

**ASSESSMENT OF THE USE OF THE VALUE
ANALYSIS METHOD BY COMPANIES QUOTED IN
THE NAIROBI STOCK EXCHANGE**

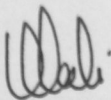
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**A MANAGEMENT RESEARCH PROJECT
SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER
BUSINESS ADMINISTRATION, FACULTY OF
COMMERCE, UNIVERSITY OF NAIROBI**

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DECLARATION

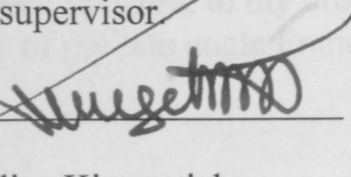
This project is my original work and has not been submitted for a degree in any other university.

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The first and most important acknowledgement must go to my family-both immediate and extended, which has supported my commitment to this post-graduate programme.

My special thanks go to my main supervisor Mr. Julius Kipngetich and Mr. J. Kenduwo for the invaluable guidance and constant advice from the project conceptualisation through to writing up of the final project.

I wish to register my appreciation to all my classmates for the good company and full support we had during the programme. To each of them I say

DEDICATION

To my parents Gideon and Rose, without whom my academic dream would not have been realized; to my brothers Aaron & Kyalo and sister Lucy and, in memory of my late uncle Francis Kalele

all those respondents to the questionnaire for their patience in filling them and providing very rich contributions in form of responses to the issues raised in the study.

I would also like to thank my dear friends Eric, Crispin, Muthunga, Mutisya, Kotalla, Odongo, Phyllis, Maggie, Joel and Catherine for their moral support, valuable suggestions and stimulating discussions.

For those who have made any other contribution to my life and their names are not here, I register my appreciation and thanks to all of you.

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ABSTRACT

The study was to establish the knowledge of the use of the value analysis method by Kenyan companies by evaluating the use of the various approaches advocated for it's use.

This study was able to ascertain that the process is used by most companies but at varying degrees.

The various approaches to its use were evaluated and the need to enhance the use of suppliers and other departments to increase the value added to the final product was realised.

The study will enhance the importance of the use of the value analysis method as a means to achieve optimal value addition in an organisation's operations.

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CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Operational decisions are some of the most important decisions that managers have to make on behalf of their companies. These decisions touch on the profitability of the firm as they determine the level of costs incurred which in turn affects the pricing and quality of the product produced. The decisions made will have a bearing on the level of customer satisfaction which is a key component of the goal towards profitability. (Reider, 1995).

Operation managers are thus expected to make key decisions in regards to their operations, value analysis technique can assist managers to make this key decisions.

This is a powerful, creative, value-based decision making process that is used by organizations to save costs and increase profits. The techniques of value analysis represent a potentially powerful set of tools which can be used by management in controlling material costs (Burt, 1996). In a manufacturing set-up, the fundamental objective of all value analysis activities is the procurement of materials representing the “best buy” in terms of the function to be performed.

Value analysis was developed and popularised by management consultants during the 1970's and 1980's as a way of reducing overhead costs (Davenport, 1993). This approach which offers a systematic way to analyze the costs and value associated with various activities was intended as a bottom-up response to top-down cost reduction programs many of which involved indiscriminate percentage based reductions of cost or employees across an organization, resulting in the loss of valuable employees.

Initially value analysis was concentrated in the manufacturing sector where production is the main activity; over the years it has been adopted in the service industry to eliminate unnecessary processes hence a reduction in costs and better trading results.

Martin (1997) undertook a study on the application of the value analysis method on non-engineering processes in the US, which concluded that the method can be used in such processes which before was seen only to be applicable in manufacturing sectors.

1.2 STATEMENT OF THE PROBLEM

In Kenya, value analysis method is a technique that is relatively a new phenomenon, even though most people don't know about it, it's widely practiced by business executives in running their operations.

The aim of the study is to determine the level use of the value analysis method within the Kenyan context. This will improve the decision making process by operation managers leading to a higher return on investment.

Value analysis method is a change process which uses the issue of value addition to guide an organisation when its stream lining its operations.

Studies in Kenya have been done on the importance of various change processes like Total Quality Management, Business Re-engineering and Business Process Re-engineering in assisting a company to attain competitive advantage over its competitors.

This study will bring into focus the need to incorporate value analysis method as a means of enhancing the value addition process within an organisation.

Even though little research has been undertaken in Kenya on the subject, it's a technique that can be used by any organisation that is in the process of streamlining its operations.

The study will thus open up the technique for the research in it's ability for use by organisations in attaining competitive advantage over its competitors.

The study will give an indication of the level of use of the various tools of the value analysis method by companies in their decision making roles. This will ensure that the importance of the technique will clearly come out as well as raise awareness of the process to those companies not formally practising the technique.

1.3 OBJECTIVES OF THE STUDY

- 1.3.1 To establish knowledge of the concept of value analysis method by Kenyan companies.
- 1.3.2 To establish the use of the various tools of the value analysis method by managers.

1.4 IMPORTANCE OF THE STUDY

- 1.4.1 The study will be important in stimulating research into the use of value analysis method in Kenya.
- 1.4.2 The study will assist business owners and senior management of organisations who are in the process of streamlining their operations.
- 1.4.3 The study will assist people in the organisations to continue using the concept of value addition when making key decisions.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 DIFFERENCE BETWEEN VALUE ANALYSIS, BRE AND BPR

Value analysis technique is one of the change process that has been advocated over the years which has the purpose of ensuring that a firm acquires or maintains competitive advantages over its competitors.

For a firm to remain afloat in a competitive environment it either maintains or improves the quality of their product or maintain its competitive edge on pricing of the product by controlling costs (**Porter, 1990**).

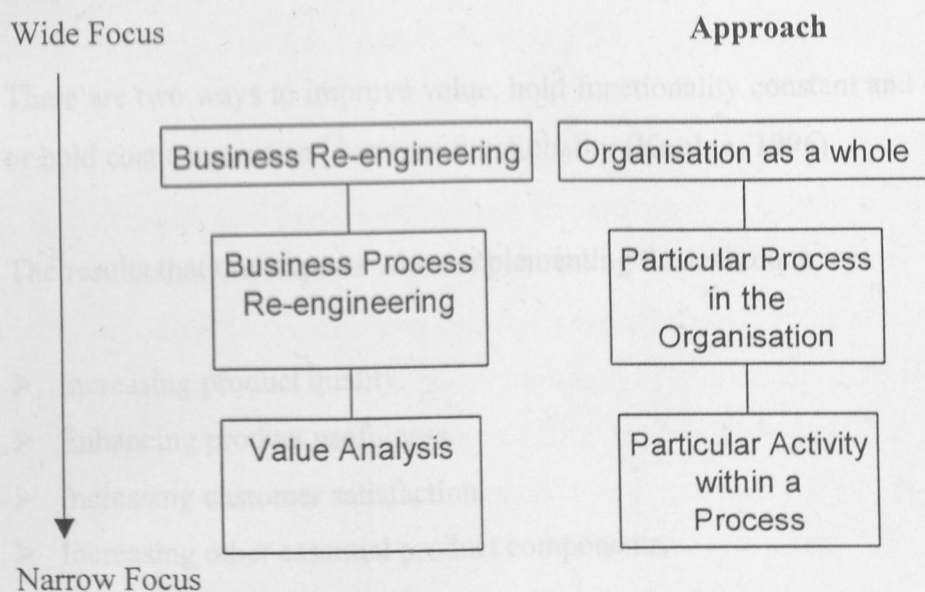
There are several change processes including Business Re-engineering (BRE), Business Process Re-engineering (BPR), Total Quality Management (TQM) which have been advocated to achieve this. All these philosophies address the issue of costs and quality i.e. they are drivers of the philosophies. (**Hammer, 1992**)

The change processes BRE, BPR and value analysis have their focus on revolution of activities that do not add value to the final product being produced.

2.2 WHY UNDERTAKE A VALUE ANALYSIS STUDY

One of the key reasons behind using the value analysis is for acquiring or maintaining competitive advantage over competitors. Competitive advantage involves the concept of the value chain which is a general framework for thinking strategically about the activities involved in any business and assessing their relative cost and role in differentiation.

The difference between the three lies in the focus; as illustrated in the figure below;



Source: Burt (1995)

In BRE the change focus is to be effected on the organisation as a whole. In BPR the focus is on a particular process e.g. purchasing while in value analysis the focus could be the approval route of an LPO in purchasing.

Value analysis method documents the elapsed time and experience for each activity the reference being the requirements of the customers (internal and external); those activities that do not add value are eliminated. (Davenport, 1993).

