content Validity Index (CVI) was calculated from the formula below:

\[ CVI = \frac{n}{N} \]

Where, CVI: Content Validity Index, N: Total number of items in questionnaire, n: number of relevant items in the questionnaire

CVI= 9/9 = 1

Since the CVI of research instrument (1) was greater than 0.7, then the instrument was declared content valid.

3.6. Data gathering procedures

During the administration of the questionnaire

The Researchers went on the field, introduced themselves and were familiar with research population. The Researchers were allowed to conduct research; they distributed the questionnaire and gave the explanations on how to fill it. While the respondents were fulfilling the questionnaires, the Researchers collected the secondary data by reading available books, publications
and visited website of concerned organizations. After two months, the respondents put the questionnaires back to the Researchers and were checked to ensure if all questions are answered.

After the administration of the questionnaire

The data gathered was collected, encoded into computer using the Statistical Package for Social Scientists (SPSS).

3.7. Data analysis

Frequencies and percentage distributions were used to analyze data on the profile of respondents. Means were used to analyze data on the extent of operational audit, extent of cost allocation and level of organizational performance. The Pearson’s Linear Correlation coefficient was used to establish whether there is a significant relationship between operational audit, cost allocation and organizational performance. The Statistical Package for Social Scientists (SPSS) was the package used to analyze all the data. The 0.05 level of significance was used to determine the strength of the relationship between the independent variables and dependent variable.

To interpret the responses of respondents on the extent of operational audit, cost allocation and level of organizational performance, the following quantifications of interpretations were used.

5 points scales interpretations
5.5—4.51 very low
3.51—4.5 low
2.51—3.5 moderate
1.51—2.5 high
1.0—1.5 very high

4 points scales interpretations
3.51—4.5 strongly disagree
2.51—3.5 disagree
1.51—2.5 agree
1.00—1.5 strongly agree

3.8. Ethical considerations

Through this study, the Researchers avoided as well as possible everything which could bring discredit on them, or the profession generally (research activity). The Researchers provided some ethical considerations in research such as honesty, objectivity, confidentiality, integrity and carefulness. Consequently, the research results were useful for Researchers in particularly and society in generally.

3.8. Limitations to the study

Sometimes, respondents were not forthright in answering questions, this was overcome by giving them reasonable assurance that the responses are strictly for scientific research purposes and probing more as the questionnaire involve checks and balances.

Difficult in accessing the respondents due to their busy schedules; however the Researchers used multiple skills like call back, re-arranging appointments and extensively mapping.

4. PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Profile of respondents

Respondents in this study were described in terms of names of organizations, gender, and position of work experience. Respondents were asked to provide such information about them. Their responses were summarized using frequencies & percentage distributions as indicated in table 2.
Table 2: Profile of respondents

<table>
<thead>
<tr>
<th>Respondent's profile</th>
<th>Category</th>
<th>Frequency</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization's name</td>
<td>Sulfo Rwanda Industries</td>
<td>21</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Reco&amp;Rwasco</td>
<td>26</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>Ocir Café</td>
<td>28</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>Rwanda FoamSARL</td>
<td>23</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>Rwanda Color</td>
<td>26</td>
<td>21</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>124</td>
<td>100</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>86</td>
<td>69</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>38</td>
<td>31</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>124</td>
<td>100</td>
</tr>
<tr>
<td>Position</td>
<td>Manager</td>
<td>122</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>124</td>
<td>100</td>
</tr>
<tr>
<td>Working experience</td>
<td>Under one year</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>One year</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Two years</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Over two years</td>
<td>116</td>
<td>94</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>124</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Researchers, 2011

According to results in table 2, the biggest number of managers observed in all organizations is 28 (23%) and the smallest number of managers is 21 (17%) in all organizations. These figures show that all organizations share the same characteristics, structure point of view, to be compared and analyzed together.

The results in table 2 show that 69% of respondents were male and 31% were female. These results revealed that there is a gender promotion in Rwanda industries because according to the Government of Rwanda in the promotion of gender, the minimum number of female should be 30% of total employees in public or private organization.