2.2 WHY UNDERTAKE A VALUE ANALYSIS STUDY

One of the key reasons behind using the value analysis is for acquiring or maintaining competitive advantage over ones competitors. Competitive advantage involves the concept of the value chain which is a general framework for thinking strategically about the activities involved in any business and assessing their relative cost and rule in differentiation.

The difference between value i.e. what buyers are willing to pay for a product and the cost of performing the activities involved in creating it ultimately determines the profits. **(Porter, 1990).**

There are two ways to improve value, hold functionality constant and reduce cost or hold cost constant and increase functionality **(Kaplan, 1996)**

The results that one expects when implementing the technique are:

- Increasing product quality.
- Enhancing product usefulness.
- Increasing customer satisfaction.
- Increasing other essential product components.

If the exercise is carried out objectively the results highlighted above will accrue to the firm. **(Martin, 1997).**

2.3 PREREQUISITES TO A VALUE ANALYSIS STUDY

The following are the prerequisites to a value analysis study as formulated by **(Miles,1997)** for an effective program to be carried out:

2.3.1 Value Analysis Leader: The leader is the primary ingredient. He or she should be a senior individual designated by the leader to have end-to-end responsibility for the process and its performance. The characteristics of the value analysis study leader are:

- The leader should be a strong committed executive leader. He or she must be executive since this is a top – down change or phenomenal and the leader must have sufficient stature to demand the supply staff organizations such as human resources and Information Systems.

- It must be a person full of passion and commitment to the value analysis method. A person not just using the analytical side of the brain but the emotional as well!
- A person with a sense of urgency (having a gut feeling!)

2.3.2 Understanding of processes: This is an important prerequisite to the rethinking of processes. In many companies most people are not aware of the end-to-end process as they are involved in their functional unit and are not able to explain the final process. However, it is necessary not to emphasise on analysing the old processes since too much of this may lead to a recommitment to them and thus inhibiting change. It is also a time waster. However, understanding of the old processes would put the people at a level where they will now be in a position to rethink this understanding also lead to identifying the leverage point by the units or teams. This is the point in the process where small improvement will produce disproportionate impact on the overall process performance

2.3.3 Organise a Team: If the Value Analysis Method sits at the top of the company's agenda then it follows that the company's best and brightest must be assigned to it. Value analysis is performed in terms of its contents, context and style.

- Content - Understanding old processes, inventing new processes, constructing new processes and selling new ways.
- Context – Uncertainty, experiment, pressure
- Style – Exploration and discovery

Therefore high calibre staff is needed to form the value analysis team. The team will have to think beyond the box or structures. The leadership should reward creative thinking and be willing to consider any new idea.

The leader should also co-ordinate and facilitate (provide guidance) to the teams.

- 2.3.4 Value analysis must be done as quickly as possible.** If tangible results cannot be seen within a year, there is loss of support and momentum to make the effort successful. The team needs to stay focused and narrow the scope if necessary in order to get results fast.
- 2.3.5 Value analysis should cover as much ground as possible.** There should not be any attempt to set limits to preserve a piece of the old system or making some aspects untouchables these will fail the efforts.
- 2.3.6 The personal needs of an individual value analysis method will affect must be taken to account.** The people must benefit otherwise they might hinder the process.
- 2.3.7 Communication is vital ingredient to the success of a value analysis method.** The content of the value analysis message must be clear, specific and comprehensible. This message should have 4 core elements in its message (4Ps').
- Purpose
 - Process: explanation of how value analysis will be done
 - Process: constant update of how far in the process you are
 - Problems: to create trust the company should admit failures, stress lessons learnt and move on.

2.4 VALUE ANALYSIS TOOLS

The two general conceptual tools that are basic to the operation of a value analysis program are (Burt, 1996): -

- i) Design analysis of the required product, part or material.
- ii) Cost analysis of the required product, part, or material.

2.4.1 Design Analysis

Design analysis entails a methodical step-by-step study of all phases of the design of a given item in relation to the function it performs. The appraisal focuses on the function which the part; or the larger assembly contains the part it performs.

This approach is designed to lead the analyst away from a traditional perspective which views a part as having certain accepted characteristics and configurations. Instead, it encourages the analyst to adopt a broader point of view and to consider whether the part performs the required function both as effectively and as efficiently as possible. Both costs and quality are objects of the analysis (Burt, 1996).

One technique many firms use in analysing component parts of a sub-assembly is to dismantle or "explode" the unit and then mount each part adjacent to its mating parts on a pegboard or a table. The idea is to demonstrate visually the functional relationships of the various parts. Each component can thus be studied as it relates to the performance of the complete unit, rather than as an insulated element (Reider, 1995).

Analysis of each component in this fashion attempts to answer four specific questions.

- Can any part be eliminated without impairing the operation of the complete unit?
- Can the design of the part be simplified to reduce its basic cost?
- Can the design of the part be changed to permit the use of simplified or less costly production methods?
- Can less expensive but equally satisfactory materials be used in the parts?

The discovery of potential improvements is simply the product of an analysis with a substantially broader orientation that is possessed by the original designer. An organized Value Analysis study usually utilizes a number of individuals with different types of backgrounds, experience and skill impossible to combine in the person of a single designer.

The specific manner in which a value analyst approaches the problem of design analysis is a creative matter which differs from one analyst to another. Some approaches have however been developed which are designed to stimulate and organize the efforts of the analysts, commonly used are: -

- a) The value analysis checklist
- b) The functional cost approach
- c) The use of brainstorming
- d) The use of suppliers

The Value Analysis Checklist; Most firms develop some type of checklist to systemize a value analyst's activity. Questions are highly specialized for particular types of products. The following is an illustration of the more general questions in a checklist as adopted from the National Association of Purchasing Management in the US (Burt, 1996);

First define the function of the item, then determine:

- Can the item be eliminated?
- If the item is not standard, can a standard item be used?
- If it is a standard item, does it completely fit the application, or is it a misfit?
- Does the item have greater capacity than required?
- Can the weight be reduced?
- Is there a similar item in inventory that could be substituted?
- Are closer tolerances specified than are necessary?
- Is unnecessary machining performed on the item?
- Are unnecessary fine finishes specified?
- Is commercial quality specified?
- Can you make the item less expensive in your plant? If you are making it now, can you buy it for less?
- Is the item properly classified for shipping purposes to obtain lowest transportation rates?
- Can cost of packaging be reduced?
- Are suppliers being asked for suggestions to reduce cost?

In using this or similar checklists, an analyst evaluates the component under investigation with respect to each item on the checklist. When a question is found to which the answer is not satisfactory, this becomes a starting point for more detailed investigation.

The Functional Approach; As value analysts in a particular industry gain experience, they quickly establish benchmark costs for performing certain functions characteristically encountered in their industries.

After analysing certain types of equipment day after day, good value analysts learn in a general way approximately what it costs to perform certain functions.

As these kinds of data are accumulated, costs of particular interest appearing on new jobs can be compared with historical benchmarks. If the cost seems excessive, the analysts investigate further to determine the reason. The costs may well be justified due to differences between the new units on which benchmarks were based. If this does not appear to be the case, the analyst continues to search for a lower cost method of performing the function.

One important feature of this general approach is the idea of comparing current performance with typical past performance.

Another important feature is the concept that the cost of performing a function must be reasonably proportionate to the value of the function itself.

The use of Brainstorming; Brainstorming is a process designed to stimulate creative thinking. A group of individuals with different backgrounds meet for the purpose of generating ideas useful in solving a particular problem.

Emphasis is placed on the free-wheeling generation of ideas, which are reduced as soon as they are made. During this period no one in the group evaluates any ideas, since the objective at this point is to develop spontaneous and positive ideas.

The theory underlying this approach to problem solving recognizes that many of the ideas spontaneously generated are completely infeasible. However the theory holds that some of these ideas trigger thoughts from others in that group that lead to different and often very useful ideas.

Once the facts of a problem are roughly defined and understood, several representatives from the appropriate departments are called to participate in a brainstorming session. After the session, the resulting ideas are analysed for feasibility and cost. The promising ideas are turned over to the analyst for further development.

The Use of Suppliers; There is a fundamental concept that the primary responsibility of purchasing and supply department is to manage "outside manufacturing" which implies the development of a continuing relationship with major suppliers and a partnering agreement with some of them.

Functioning in this type of environment, suppliers frequently prove to be extremely valuable assets in a firm's total value analysis effort. Firms in the US have found that a majority of its value analysis savings come directly from suggestions of suppliers who have been asked to participate in its value analysis program.

A suppliers assistance can be enlisted in various ways that fit into two basic categories:

- i) Informal participation
- ii) By participation in a suppliers workshop

When using the informal approach, a firm usually has numerous high-priority value analysis projects enlisted on display boards with all parts identified and tagged as to current cost. The current and potential suppliers are invited to study particular exhibits at their leisure for purpose of offering possible cost reduction or quality improvement suggestions for items each might finish.

If a supplier can provide a lower-cost item that performs satisfactorily, or if it suggests feasible design modifications which permit the use of a lower cost item, the firm is rewarded with additional business.

The second approach entails the use of periodic, formally organized supplier workshops. A group of technical and managerial representatives from suppliers firms is invited to the purchaser's plant for a one or two day workshop.

The sessions include an introduction to the purchaser's new products, general company plans and their effects on suppliers, basic buying policies and selected value analysis problems. The team then tours the buyers facilities to see how and

where the products are used where they are supposed to study specific value analysis exhibits as is done in the formal approach.

It should be emphasized that solicitation of supplier assistance in a value analysis program is based on the premise that creative suppliers will be compensated for their efforts by recurring additional business or by sharing in the cost savings they help generate.

2.4.2 Cost Analysis

It is no secret that many manufacturers do not base the selling prices of their products entirely on costs. In some case, the complexities of multi-product cost accounting make it virtually impossible to determine the exact cost of producing and marketing a specific product. In other cases, firms may follow a variable-margin pricing policy, whereby the markup on certain types of products is greater than others. Still other firms may follow the industry leader in establishing product prices (Burt, 1996).

Whatever the reason, industrial buyers realize that many of the prices they pay do not accurately reflect the cost of the product. Moreover, unless the buying firm has real clout and substantial knowledge of production costs, in some cases it may not know whether its buyer is in fact paying a fair price.

Cost analysis involves the investigation of a supplier's probable cost of producing a given product. The analyst constructs estimated elemental costs for materials, labor, manufacturing overhead, and general overhead. When totaled, these figures represent theoretical total cost incurred by an efficient producer. An experienced analyst, with the use of wage data, material price lists, and various industry time standard, can determine a total theoretical cost which reasonably approximates the actual cost. To this figure is added a reasonable profit margin. Although the calculated price is not exact, it provides the buyer with a powerful negotiating tool. By using this calculated price as a target, a buyer can place a selling firm in a

position of having to point out any errors in the development of the figure, or else justify its own quoted price with supporting cost data.

Cost analysis has become an extremely useful adjunct of value analysis, playing two major roles:

- Cost analysis is conducted for currently purchased items whose costs appear excessive. In such cases, the information developed from cost analysis is used as a basis for further price negotiation with the supplier.
- Cost analysis also serves as a means of locating high-cost parts which should be subjected to design analysis. During the course of a cost analysis, some high-cost elements are frequently isolated for the first time. Subsequent design analysis often leads to specification and production modifications and ultimately to reduce costs.

2.5 RESULTS OF VALUE ANALYSIS ACTIVITIES

Various results result to an organisation which implements the value analysis method. These are summarised as per the extract from a paper by (Martin 1997) on the application of Value method procedures in non-engineering processes;

- **PROFITS;** Good decisions makes for a good increase in profits. Value studies generate increased profits for a firm which translates to a higher return on investment for every shilling invested. Studies have shown that firms make a profit that exceeds the cost of the value study activity. In addition, other factors that are difficult to quantify such as improved personnel morale, easier operations and reduced potential for injuries were identified and implemented.
- **COSTS;** Naturally, some activities do not make a profit in themselves. However, they are usually required to support the profit making ventures.

Other activities must be done due to regulations or other reasons. Some of these activities are required simply because a business exists. To limit the effect of these costs on profitability, ways to minimize or remove them can be examined. Value analysis has costs as one of its key considerations in its application which results in reduced costs.

- **RESOURCE REQUIREMENTS;** Resources usually cost money, but may cost much more. If a resource (person, equipment, etc.) is unavailable, in very high demand, or is difficult to obtain quickly, we may consider it to be too costly to make it available. Additionally, if you free an existing resource, it can often be used in other endeavours. Thus, resources are often a crucial component in reducing costs and increasing profits.

While conducting the selection phase in the value studies, it's possible to significantly improve the staff's production. The increase in production allows people to spend more of their time on high return activities that produced a better return for the customers of their products and services. However, freeing resources does not mean laying off people. Thus, when a value study identifies changes to activities that would be misplaced in the business, the value study should examine how to utilize the valuable staff resource. Thus, the affected people should be realigned within the organization or placed in new opportunity positions, to best suit both their needs and the business.

- **QUALITY;** Higher quality products generate reduced costs for the provider of the product, and improved customer satisfaction. Thus quality is a key for both the business and the customer we serve. This is a key consideration when undertaking a value analysis program. Reduced costs to create the product that we sell to the customer help our businesses improve profitability. Products that continue to do what the customer needs and wants creates satisfied and loyal customers.

- **PRODUCT IMPROVEMENTS AND DEVELOPMENT;** While quality is a major component of customer satisfaction and loyalty, the improved or new product is the most prevalent item that lures our customer to another business. The highest quality products is of no value if it serves a past need that is no longer relevant. The key is in the innovative new product.

People regularly replace products with new or improved products. People are always looking at the new computer, new car, or new process. Innovations generate the new products that better meets the need and desires of the customer.

2.6 APPLICATION OF VALUE ANALYSIS PROCEDURES

Value Analysis has been applied in the United States widely documented by the Journal of Bureau of Reclamation on Value Program Summary of Activities Report (1997). The following is an extract from that report.

- **Interior-wide Value Engineering Indefinite Quantities Contract.** Completed in December 1993, this study developed and examined selection and measurement criteria for an indefinite quantity contract for Value Engineering and Cost Estimating Services for Interior. The study used the criteria analysis to identify issues for use in subsequent negotiations to select a contractor. The value study clarified selection issues and generated a consensus among decision makers.
- **Reclamation Service Centre, Building 67, Personnel Relocation and Floor Renovation.** Two studies were initially proposed. The first proposed study was an examination of the relocation of organizations in the building necessitated by a 1994 reorganization. The second study was to examine the renovation and required layout of the floors for the relocated groups. Management determined that a generalized floor renovation and layout study would be done first (August 1994), with the organizational relocation study to

follow. Because of this generalized study, management adopted proposals that generated about \$1,600,000 in cost avoidance over 10 years and fostered a generally improved staff satisfaction with the renovation effort. However, after completion of the renovation study, management canceled the study for organizational relocation.

- **Reclamation Library, Videotape, and Photographic Resources.** This was a Value Analysis study completed in January 1995. The team was asked to identify: 1) the major services provided by the library, 2) the essential needs served by library services, 3) if a library was the best way to meet the identified essential needs, and 4) recommendations of the way to meet the identified essential needs. The value study resulted in decisions to retain the library, replace some services with higher value products, improve access for some services, discontinue some services, and improve service capacity by doing more cross-training and increasing the required expertise for one staff position. Beyond the many non-monetary benefits attained, the study proposals adopted saved about \$426,000 over a five year period.
- **Mni Wiconi Criteria/Limits Analysis.** This specialized value study was facilitated for the Oglala Sioux Tribe, Rosebud Sioux Tribe, Lower Brule Sioux Tribe, and West River/Lyman-Jones Water Districts. Reclamation has facilitated several planning and concept value studies for the overall Mni Wiconi Project. These studies involve multiple entities ranging from the above clients only; to the above clients, two states, several counties, Reclamation, Corps of Engineers, and a host of others. The purpose of the criteria and limits analysis was to bring the clients and stakeholders together, speed the acceptance processes, and set the stage for more than \$260,000,000 (1992 prices) in construction related work. many subsequent activities, including nearly ten value studies performed to date, have used the results from this March 1995 analysis.

CHAPTER THREE

3.0 RESEARCH DESIGN

3.1 Population of Study.

The population of the study consisted of all companies in Kenya which are quoted in the Nairobi Stock Exchange, the rationale being that the market capitalization of the NSE constitutes a sixth of Kenya's GDP. The companies listed in the NSE are representative of all the sectors of Kenya's economy.

3.2 Data Description and Collection

The instrument for collecting the data was a questionnaire as detailed in the appendix. Section A contains 20 questions about the company in relation to the operational variables of the value analysis method. This seeks to establish the awareness of the use of the method.

Section B contains 18 questions in relation to the use of the various tools of the value analysis method. The scale used was a 5-scale Likert type ranging from strongly agree to strongly disagree. The questions are asked to solicit responses on the level of the use of the various tools.

The operational variables in value analysis are quality, costs, and customer. The tools of value analysis are value analysis, checklists, functional approach, use of brainstorming, use of supplies and cost analysis.

The source of data is primary since the researcher administered the questionnaire directly to the operation/production managers of the various companies.

3.3 Data Analysis

The type of data is non-casual as they describe relationship among variables and as such cause and affect inferences cannot be inferred or would be rather weak

The first questionnaire (A) was analyzed through the use of the statistical measures of frequencies and percentages in order to come up with the level of use of the value analysis method by Kenyan companies in their operations.