Considering the results in table 2, the 122 out of 124 either 98% of respondents are managers in their organizations. This shows that their answers as persons in charge of different responsibilities in the organization are consistency to organization’s objectives.

The results in table 2 shows that 116 of respondents either 94% possess an experience of over two years. None has an experience less than two years. These years of working experience confirm how the respondents are familiar with their tasks and organization’s objectives.

Extent of Operation audit and cost allocation in selected Rwanda industries

The independent variables of this study were operational audit and cost allocation. The second objective of this study was to determine their extent on organizational performance in selected Rwanda industries. For coming up with this objective, the respondents were asked to describe the extent of operational audit and cost allocation by rating the level of efficiency and effectiveness of operational audit according to two types of auditors (internal and external), rating the level of fairness of allocation of different types of costs in their organization. The extent of these variables was also illustrated by respondents’ opinions on the role of operational audit and cost allocation on organizational performance. The respondents were asked to rate and score different statement on operational audit and cost allocation on organizational performance. Key of rating is: very high (<1.5), high (1.51<2.5), moderate (2.51<3.5), low (3.51<4.5), very low (4.51<5.5), strongly agree (<1.5), agree (1.51<2.5), disagree (2.51<3.5), strongly disagree (3.51<4.5).

Their responses are summarized into table 3.

Table 3: The extent of Operation audit and cost allocation on organizational performance in selected Rwanda industries

<table>
<thead>
<tr>
<th>Efficiency</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal auditors</td>
<td>1.55</td>
<td>High</td>
<td>1</td>
</tr>
<tr>
<td>External auditors</td>
<td>3.36</td>
<td>Moderate</td>
<td>2</td>
</tr>
<tr>
<td>Average mean</td>
<td>2.45</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Effectiveness</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal auditors</td>
<td>1.94</td>
<td>High</td>
<td>1</td>
</tr>
<tr>
<td>External auditors</td>
<td>2.15</td>
<td>High</td>
<td>2</td>
</tr>
<tr>
<td>Average mean</td>
<td>2.04</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>
The results in table 3 show that the efficiency and effectiveness of operational audit depends on type of auditor. For example, the respondents rated the level of efficiency to be high (mean=1.55) when it is conducted by internal auditors. The same respondents rated the level of efficiency to be low (mean=3.36) when it is conducted by external auditors. They also rated the level of

<table>
<thead>
<tr>
<th>Operations Audit Roles</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational audit helps to achieve organization’s goals</td>
<td>1.10</td>
<td>Strongly agree</td>
<td>1</td>
</tr>
<tr>
<td>Operational audit help to determine the effectiveness and efficiency use of resource by analyzing their productivity/hour or labor</td>
<td>1.18</td>
<td>Strongly agree</td>
<td>2</td>
</tr>
<tr>
<td>Operational audit helps to motivate managers and employees</td>
<td>1.21</td>
<td>Strongly agree</td>
<td>3</td>
</tr>
<tr>
<td>Operational audit helps managers to make decision regarding production quantities</td>
<td>1.65</td>
<td>Agree</td>
<td>4</td>
</tr>
<tr>
<td>Operational audit enables managers to maximize profit</td>
<td>1.65</td>
<td>Agree</td>
<td>5</td>
</tr>
<tr>
<td>Operational audit is a strong inputs in predicting a secured level of sales</td>
<td>1.95</td>
<td>Agree</td>
<td>6</td>
</tr>
<tr>
<td><strong>Average mean</strong></td>
<td>1.45</td>
<td>Strongly agree</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost Allocation Types</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocation of fixed cost</td>
<td>1.65</td>
<td>Fair</td>
<td>1</td>
</tr>
<tr>
<td>Allocation of direct costs</td>
<td>1.90</td>
<td>Fair</td>
<td>2</td>
</tr>
<tr>
<td>Allocation of indirect costs</td>
<td>2.56</td>
<td>Unfair</td>
<td>3</td>
</tr>
<tr>
<td>Allocation of variable costs</td>
<td>3.03</td>
<td>Unfair</td>
<td>4</td>
</tr>
<tr>
<td><strong>Average mean</strong></td>
<td>2.28</td>
<td>Fair</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cost Allocation Roles</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost allocation enables managers to avoid waste of resources: efficiency effectiveness use of resources (productivity/hour or productivity/labor)</td>
<td>1.34</td>
<td>Strongly agree</td>
<td>1</td>
</tr>
<tr>
<td>Cost allocation helps managers to achieve organization’s objectives</td>
<td>1.78</td>
<td>Agree</td>
<td>2</td>
</tr>
<tr>
<td>Cost allocation helps managers to maximize profits by reducing cost of business</td>
<td>2.17</td>
<td>Agree</td>
<td>3</td>
</tr>
</tbody>
</table>