The second questionnaire B was analyzed through the use of the factor analysis technique in order to uncover the extent of the use of the various tools advocated in the value analysis method.

summarised as follows:

Table 4.1 Level of Importance of Value Analysis

	No. of Respondents	%
Very Low	1	2.8
Low	9	25.7
None	-	-
High	13	42.9
Very High	10	28.6
TOTALS	33	100

71.3% of the respondents acknowledged the importance of the concept in decision making process which is an indication of it's awareness

CHAPTER FOUR

Table 4.2 Key Considerations

4.0 DATA ANALYSIS AND FINDINGS

This chapter deals with data analysis, findings and discussions on the research findings. 50 questionnaires were sent out of which 35 were returned filled which gave a response rate of 70%.

4.1 USE OF VALUE ANALYSIS

This section deals with the knowledge of the use of value analysis and is summarised as follows:

Table 4.1 Level of Importance of Value Analysis

	No. of Respondents	%
Very Low	1	2.8
Low	9	25.7
None	-	-
High	15	42.9
Very High	10	28.6
TOTALS	35	100

71.5% of the respondents acknowledged the importance of the concept in decision making process which is an indication of it's awareness.

Table 4.3 Use of Suppliers

Table 4.2 Key Considerations

	No. of Respondents	%
Quality	23	65.7
Costs	31	88.6
Customer	20	57.2
TOTALS	35	100

The key considerations when streamlining operations are costs (88.6%), quality (65.7%), and customer (57.2%) indicating a bias for cost driven initiatives.

Table 4.3 Use of Checklists

Other considerations given by the respondents when streamlining operations were:

- Staff costs
- Safety
- Value added
- Supplier
- Other parties in the supply chain process.

Table 4.3 Use of Functional Approach

	No. of Respondents	%
Very Low	2	5.7
Low	9	25.7
None	8	22.9
High	14	40.0
Very High	2	5.7
TOTALS	35	100

45.7% of respondents highly use the functional approach in there operations. 31.4% use it rarely while 22.9% don't use the approach at all.

Table 4.3 Use of Suppliers

	No. of Respondents	%
Very Low	2	5.7
Low	8	22.8
None	8	22.8
High	14	40.0
Very High	3	8.7
TOTALS	35	100

48.7% of respondents highly use suppliers in adding value in there operations, 28.5% use the approach at low levels while 22.8% don't use the approach at all.

Table 4.3 Use of Checklists

	No. of Respondents	%
Very Low	1	2.8
Low	13	37.1
None	1	2.8
High	8	22.9
Very High	12	34.3
TOTALS	35	100

57.2% of respondents highly used checklists when eliminating non-value adding activities, 39.9% used it rarely while only 2.8% never use the approach.

Table 4.3 Use of Brainstorming Sessions

	No. of Respondents	%
Very Low	1	2.8
Low	10	28.6
None	-	-
High	14	40.0
Very High	10	28.6
TOTALS	35	100

68.6% of respondents highly used brainstorming sessions in evaluating the value addition activities, 31.4% used the approach at low levels. All respondents used this approach at varying levels.

Table 4.3 Use of Cost Analysis

	No. of Respondents	%
Very Low	1	2.8
Low	6	17.2
None	-	-
High	18	51.4
Very High	10	28.6
TOTALS	35	100

80% of the respondents highly used cost analysis to evaluate the non-value adding activities while 20% used the approach at low levels.

From tables 4.3 the cost analysis approach is widely used by most respondents followed by functional approach, use of checklists, use of suppliers and use of brainstorming sessions.

Table 4.4 Activities Vs Value Addition

	No. of Respondents	%
Very Low	-	-
Low	4	11.4
None	-	-
High	24	68.6
Very High	7	20.0
TOTALS	35	100

88.6% of the respondents felt that activities carried out in there departments highly add value to the final product while 11.4% felt that this was at low levels.

Table 4.5 Methods of Eliminating Non-Value Adding Activities

The following were the summarized responses to the open-ended question on the methods of eliminating non-value adding activities:

- Constant review of processes at departmental level.
- Use more of suppliers to cater for activities being carried out by the company.
- Retrench people not adding value.
- Restructure to enable activities add value or cut-off this activities from the functional system.
- By weighing this activities and looking at worthiness to the business.
- Use of checklists
- Use of functional approach.

Table 4.6 Activities Vs Level of Satisfaction

	No. of Respondents	%
Highly Unsatisfactorily	-	-
Unsatisfactory	2	5.7
Neutral	1	2.8
Satisfactory	29	82.8
Highly Satisfactory	3	8.7
TOTALS	35	100

82.8% of the respondents felt that activities were satisfactorily meeting the expectations of the customers but there was room for improvement. 8.7% responded that they highly met the customers expectations.

Table 4.7 Activities Reduction In Relation To Time

	No. of Respondents	%
Very Low	-	-
Low	5	14.3
None	7	20.0

High	18	51.4
Very High	5	14.3
TOTALS	35	100

65.7% of respondents considered time as a major factor when reducing activities in there processes, 14.3% take it as a minor factor while 20% considered it not a factor at all.

Table 4.7 Activities Reduction In Relation To Quality of Service

	No. of Respondents	%
Very Low	2	5.7
Low	-	-
None	3	8.7
High	21	60.0
Very High	9	25.7
TOTALS	35	100

85.7% of respondents considered quality of service as a major factor when reducing activities in there operations, 5.7% as a minor while 8.7% considered it not a factor at all.

Table 4.7 Activities Reduction In Relation To Costs

	No. of Respondents	%
Very Low	-	-
Low	8	22.9
None	-	-
High	22	62.8
Very High	5	14.3
TOTALS	35	100

77.1% of respondents considered costs as a major factor when reducing activities in there operations, 22.9% considered it as a minor factor.

Table 4.7 Activities Reduction In Relation To Value Added

	No. of Respondents	%
Very Low	-	-
Low	7	20.0
None	2	5.7
High	19	54.3
Very High	7	20.0
TOTALS	35	100

74.3% of respondents considered the value added as a major factor when reducing activities, 20% considered it a minor factor, 5.7% didn't take it as a factor.

From Tables 4.7 this indicates quality of service as the major consideration when reducing activities followed by costs, value added and time.

Table 4.8 Activities Reduction Vs Function

	No. of Respondents	%
Very Low	-	-
Low	-	-
None	-	-
High	29	82.9
Very High	6	17.1
TOTALS	35	100

82.9% of respondents very highly considered the function of the activity as a major factor when streamlining operations, 17.1% highly considered it.

Table 4.9 Are Costs Of Activities Justified By The Function

	No. of Respondents	%
Yes	20	57.1
Partially	9	25.8
No	6	17.1
TOTALS	35	100

This is an indication that costs in relation to the function can be reduced.

Table 4.10 Can Costs of Function Be Reduced

	No. of Respondents	%
Yes	35	100
No	-	-
TOTALS	35	100

This indicates that there is room for reduction of costs incurred for each function.

The following were the summarized responses on how costs of performing a function can be reduced:

- Automation; use of modern technology
- Best operating practices i.e. cost effective methods.
- Use of contractors i.e. suppliers to carry out the function.
- Enhanced financial control by careful selection of suppliers.
- Reduce labour costs
- Training in productivity and lean manufacturing.

Table 4.11 Costs of Function In Relation To Value

	No. of Respondents	%
Highly proportionate	-	-
Unproportionate	7	20.0

Neutral	2	5.7
Proportionate	24	68.6
Highly proportionate	2	5.7
TOTALS	35	100

Table 4.14 Level of Incorporation of Customers views

74.3% of respondents considered the costs of functions proportionate in relation to the value added, 20% considered it unproportionate while 5.7% were neutral.

Table 4.12: Level of Incorporation of other people

	No. of Respondents	%
Very Low	1	2.8
Low	12	34.3
None	-	-
High	18	51.4
Very High	4	11.5
TOTALS	35	100

Table 4.15 Incorporation of other people

62.9% of respondents highly incorporated other people when generating ideas on value adding activities, while 37.1% incorporated other people at lower levels. This indicates a need to incorporate other departments in this exercise.

Table 4.13 Frequency of Meetings on value adding activities

	No. of Respondents	%
Very Low	1	2.8
Low	13	37.2
None	-	-
High	12	34.3
Very High	9	25.7
TOTALS	35	100

60% of respondents held meetings at high frequencies to deliberate on value adding activities 40% held them at low frequencies. This is an indication of the need for regular meetings to be held at departmental levels.

Table 4.14 Level of Incorporation of Customers views

	No. of Respondents	%
Very Low	2	5.7
Low	8	22.9
None	-	-
High	13	37.1
Very High	12	34.3
TOTALS	35	100

71.4% of respondents highly incorporated there customers views in the creation of value, 28.6% incorporated their views at low levels.

Table 4.15 Decision making

	No. of Respondents	%
Top Management	16	45.7
Middle Level Managers	-	-
Line Managers	-	-
Combination of the above	19	54.3
Other	-	-
TOTALS	35	100

54.3% of respondents indicated that decisions are made by a combination of the various management levels while 45.7% indicated that the top management made the decisions.

Table 4.16 Role of suppliers

	No. of Respondents	%
Very Low	4	11.4
Low	14	40.0
None	-	-
High	10	28.6
Very High	7	20.0
TOTALS	35	100

48.6% of respondents highly rated the role of there suppliers in there quest for customer satisfaction, 51.4% lowly rated there role. Indication of a need to enhance the role of suppliers.

Table 4.17 Consultation of suppliers on

	No. of Respondents	%
Customer Satisfaction	15	42.9
Quality	23	65.7
Cost Reduction	18	51.4

42.9% consulted suppliers when formulating strategy on customer satisfaction, 65.7% on quality and 51.4% on cost reduction. Indication of a need to enhance the role of suppliers on issues of customer satisfaction, lost reduction and quality of products.

Table 4.18 Consideration when selecting a supplier

	No. of Respondents	%
Costs	26	74.3
Quality	23	65.7
After Sales Service	18	51.4
Credit Period	17	48.6

74.3% of respondents rated highly costs as the major consideration when selecting a supplier, 65.7% quality, 51.4% after sales services and 48.6% credit period.

The other summarised considerations were:-

Very High	➤ Time taken to deliver i.e. Reliability	45.7
High	➤ Reputation	11.5
Medium	➤ Credibility	34.3
Low	➤ Solid financial tacking	8.6
Very Low	➤ Ability to listen to our needs and changes.	100

Table 4.19 Rate support given by supplier

	No. of Respondents	%
Very Good	6	17.1
Good	11	31.4
Average	18	51.5
Poor	-	-
Very Poor	-	-
TOTALS	35	100

51.5% of respondents rated the support given by one supplier as average, 31.4% good and 17.1% as very good. No respondent gave a poor response.

Table 4.20 Benefits of value analysis in increasing product quality

	No. of Respondents	%
Very Low	-	-
Low	5	14.3
None	4	11.5
High	20	49.1
Very High	6	17.1
TOTALS	35	100

66.2% highly rated the benefits of value analysis on increasing product quality. 14.3% rated it lowly while 11.5% didn't see any benefits.

Table 4.20 Enhancing product usefulness

	No. of Respondents	%
Very Low	-	-
Low	16	45.7
None	4	11.5
High	12	34.3
Very High	3	8.6
TOTALS	35	100

42.9% highly rated the benefits of value analysis on enhancing product usefulness, 45.7% rated it lowly, while 11.5% didn't see it as a benefit.

Table4.20 Increasing customer satisfaction

	No. of Respondents	%
Very Low	-	-
Low	5	14.3
None	-	-
High	23	65.7
Very High	7	20.0
TOTALS	35	100

85.7% of respondents highly rated the benefits of the value analysis method on enhancing customer satisfaction, 14.3% lowly rated this benefit.

Table 4.20 Increasing other essential product components

	No. of Respondents	%
Very Low	6	17.1
Low	17	48.7

None	4	11.4
High	6	17.1
Very High	2	5.7
TOTALS	35	100

22.8% of respondents highly rated the benefit of value analysis method on increasing other essential product components, 65.8% rated the benefit lowly while 11.4% didn't see it as a benefit.

From tables 4.20 this indicates a high response for increased customer satisfaction and increased product quality; very low response to benefit of enhancing product usefulness and increase in other essential product components.

The other summarised benefits from a value analysis program is making products more competitive in the market by enjoying economies of scale by producing large volumes of products at high quality at affordable price.

Table 4.21 gives the breakdown of the response rate of the respondents per sector as per divisions of the Nairobi Stock Exchange;

	No. of Respondents	Companies quoted	Response rate %
Agricultural	4	9	44.4
Commercial	9	13	69.2
Finance	8	11	72.7
Industrial	14	18	77.8
TOTALS	35	51	68.6

This indicates a low response rate in the Agricultural sector due to the limitation of resources as most of the companies are located outside Nairobi.

Table 4.22 Cross Tabulation of Industry with Key Considerations

	Quality		Costs		Customer	
	No.	%	No.	%	No.	%
Agricultural	4	100	4	70.0	2	50.0
Commercial	5	55.5	7	77.8	6	66.7
Finance	4	50.0	6	75.0	4	50.0
Industrial	11	78.6	14	100.0	8	57.1

This indicates that the commercial and finance sectors need to enhance the importance of quality when streamlining operations. Costs are well taken into account among the sectors. There is need to improve on the views of the customer as this is a consideration that little emphasis has been put in.

Table 4.23 Cross Tabulation of Industry with use of Brainstorming

	Low		None		High	
	No.	%	No.	%	No.	%
Agricultural	2	50.0	-	-	2	50.0
Commercial	3	33.3	2	22.2	4	44.5
Finance	4	50.0	-	-	4	50.0
Industrial	2	14.3	6	42.9	6	42.9

This indicates that the use of brainstorming session i.e. incorporating other departments in generating ideas is low across the sectors thus the need to enhance the use of this approach.

Table 4.24 Cross Tabulation of Industry with Use of Suppliers

	Low		None		High	
	No.	%	No.	%	No.	%
Agricultural	-	-	3	75.0	1	25.0
Commercial	3	33.3	3	33.3	3	33.3
Finance	4	50.0	2	25.0	2	25.0
Industrial	3	21.4	-	-	11	78.6

This indicates that the other sectors apart from industrial don't highly value the use of suppliers to enhance value in there products thus a need to enhance this approach.

Table 4.25 Cross Tabulation of Industry with use of Checklists

	Low		None		High	
	No.	%	No.	%	No.	%
Agricultural	-	-	-	-	4	100
Commercial	4	44.4	1	11.1	4	44.4
Finance	2	25.0	-	-	6	75.0
Industrial	8	57.1	-	-	6	42.9

Indication of average use of the approach in the commercial and industrial sectors when eliminating the non-value adding activities, its value use can be enhanced to assist in the exercise.

Table 4.26 Cross Tabulation of Industry with Use of Functional Approach

	Low		None		High	
	No.	%	No.	%	No.	%
Agricultural	-	-	-	-	4	100
Commercial	3	33.3	-	-	6	66.6
Finance	3	37.5	-	-	5	62.5
Industrial	5	35.7	-	-	9	64.3

This is an approach that is widely used by the respondents across the sectors.

Table 4.27 Cross Tabulation of Industry with Use of Cost Analysis

	Quality		Costs		Customer	
	No.	%	No.	%	No.	%
Agricultural	-	-	-	-	4	100
Commercial	2	22.2	-	-	7	77.8
Finance	-	-	-	-	8	100
Industrial	4	28.6	-	-	10	71.4

This is an approach that is widely used by most of the companies. From the cross tabulations it's clear that there is high use of the cost analysis approach across the sectors, of checklists and functional approaches are also highly used. The area that need to be addressed is in the use of suppliers and brainstorming in the process of value addition.

4.2 Factor Analysis

Factor analysis was done in Section B of the questionnaire, the results are presented below.

Table 4.28 Statements in the Questionnaire (Section B)

1. Value is a key component when making operation decisions.
2. Quality is a by product of value analysis
3. Costs are increased when value is added
4. Our customers are value sensitive
5. Activities carried out all add value to the product
6. The more the activities in operation the higher the value.
7. Function of activity has no relationship to the value added.
8. Costs can be reduced by improving the function
9. Decisions relating to value addition should be made by managers alone.
10. No need to involve other departments in decision making
11. Customers should influence the operational decisions
12. Suppliers should be consulted on issues of value addition
13. Suppliers can assist to improve on value in our products.
14. Costs can be reduced by being in touch with suppliers
15. Increased value leads to increased customer satisfaction
16. Products innovations are functions of a value analysis program
17. Suppliers do support us in the process of value addition
18. Quality is a function of value.

Table 4.29 below shows the summary statistics relating the variables of the second part of the questionnaire. It gives the mean, mode and standard deviation.