Source: Researchers, 2011
effectiveness to be high (mean=1.94) when it is conducted by internal auditors and also to be high (mean=2.15) when it is conducted by external auditors. Overall, the efficiency (mean=2.45) and effectiveness (mean=2.04) of operational audit in selected Rwanda industries are high.

The same table 3 gives respondents’ opinions on the role of operational audit in organization. Respondents strongly agreed (mean=1.10) that Operational audit helps to achieve organization’s goals. The respondents strongly agreed (mean=1.18) that operational audit help to determine the effectiveness and efficiency use of resource by analyzing their productivity/hour or labor. They strongly agreed (mean=1.21) that operational audit helps to motivate managers and employees in organization. Respondents agreed (mean=1.65) with the statement that operational audit helps managers to maximize profit and to make decision regarding production quantities. Respondents agreed (mean=1.95) with the statement that operational audit is a strong inputs in predicting a secured level of sales. Overall, the respondents strongly agreed (mean=1.45) with the role operational audit in organization for improving organizational performance.

The results in table 3 show the respondents’ opinions on the fairness of allocation of different types of cost. The respondents rated the allocation of fixed cost to be fair (mean=1.65), the allocation of direct cost to be fair (mean=1.90), the allocation of indirect cost to be unfair (mean=2.56), and the allocation of variable cost to be unfair (mean=3.03). Overall, the allocation of different types of costs is fair (mean=2.28) in selected Rwanda industries.

The results in table 3 show also the respondents’ opinions on the role of cost allocation on management. The respondents strongly agreed (mean=1.34) that cost allocation enables managers to avoid waste of resources: efficiency effectiveness use of resources (productivity/hour or productivity/labor). The respondents agreed (mean=1.78) that cost allocation helps managers to achieve or-organization’s objectives. They also agreed (mean=2.17) that cost allocation helps managers to maximize profits by reducing cost of business. The respondents agreed (mean=2.27) that cost allocation is a strong input in predicting secured level of sales. They also disagreed (mean=2.65) that cost allocation helps to motivate employees and managers. The respondents disagreed (mean=2.77) with the statement that cost allocation helps managers to make decision regarding production quantities. Overall, respondents agreed (mean=2.16) with the role of cost allocation on management in selected Rwanda industries.

**Level of organizational performance in selected Rwanda industries**

The third objective in this study was to determine the level of organizational performance in selected Rwanda industries. The respondents were asked to rate different levels of organizational performance according to the key performance indicators provided by the Researchers. Their responses are summarized into table 4.