Table 4.29 The summary statistics of section B of questionnaire

	Mean	Standard Deviation	Mode
Q 1.	1.667	0.913	1.000
Q 2.	2.000	0.894	2.000
Q 3.	3.571	1.028	4.000
Q 4.	1.619	0.74	1.000
Q 5.	3.381	1.024	4.000
Q 6.	3.857	1.014	4.000
Q 7.	3.476	1.078	4.000
Q 8.	1.667	0.577	2.000
Q 9.	3.952	1.117	4.000
Q 10.	4.048	1.244	4.000
Q 11.	2.667	1.278	4.000
Q 12.	2.524	1.123	2.000
Q 13.	2.000	0.837	2.000
Q 14.	2.238	0.944	2.000
Q 15.	1.476	0.602	1.000
Q 16.	1.750	0.550	2.000
Q 17.	2.762	1.091	2.000
Q 18.	1.952	1.024	2.000

From the above, the following statements 1, 2, 4, 8, 11, 12, 13, 14, 15, 16, 17, 18 the respondents tend to agree or strongly agree with the statements. Thus on average value is a key component when making operation decisions. Quality is a function of value analysis program and it's agreed on average that customers are value sensitive.

Also respondents agreed that costs can be reduced by improving the function of the product. The value can also be enhanced by working with suppliers to improve on value and reduce costs.

On average they agreed that increased value leads to increased customer satisfaction and that product innovations are a function of a value analysis program.

Respondents however disagreed or strongly disagreed with the following statements 3, 5, 6, 7, 9, 10. Thus on average an increase in costs of functions does not lead to an increase in value.

They also disagree that all the activities being carried out add value to the product as there is no relationship between number of activities versus the value added.

On average they disagreed with the statement that the function of the activity has no relationship to the value added implying that there exists one.

Respondents also disagreed with the role of decision making which showed on average the need to involve other people and departments in carrying out the exercise.

A study of the mode of each of the statements indicates that the respondents agreed or strongly agreed with the statements except 3, 5, 6, 7, 9, 10 and 11.

The statistical package used was SPSS limited to an 18 by 18 matrix.

- **Initial statistics;** the measures in the initial statistics table indicate how well each of the identified statements fit the data from all the respondents.

The output measure consists of the eigen values, which is the sum of the squares of its factors loadings, since the responses to the statements are

standardised, the variance associated with the responses to any statement equals 1.0. For example, factor 1 explains 26.4% of the total variation, factor 2 explains 14.2% of the total variation and so on.

- **Factor matrix;** the factor matrix explains the correlations between the factors and the variables. Variables Q.8, Q13, Q14 load heavily on principal factor 1, Q6 and Q9 load heavily on factor 2, while Q4 and Q5 load heavily on factor 3.

Factor 4 is heavily loaded by Q12 and Q17, factor 5 by variable Q 18, factor 6 by Q 14 and factor 7 by Q 3.

- **Rotated factor matrix;** the rotated matrix gives the revised initial factor matrix after it had been orthogonally rotated using varimax. It attempts to simplify the columns of factor matrix by making all values close to either 0 or 1.

This matrix represents the terminal solution of the factors. Since it's an orthogonal factor matrix, it stands for both a pattern and structure matrix. That is, the coefficients in the matrix represent both regression weights and correlation coefficients. The loadings in a given row represent regression coefficients of factors that describe a given variable.

From the final rotated matrix, 7 factors were extracted whereby statements 8, 13, and 14 load heavily on factor 1, statements 2, 11, and 18 load on factor 2, statements 6 and 16 load on factor 3, statement 3 loads on factor 4, statements 4 and 17 load on factor 5, statements 12 and 17 load on factor 6 while statements 5 and 9 load on factor 7.

The implications of this are shown in Table 4.30 below:

Table 4.30 The Factors

This means that the following statements will make factor 1

- Costs can be reduced by improving the function
- Suppliers can assist to improve on value in our products
- Costs can be reduced by being in touch with suppliers.

Factor 2 arises out of the following statements:

- Quality is a by product of value analysis
- Customers should influence the operational decisions
- Quality is a function of value

Factor 3 arises out of the following statements

- The more the activities in operation the higher the value.
- Products innovations are a function of a value analysis program.

The following statement makes factor 4:

- Costs are increased when value is added.

Factor 5 is made up of the following statements:

- Our customers are value sensitive.
- Suppliers do support us in the process of value addition.

Factor 6 is made up of the following statements:

- Suppliers should be consulted on issues of value addition.
- Suppliers do support us in the process of value addition.

Factor 7 is made up of the following statements:

- Activities carried out all add value to the product
- Decision relating to value addition should be made by managers alone.

CHAPTER FIVE

DISCUSSIONS AND CONCLUSION

The objective of the study was to establish the awareness of the use of the value analysis method by Kenyan companies quoted in the Nairobi Stock Exchange.

The study was also to come up with the tools that are widely used by the firms in using the method.

The literature covered in the study dwelt much on the use of the technique in the United States thus the need to have a view of this valuable technique by Kenyan companies.

5.1. Conclusions.

From the research findings as presented in Chapter 4 of this study, several conclusions may be drawn. These are discussed in light of the objectives of the study.

5.1.1. Conclusions on use of value analysis

From this section it can be deduced that a great proportion of operation/production managers value the use of the technique in their decision making processes.

There is a great emphasis on costs when streamlining operations as opposed to quality and cost plus other considerations like safety, value added or suppliers.

There are five approaches in implementing a value analysis program out of which the cost analysis approach is greatly used by most companies. Functional approach and use of checklists are used to reasonable degree, but the use of suppliers and brainstorming approaches are used on average.

When reducing the activities the key considerations in carrying out the exercise are quality, costs, value added and time.

There is a need to reduce the cost of carrying out a function as most respondents felt that even though the current cost of the function are reasonable there was room to reduce the costs. Methods were suggested for going about it such as automation, cost effective methods, lean production, training in productivity, use of suppliers and enhanced financial control.

The study came up with several methods of eliminating the non-value adding activities which included constant review of processes, retrenchment, contract some jobs, restructuring which are in addition to the approaches of the value analysis method.

The level of incorporation of other people when generating ideas was high but there is need to have a cross-section of the departments when discussing issues of value addition.

The level of incorporation of customer's views was reasonably high though this should be at optimal levels as customers are the ones who determine how well a firm fares in the market.

The role of suppliers is one area which needs to be looked into as half the respondents didn't value the role of suppliers in their quest for customer satisfaction.

The level of consultation of suppliers in issues of customer satisfaction, quality and cost reduction was more or else on the average.

For Kenyan companies to be more competitive there is need to involve suppliers in their quest for value addition as well as incorporate their views when formulating their strategies.

There is also a need to have brainstorming sessions between departments when generating ideas as well as decentralize the decision making process from Top Management only to a combination of all the management levels.

Increased customer satisfaction and increased product quality which are benefits of a value analysis program are well known to the respondents, but benefits such as enhancing product usefulness and increasing other essential product components are not.

Value analysis method is a technique which is well known to most companies, for optimal use of the technique there is need to make use of all of it's approaches.

5.1.2 Conclusions of the Factor Analysis.

According to the summary statistics, on usage most operation/production managers of the companies agree that value is a key component when making operation decision.

They are in agreement that quality and value addition are key components in the quest for customer satisfaction.

Respondents agreed on the need to incorporate other departments and suppliers when making decisions relating to the value adding process.

After the final varimax rotation, the factors were finally generated, Factor 1 was on the role of suppliers that would make a valuable contribution to the process of cost reduction and value addition which is one goal that a company is out to achieve.

Factor 2 emphasized the role of quality in value addition which should be what the customer perceives as quality i.e. operational decisions are made with quality and value being the considerations from the customers point of view.

Factor 3 is the use of the functional approach whereby activities carried out should be evaluated on the basis of value added which in turns leads to product innovations.

Factor 4 has the issue of costs in relation to value addition, this indicates that value has an added cost but this cost is normally overridden by the benefits, which arise from a satisfied customer.

Factor 5 is the role of customers in the decision making process, they are vital in the process of formulating strategy as well as the suppliers. Emphasizing the role of customers.

Factor 6 is made up of the one of value addition, which is a key ingredient for a company to be a success.

Factor 7 emphasizes the need for companies to have a decentralized decision making process where all departments, customers and suppliers are involved when making key operational decisions.

3.2 Limitations of the study and suggestions for further research.

This section discusses the limitations of the study both general and methodological and suggestions for further research.

Table 5.1 Summary of factors

- Role of supplies
- Functional Approach
- Cost Analysis
- Decentralized decision-making process.

The four are the approaches to be used when carrying out a value analysis program.

- The results of the factors concurs with the approaches that are advocated for the use of value analysis method (**Burt, 1997**), which are use of suppliers, functional approach, cost analysis and use of brainstorming sessions i.e. use of various departments in making key decisions.

The respondents were in agreement on the importance of the use of the above approaches when implementing a value analysis program.

The other factors are the key considerations when making operation decisions,

- Quality
 - Customers
 - Value added
- The three factors emphasizes the key considerations that should be taken into account when making operation decisions, these are key factors when undertaking a value analysis program.

5.2 Limitations of the study and suggestions for further Research.

This section discusses the limitations of the study both general and methodological and suggestions for further research.

5.2.1 Limitation of the study.

A major limitation was that not all of the operation/production managers of the companies quoted in the NSE agreed to participate in the study.

The limitation of resources and time made it difficult for companies outside Nairobi to respond adequately as the questionnaires were being administered directly to respondents.

5.2.2 Suggestion for Further Research

This was study carried out for companies listed in the Nairobi Stock Exchange, if a study is carried out that is specific to an industry then the results will be more specific to a particular industry.

The study can also be extended to involve other managers like marketing managers or purchasing managers who are directly involved with the process of value addition.

Finally this study can also be extended to cover the employees in direct contact with the customers like sales representatives or production supervisors and other support staff within the companies.

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----- FACTOR ANALYSIS -----

Analysis number 1 Listwise deletion of cases with missing values

Extraction 1 for analysis 1, Principal Components Analysis (PC)

Initial Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
Q1	1.00000	*	1	4.75695	26.4	26.4
Q2	1.00000	*	2	2.56334	14.2	40.7
Q3	1.00000	*	3	1.93332	10.7	51.4
Q4	1.00000	*	4	1.87308	10.4	61.8
Q5	1.00000	*	5	1.66477	9.2	71.1
Q6	1.00000	*	6	1.26764	7.0	78.1
Q7	1.00000	*	7	1.17420	6.5	84.6
Q8	1.00000	*	8	.81959	4.6	89.2
Q9	1.00000	*	9	.57442	3.2	92.4
Q10	1.00000	*	10	.40504	2.3	94.6
Q11	1.00000	*	11	.32974	1.8	96.5
Q12	1.00000	*	12	.19547	1.1	97.5
Q13	1.00000	*	13	.18474	1.0	98.6
Q14	1.00000	*	14	.13502	.8	99.3
Q15	1.00000	*	15	.09459	.5	99.8
Q16	1.00000	*	16	.01957	.1	100.0
Q17	1.00000	*	17	.00730	.0	100.0
Q18	1.00000	*	18	.00123	.0	100.0

PC extracted 7 factors.

Factor Matrix:

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q1	.52716	.03835	.31512	-.35463	-.27216
Q2	.50357	.41617	.04176	.17516	.53537
Q3	-.46312	.24185	-.04683	.53379	.12869
Q4	-.13761	-.59967	.57804	.25253	-.12153
Q5	.07073	.30490	.50351	.09651	.16675
Q6	.11638	.77078	.00753	.05204	.49155
Q7	-.61873	-.10375	-.37418	.17775	.43942

----- FACTOR ANALYSIS -----

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q8	.69286	-.08973	-.29835	-.07816	-.12394
Q9	-.53491	.63523	.23877	.16521	-.17464
Q10	-.78304	.49421	.01246	.13937	-.12198
Q11	.25556	.48033	.41450	-.47310	.31591
Q12	.50506	.20534	-.16611	.61882	-.18376
Q13	.81389	.08619	.06468	.23711	.01419
Q14	.73516	-.20829	-.09702	.06657	-.07570
Q15	.04959	.12190	-.67677	-.06481	.33350
Q16	.59973	.19921	-.25902	.40462	-.30545
Q17	-.01030	-.42246	.40101	.65101	.12140
Q18	.57081	.24493	.23927	.11044	.61942

	Factor 6	Factor 7
Q1	-.52709	-.11459
Q2	-.27017	.12040
Q3	.36077	.45046
Q4	.24940	.21364
Q5	.28773	-.55915
Q6	-.03845	.12529
Q7	-.33635	-.05035
Q8	-.01469	.23217
Q9	.15553	-.16924
Q10	-.18819	-.00812
Q11	.18828	.27814
Q12	-.16950	-.37088
Q13	.14435	-.12220
Q14	.44685	-.14126
Q15	.29549	-.28129
Q16	-.03760	.35479
Q17	-.28352	-.05061
Q18	-.11597	.16477

Final Statistics:

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
Q1	.86945	*	1	4.75695	26.4	26.4
Q2	.83332	*	2	2.56334	14.2	40.7
Q3	.90972	*	3	1.93332	10.7	51.4
Q4	.89929	*	4	1.87308	10.4	61.8
Q5	.79112	*	5	1.66477	9.2	71.1
Q6	.86920	*	6	1.26764	7.0	78.1

----- FACTOR ANALYSIS -----

Variable	Communality	*	Factor	Eigenvalue	Pct of Var	Cum Pct
Q7	.87396	*	7	1.17420	6.5	84.6
Q8	.65269	*				
Q9	.85728	*				
Q10	.92733	*				
Q11	.90427	*				
Q12	.90782	*				
Q13	.76623	*				
Q14	.82305	*				
Q15	.75720	*				
Q16	.85091	*				
Q17	.86091	*				
Q18	.87954	*				

VARIMAX rotation 1 for extraction 1 in analysis 1 - Kaiser Normalization.

VARIMAX converged in 11 iterations.

Rotated Factor Matrix:

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q1	.15361	.18435	.20333	-.85638	.18092
Q2	.07803	.88812	.08725	-.05469	-.13317
Q3	-.23028	.05898	.20476	.88859	.14366
Q4	.16369	-.24289	-.29751	.22004	.81487
Q5	.09636	.17042	.05100	-.03376	.03290
Q6	-.00803	.06110	.92283	-.04408	-.10482
Q7	-.70655	.03199	-.40494	.26401	-.24120
Q8	.59324	.17070	.08473	.19395	.14260
Q9	-.45347	-.12664	.53907	.27751	-.00987
Q10	-.80587	-.16433	.39943	.25040	-.04732
Q11	.11190	.51035	.23303	-.09564	-.01110
Q12	.32835	.22107	.28547	-.08360	-.10036
Q13	.71075	.38829	.12591	-.12736	-.00872
Q14	.88867	.02970	-.08540	-.02950	-.09845
Q15	.13434	.00931	-.20894	.24164	-.79326
Q16	.49209	.25258	.47997	.10045	.02126
Q17	-.07904	.17658	-.31591	.07633	.65134
Q18	.22695	.90038	-.07515	-.03767	.03500

----- FACTOR ANALYSIS -----

Factor 6 Factor 7

Q1	-.01396	-.06493
Q2	.10027	-.00884
Q3	-.00189	-.03251
Q4	-.07050	.08717
Q5	.02213	.86457
Q6	.00837	.02800
Q7	.23720	-.15999
Q8	.04163	-.44899
Q9	-.02724	.51667
Q10	.04140	.15933
Q11	-.72117	.21824
Q12	.79990	.11289
Q13	.25393	.11692
Q14	.10395	.06140
Q15	.08241	.03100
Q16	.34157	-.43287
Q17	.53619	.07821
Q18	-.06022	.07379

Factor Transformation Matrix:

Factor 1 Factor 2 Factor 3 Factor 4 Factor 5

Factor 1	.79682	.44458	.08359	-.36003	-.04560
Factor 2	-.21764	.37833	.76368	.08315	-.36219
Factor 3	-.03599	.18207	.06038	-.19372	.76729
Factor 4	.03702	.17789	.09657	.53023	.30738
Factor 5	-.17466	.67705	-.59665	.23378	-.22391
Factor 6	.53343	-.28808	-.01124	.59646	-.12247
Factor 7	-.00008	.20029	.20177	.50530	.34406

Factor 6 Factor 7

Factor 1	.12452	-.11508
Factor 2	-.10692	.27707
Factor 3	-.26169	.51688
Factor 4	.76083	-.05627
Factor 5	-.15830	.15891
Factor 6	-.35196	.36784
Factor 7	-.42045	-.69217

1. Do you agree with the concept of value analysis in the

very high

FACTOR ANALYSIS

Factor Score Coefficient Matrix:

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Q1	-.12107	.03755	.09477	-.49313	.11035
Q2	-.11816	.43180	-.02562	.00567	-.02893
Q3	.05159	.09740	.11806	.52646	.11911
Q4	.13979	-.08718	-.07200	.17129	.41179
Q5	.08002	.00909	-.05278	-.02950	-.04485
Q6	.00068	.03631	.43264	.01824	.00305
Q7	-.27199	.15378	-.20746	.01061	-.14010
Q8	.13448	.01450	.05651	-.00007	-.03909
Q9	-.06093	-.05762	.22795	.08047	-.00388
Q10	-.23700	.00574	.18504	.00501	-.00230
Q11	.03103	.22912	.06905	.04009	.03737
Q12	.03047	.01168	.10040	-.06032	-.06582
Q13	.19176	.06640	.02686	.03417	-.00706
Q14	.33994	-.12489	-.04984	.12279	-.07958
Q15	.09865	-.03395	-.15777	.14898	-.45276
Q16	.11256	.05341	.25344	.15075	.07841
Q17	-.09250	.14012	-.12908	-.00134	.32195
Q18	.04125	.43310	.00040	.05525	.04218