**Table 4:** Respondents’ opinions on the level of organizational performance indicators in their organization

<table>
<thead>
<tr>
<th>Indicators of Organization Performance</th>
<th>Mean</th>
<th>Interpretation</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Competitively organization</td>
<td>1.01</td>
<td>Very high</td>
<td>1</td>
</tr>
<tr>
<td>Goals achievement</td>
<td>1.01</td>
<td>Very high</td>
<td>2</td>
</tr>
<tr>
<td>Employees and managers motivation</td>
<td>1.01</td>
<td>Very high</td>
<td>3</td>
</tr>
<tr>
<td>Customer service</td>
<td>1.18</td>
<td>Very high</td>
<td>4</td>
</tr>
<tr>
<td>Total shareholder return</td>
<td>1.23</td>
<td>Very high</td>
<td>5</td>
</tr>
<tr>
<td>Market share</td>
<td>1.26</td>
<td>Very high</td>
<td>6</td>
</tr>
<tr>
<td>Profit maximization</td>
<td>1.28</td>
<td>Very high</td>
<td>7</td>
</tr>
<tr>
<td>Productivity/hour or labor</td>
<td>1.40</td>
<td>Very high</td>
<td>8</td>
</tr>
<tr>
<td>Social responsibility (e.g. community and public service for population welfare)</td>
<td>1.79</td>
<td>High</td>
<td>9</td>
</tr>
<tr>
<td>Return on assets</td>
<td>2.00</td>
<td>High</td>
<td>10</td>
</tr>
<tr>
<td>Return on investment</td>
<td>2.02</td>
<td>High</td>
<td>11</td>
</tr>
<tr>
<td>Total of sales</td>
<td>2.31</td>
<td>High</td>
<td>12</td>
</tr>
<tr>
<td>Production quantities</td>
<td>2.66</td>
<td>Moderate</td>
<td>13</td>
</tr>
<tr>
<td>Average mean</td>
<td>1.55</td>
<td>High</td>
<td></td>
</tr>
</tbody>
</table>
The results in table 4 show the respondents’ opinions on the level of organizational performance in their industries. Respondents rated Competitively organization, Goals achievement and Employees and managers motivation to be a very high level (mean=1.01), Customer service to be a very high level (mean=1.18), Total shareholder return to be a very high level (mean=1.23), Market share to be a very high level (mean=1.26), Profit maximization to be a very high level (mean=1.28), Productivity/hour or labor to be a very high level (mean=1.40), Social responsibility to be high (mean=1.79), return on assets to be high level (mean=2.00), return on investment to be a high level (mean=2.02), total sales to be a high level (mean=2.31), productions quantities to be a moderate level (mean=2.66) of organizational performance in their organization.

Overall, those performance indicators are high (mean=1.55) level of performance in Rwanda selected industries.

Relationship between operational audit, cost allocation and organizational performance

The fourth and last objective in this study was to determine the relationship between operational audit, cost allocation and organizational performance in selected Rwanda industries in Kigali, for which it was hypothesized that the two variables are not significantly correlated. To test this hypothesis, Pearson’s Linear Correlation coefficient (PLCC) was used. The summary of r-value of those variables is presented in table 5.

<table>
<thead>
<tr>
<th>Variables Correlated</th>
<th>r-value</th>
<th>Sig.</th>
<th>Interpretation</th>
<th>Decision on Ho</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Vs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Efficiency of OA</td>
<td>0.002</td>
<td>0.983</td>
<td>Positive and Significant</td>
<td>Rejected</td>
</tr>
<tr>
<td>Effectives OA</td>
<td>0.063</td>
<td>0.489</td>
<td>Positive and Significant</td>
<td>Rejected</td>
</tr>
<tr>
<td>Audit</td>
<td>0.167</td>
<td>0.064</td>
<td>Positive and Significant</td>
<td>Rejected</td>
</tr>
<tr>
<td>Cost Type</td>
<td>0.186</td>
<td>0.039</td>
<td>Positive and Significant</td>
<td>Rejected</td>
</tr>
<tr>
<td>Cost Allocation</td>
<td>0.210</td>
<td>0.019</td>
<td>Positive and Significant</td>
<td>Rejected</td>
</tr>
</tbody>
</table>

Source: Researchers, 2011

The table 5 shows that operational audit and cost allocation are positively and significantly correlated with organizational performance. For instance the efficiency of operational audit (OA) is positively and significantly correlated with organizational performance (r=0.002, sig. =0.983). The effectiveness of operational audit (OA) is positively and not significantly correlated with organizational performance (r=0.063, sig. =0.489); operational audit is positively and significantly correlated with organizational performance (r=0.167, sig. =0.064). Allocation of different types of cost is positively and significantly correlated with organizational performance (r=0.186, sig. =0.039) cost allocation is positively and significantly correlated with organizational performance (r=0.210, sig. =0.019). Accordingly, the null hypothesis is rejected. There is a significant relationship between operational audit & cost allocation and organizational performance.
5. FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary of findings

The extent of Operation audit and cost allocation on organizational performance in selected Rwanda industries.