	Factor 6	Factor 7
Q1	.03876	-.04639
Q2	.04231	-.04904
Q3	-.07275	-.10771
Q4	-.08844	.03545
Q5	.06275	.59969
Q6	.00357	-.04786
Q7	.16061	-.11692
Q8	.03677	.26152
Q9	.02832	.27962
Q10	.08057	.01841
Q11	-.44353	.06318
Q12	.47584	.13605
Q13	.10760	.12932
Q14	.00181	.14147
Q15	.04846	.11249
Q16	.11933	-.29927
Q17	.31288	.04062
Q18	-.06850	.00830

APPENDIX 1

QUESTIONNAIRE

SECTION A

1. In your opinion what is the level of importance of the concept of value analysis in the decision making process?

i) very low ii) low iii) none iv) high v) very high

2. When streamlining operations what are the key considerations;

Quality	[]
Costs	[]
Customer	[]
Other (specify)	

3. How have you been able to incorporate the issue of value addition in your processes?
Indicate the seriousness you attach to each of the following approaches

i) very low ii) low iii) none iv) high v) very high

Use of functional approach	[]
Use of suppliers	[]
Use of checklists to eliminate non-value adding activities	[]
Use of brainstorming sessions	[]
Use of cost analysis	[]

4. In your current area of operation are all the current activities carried out necessary?

YES	[]
NO	[]

5. Is there duplication of activities within the same department or in others?

YES	[]
NO	[]

If yes what is being done?

.....

6. Do all the activities carried out add any value to the satisfaction of the customers?
Indicate the level of satisfaction.

i) Highly unsatisfactory	ii) Unsatisfactory	iii) Neutral
iv) Satisfactory	v) Highly satisfactory	

7. If the activities were to be reduced what would be the consideration? Indicate the importance attached to each of the following?

i) very low ii) low iii) neutral iv) high v) very high

Time ()
Quality of service ()
Costs ()
Value Added ()

8. When streamlining operations indicate the level to which the function of the activity/ product is taken into consideration?

i) very low ii) low iii) none iv) high v) very high

9. Are the costs of carrying out the various activities justified by there function?

Yes [] No []

10. Can the cost of performing the function be reduced?

Yes [] No []

If YES what is being done?

.....

11. Are the costs of performing the functions in your department reasonably proportionate to the value of the function?

i) Highly unproportionate ii) Unproportionate iii) Neutral
iv) Proportionate v) Highly proportionate

12. Indicate the level to which other groups of people are incorporated when generating ideas?

i) Very low ii) Low iii) None iv) High v) Very high

13. Who makes decisions affecting the activities in your area of operation?

Top Management []
Middle Level Managers []
Line Managers []
Combination Of The Above []
Other (Specify)

14. What is the role of suppliers in the quest for customer satisfaction?

- i) Very low ii) Low iii) None iv) High v) Very high

15. Are suppliers consulted when formulating strategies on;

Customer satisfaction []

Quality []

Cost reduction []

16. What considerations are taken into account when selecting a supplier?

Costs []

Quality []

After Sales Service []

Credit Period []

Other (Specify)

17. How could you rate the support given by the supplier?

Very good []

Good []

Average []

Poor []

Very poor []

18. What benefits result from streamlining of operations using the concept of value analysis?

i) Very low

ii) Low

iii) None

iv) High

v) Very high

Increasing product quality []

Enhancing product usefulness []

Increasing customer satisfaction []

Increasing other essential product components []

Others (specify)

SECTION B

Indicate extent to which you agree or disagree with the following statements

- | | Strongly
Agree | agree
or disagree | neither
agree
or disagree | disagree | strongly
disagree |
|---|-------------------|----------------------|---------------------------------|----------|----------------------|
| 1. Value is a key component
When making operation decisions | [] | [] | [] | [] | [] |
| 2. Quality is a by product of value
analysis | [] | [] | [] | [] | [] |
| 3. Costs are increased when value is
added | [] | [] | [] | [] | [] |
| 4. Our customers are value
sensitive | [] | [] | [] | [] | [] |
| 5. Activities carried out all add
value to the product | [] | [] | [] | [] | [] |
| 6. The more the activities in
operation the higher the value | [] | [] | [] | [] | [] |
| 7. Function of activity has no
relationship to the value added | [] | [] | [] | [] | [] |
| 8. Costs can be reduced by improving
the function | [] | [] | [] | [] | [] |
| 9. Decisions relating to value addition
should be made by managers alone | [] | [] | [] | [] | [] |
| 10. No need to involve other departments
in decision making | [] | [] | [] | [] | [] |
| 11. Customers should influence
the operational decisions | [] | [] | [] | [] | [] |
| 12. Suppliers should be consulted on
issues of value addition | [] | [] | [] | [] | [] |
| 13. Suppliers can assist to improve on
value in our products | [] | [] | [] | [] | [] |
| 14. Costs can be reduced by being
being in touch with suppliers | [] | [] | [] | [] | [] |

15. Increased value leads to increased customer satisfaction ☐ ☐ ☐ ☐ ☐

16. Products innovations are a function of a value analysis program ☐ ☐ ☐ ☐ ☐

17. Suppliers do support us in the process of value addition ☐ ☐ ☐ ☐ ☐

18. Quality is a function of value. ☐ ☐ ☐ ☐ ☐

6. Limara Tea Co. Ltd.

7. Red Valley Products Ltd.

8. Sassi Tea & Coffee Ltd.

9. Tea Group Ltd.

Commercial and Services

10. Africar Leases Corporation PLC

11. A. Delapena & Co. Ltd.

12. UMC Holdings Ltd.

13. Car & General (K) Ltd.

14. Express Ltd.

15. Hutchings Brier Ltd.

16. Kenya Airways Ltd.

17. Marshalls (K. A.) Ltd.

18. Nation Media Group

19. Pearl Dry Cleaners Ltd.

20. Tourism Promotion Services Ltd.

21. Standard Newspapers Group

22. Tesco Supermarkets

Finance and Investment

23. Barclays Bank Ltd

24. C. P. C. Bank Ltd.

25. Diamond Trust Bank Kenya Ltd.

26. I. C. D. C. Investments Co. Ltd.

27. Housing Finance Co. Ltd.

28. Indus Commerce Co. Ltd.

29. Kenya Commercial Bank Ltd.

30. National Bank of Kenya Ltd.

31. N.K. Bank Ltd.

32. Pan Africa Insurance Ltd.

33. Standard Chartered Bank Ltd.

APPENDIX 2

LISTED COMPANIES IN THE NAIROBI STOCK EXCHANGE

Agricultural

1. Brooke Bond Ltd.
2. Eaagads
3. George Williamson Kenya Ltd.
4. Kakuzi
5. Kapchorua Tea Co. Ltd.
6. Limuru Tea Co. Ltd.
7. Rea Vipingo Plantations Ltd.
8. Sasini Tea & Coffee Ltd.
9. Theta Group Ltd.

Commercial and Services

10. African Lakes Corporation PLC.
11. A. Baumann & Co. Ltd.
12. CMC holdings Ltd.
13. Car & General (K) Ltd.
14. Express Ltd.
15. Hutchings Biemer Ltd
16. Kenya Airways Ltd.
17. Marshalls (E. A.) Ltd.
18. Nation Media Group
19. Pearl Drycleaners Ltd.
20. Tourism Promotion Services Ltd.
21. Standard Newspapers Group
22. Uchumi Supermarkets

Finance and Investment

23. Barclays Bank Ltd.
24. C. F. C. Bank Ltd.
25. Diamond Trust Bank Kenya Ltd.
26. I. C. D. C. Investments Co. Ltd.
27. Housing Finance Co. Ltd.
28. Jubilee Insurance Co. Ltd.
29. Kenya Commercial Bank Ltd.
30. National Bank of Kenya Ltd.
31. NIC Bank Ltd.
32. Pan Africa Insurance Ltd.
33. Standard Chartered Bank Ltd.

Industrial and Allied

34. Athi River Mining
35. British American Tobacco Kenya Ltd.
36. Bamburi Cement Ltd.
37. B. O. C. Kenya Ltd.
38. Carbacid Investments Ltd.
39. Crown Berger Ltd.
40. Dunlop Kenya
41. E. A. Cables Ltd.
42. E. A. Packaging Ltd.
43. E. A. Portland Cement
44. East African Breweries Ltd.
45. Firestone East Africa Ltd.
46. Kenya National Mills Ltd.
47. Kenya Oil Co. Ltd.
48. Kenya Orchards Ltd.
49. Kenya Power & Lighting Ltd.
50. Total Kenya Ltd.
51. Unga Group Ltd.