The extent of operational audit and cost allocation on organizational performance was shown by the level of effectiveness and efficiency of operational audit according to two types of auditors and the role of operational audit on organizational performance. It was also shown by the level of fairness of allocation of different types of cost and the role of cost allocation on organizational performance on the other hand.

The findings showed that there is a high level of efficiency and effectiveness of operational audit in selected Rwanda industries. But, according to the respondents’ points of view, internal auditors are more preferred for effective and efficient of operational audit. There is a high level of effectiveness and efficiency of operational audit when it is performed by internal auditors. This could be explained by the fact that internal auditors are permanent employees of organization and are able to assess day to day the efficiency, effectiveness and economy of organization’s operations/units according to its objectives. External auditors act as consultant and are very costly to organization. Indeed, management has the responsibility for operating an organization in an effective and efficient manner. Internal auditors are hired by organizations to assist management in effectively and efficiently operating an organization. Internal auditors do this by reviewing the effectiveness of the organization's internal control processes and making suggestions for improving it. In conducting their internal control reviews, the internal auditor should identify the potential risks faced by the organization and then ensure that the most effective and efficient controls are present to address the risks. Government Auditing Standards (1994) stated that an internal control review can take many forms, from simply ensuring that controls are present and functioning to an operational audit involving the review of an organization's mission, goals, objectives, and operating procedures.

However, operational audit is very helpful (very significant) to management in improving organizational performance. The findings showed that in assessing effectiveness, efficiency and economy of operations, operational audit helps managers to maximize profit, to determine production quantities and to predict a secured level of sales by providing to them all information on units’ performance which helps to avoid waste of resources (materials, human and financial resources) in examining their effective and efficiency uses (by productivity/hour or labor). In addition, operational audit helps organization to motivate managers and employees. This is explained by the fact that the main purpose of operational audit is to provide the assurance that organization’s plans are comprehensive, consistent, and understood at the operating levels (O.Ray & Kurt, 2001). In this regards, managers are enforced to make plans and implement them, and employees are operators that facilitate those plans to be executed. So, both of them are concerned by operational audit—assessment of effectiveness and efficiency. It also helps organization to achieve goals. Operational audit deals with the assessment of effectiveness and efficiency of operations, units or departments. Every unit or department is assessed on how is accomplishing its specific objectives and whether it is utilizing all of its resources appropriately. If each specific objective is well achieved, a set of objectives are achieved and consequently organization’s objectives are accomplished.

Besides, business organizations incur cost. The allocation of different type costs among departments or units is necessary for its performance. The findings in this study showed that the allocation of different types of cost in selected Rwanda industries is fair. In details, the fairness of allocation depends on the type of cost to be allocated. According to cost-behavior pattern, the allocation of fixed costs – costs that remain unchanged with production quantities e.g. cost of production machine, cost of plant, administrative salaries etc is very fair than the allocation of variable costs—costs that remain changed with the production quantities e.g. cost of raw materials, etc. On the other hand, according to assigning of costs to cost object, the allocation of direct costs – cost that is easily traceable with product e.g. cost of raw materials is very fair than allocation of indirect costs – cost that is complexly traceable with the product e.g. R&D cost.
Moreover, the extent of cost allocation was explained by the role of cost allocation in organization. The findings showed that cost allocation is significant to the management. It enables managers to improve organizational performance in many ways. Cost allocation helps managers to maximize profit by providing them information for economic decision e.g. to decide on the selling price for a customized product or service. Cost allocation helps managers to use efficiently and effectively the resource in organization when they are making choices among alternatives and planning for optimum utilization of resources by calculating their productivity/hour or labor. Cost allocation helps organization to achieve goals. The assignment of costs to cost object helps managers to justify the use of resources and manage efficiently and effectively those resource and consequently achieve organization’s objectives. Also, Cost allocation is of great importance when managers are predicting secured level of sales. The allocation of costs to cost object (department or units) provides useful information on the level of cost in each unit and how is able to bear them so that managers may possibly proceed to provisional setting of prices and determine the level of sales, then the market share is ensured.

Level of organizational performance in selected Rwanda industries

The findings revealed that a very high level of organizational performance in Rwanda industries is mainly shown by the following key indicators of performance: profit maximization, production quantities, productivity per hour or labor, employees and managers motivation, goals achievement and market share (secured level of sales), customer service, total shareholder return and competitively organization. Social responsibility, return on asset, total sales, and return on investment come at the second level (high) of organizational performance. Production quantities come at moderate level (third) of organizational performance. The mean of these indicators showed that they are a high level of organizational performance. Through these performance measurements, everybody inside or outside of organization can see how the firm has done compared with its own history, or compared with its competitors, they also serve to judge on organization’s continued existence.

The relationship between operational audit & cost allocation and organizational performance in selected industries in Rwanda

The findings of this study showed that there is a positive and significant relationship between operational audit and organizational performance. This relationship is supported by the effectiveness and efficiency of operational audit which has also a positive relationship with organizational performance. When operational audit is done effectively and efficiently, it provides useful information and recommendation to management for improvement of organizational performance.

The same findings showed that there is a positive and significant relationship between cost allocation and organizational performance. The allocation of costs to cost object are very importance and helps managers to improve organizational performance. The analysis of respondents’ opinions showed that the allocation of different types of cost (fixed cost, variable costs, direct cost and indirect cost) is fair in selected Rwanda industries. The level of fairness of cost allocation is also helpful in improving organizational performance.

Hence, there is a positive and significant relationship between operational audit & cost allocation and organizational performance in selected Rwanda industries. The assessment of effectiveness and efficiency of organization’s units (which must be done effectively and efficiently) teamed up with maximum utilization and optimum allocation of resources (which must be done fairly) help management to improve organizational performance. This was the reason why the null hypothesis was rejected.

Conclusion

The purpose of this study was to assess the role of operational audit and cost allocation on organizational performance.

The above discussion and analysis stated that the operational audit and cost allocation are indispensable in every organization for its success. Cost allocation is used as a tool for planning and keeping with a budget. The operational audit that consists in assessing effectiveness and efficient of operations is exceptionally concerned by providing information for improving units’ performance and maximum utilization of resources. The inefficiency of managers to
keep with budget is close to slowdown the organizational performance. Based on findings and analysis in this study, Rwanda industries avoided this tendency by conducting operational audit effectively and efficiently in their organizations and allocating fairly their costs. Everybody is assessed on how is accomplishing organization’s objective by keeping within budget. This helps organization to reduce waste of resources and increase its performance. In the words of Alvin & James (1997), at the completion of an operational audit, recommendations to management for improving operations are normally expected.

**Recommendations**

At the end of this study, recommendations are intended to Rwanda industries and Rwanda government.

Although, Rwanda industries adopt operational audit and cost allocation as a mean to improve their performance, most of their managers don’t understand the mechanism of cost allocation. Only, accounting and/or finance department(s) are/is comfortable with calculations and analysis. Other departments provide information to the mentioned department. They don’t even establish their budget; they wait decision from finance and accounting department. The Researchers would like to invite Rwanda industries to train their managers on cost allocation process.

The Researchers invites government of Rwanda to reward Rwanda industries that maximizes their profits by reducing cost. If an industry spends its time by thinking on how it can reduce its cost without increasing selling price it is somehow an advantage for Government because it contributes to the welfare of population. The cost allocation helps to keep within budget and operational audit helps to improve the performance of units/operations by assessing their effectiveness and efficiency in using available resources. More operational audit is conducted, more cost allocation is accurate and consequently organization performs well. The two systems are costly to the organization in term of money and time.

**The area of further research**

The Researchers take this opportunity to request other Researchers to embark on finding solutions other than operational audit that can improve cost allocation for the performance of organization.

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