

**IMPROVEMENTS THROUGH BENCHMARKING: A SURVEY OF
THE KENYAN CONSTRUCTION FIRMS. //**

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BY

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DECLARATION

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

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DEDICATION

To my husband Nyagah, and sons Rwigy and Gitonga

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ABSTRACT

This study explores the extent to which benchmarking has been used as a tool for continuous improvement by the Construction industry in Kenya. Benchmarking is a technique for developing business practices through comparison with best performers in an industry. This technique has been used by many companies across various industries to improve performance and hence competitiveness with remarkable results. Having been developed by a manufacturing company and being applied successfully more by the manufacturing sector across the globe, the construction industry in some of the developed countries has also applied the technique and has realised performance improvement among several other benefits.

Given the importance of continuous performance improvement in this era of cut-throat competition, the study set out to find out whether the Kenyan construction companies are aware of benchmarking, whether there are any improvements realised and if there are challenges being faced in the benchmarking process and implementation by the companies. To obtain the information, questionnaires were administered to the project managers or directors of the sampled general building contractors both by drop and pick method and oral interviews.

The study established three key findings: that very few companies are using benchmarking consciously while a great number of them are aware of the technique but have not implemented. Various benefits accruing from the use of benchmarking have been realised including substantial performance improvement. Most construction companies are doing some form of benchmarking without knowing, mostly between the various projects handled and also between fellow competitors.

A major conclusion of the study is that the construction industry is still lagging behind in the implementation of performance improvement techniques including benchmarking and this is mainly due to poor the management structures found in most construction

companies and also the stiff competition which has reduced profit margins leaving very little capital for investment in research and development.

The main recommendations are that construction companies should seek to raise their performance levels and competitiveness by learning from others, taking advantage of the improvement techniques being developed by the manufacturing sector and restructuring their organizational structures to make them more conducive for strategic changes.

TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION

1.1 Background	1
1.2 Statement of The Problem	5
1.3 Objectives of The Study	6
1.4 Importance of The Study	6

CHAPTER 2: LITERATURE REVIEW

2.1 An Overview	8
2.2 Definition of Terms	9
2.3 Origin of Benchmarking	11
2.4 Types of Benchmarking	12
2.5 Benchmarking Methodology	16
2.6 Prelquisites of Benchmarking	17
2.7 Responses to the benchmarking Process	17
2.8 Benefits of Benchmarking	18
2.9 Challenges of Benchmarking	19
2.10 The Construction Process	20
2.11 Types of Contractors	22
2.12 Performance objectives in Construction	23
2.13 Applications of Benchmarking in the Construction Industry	26

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research design	28
3.2 Population	28
3.3 Sampling	28
3.4 Data Collection	29
3.5 Data analysis	29

CHAPTER 4: DATA PRESENTATION AND ANALYSIS

4.1 Background Information and Organization Structure	30
4.2 General Performance	32
4.3 Benchmarking Awareness and Application	43
4.4 Challenges facing firms in the benchmarking process	46
4.5 Other Improvement Programs	47

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary	49
5.2 Extent to which Kenyan Construction Companies use benchmarking	49
5.3 Improvements realised upon application of benchmarking	51
5.4 Challenges encountered by the Kenyan construction firms in their endeavour to undertake benchmarking	51
5.5 Recommendations	52
5.6 Limitations	53
5.7 Areas of further study	54

REFERENCES	55
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APPENDICES

Appendix 1: Letter to respondent	57
Appendix 2: Questionnaire	58

LIST OF TABLES

	Page
Table 4.1: Type of work undertaken	30
Table 4.2: Number of directors	32
Table 4.3: Time performance of projects	33
Table 4.4: Activities undertaken to improve on completion periods	34
Table 4.5: Factors Influencing Cost Of Production	35
Table 4.6: Cost reduction programs undertaken	36
Table 4.7: Turnover Associated With Clients and Consultants	38
Table 4.8: Tender results Statistics for the Years 2004 and 2003	40
Table 4.9: Sharing of improvement ideas	41
Table 4.10: Programs undertaken in response to the benchmarking process	45
Table 4.11: Benefits accruing from a benchmarking process	46
Table 4.12: Challenges Encountered In the Benchmarking Process	47

LIST OF FIGURES

	Page
Figure 4.1: Years of experience	31
Figure 4.2: Rating of quality of work	37
Figure 4.3: Benchmarking awareness in the Kenyan construction industry	43
Figure 4.4: Benchmarking application in the Kenyan construction industry	44
Figure 4.5: Extent of improved quality	45

CHAPTER 1: INTRODUCTION

1.1 BACKGROUND

As the pace of change accelerates in the 21st century as a result of technological opportunities, liberalization of world markets, demands for innovation, quality and speed, organisations are continuously adjusting their operations to respond to these challenges. This has led to an unprecedented intensity of competition and a momentous change in the ways of conducting business. The pace and scale of change demanded of organizations are enormous and it is such that organizations have to look for innovative and creative ways for survival and to be competitive.

A consensus that is emerging in the business world is that successful organizations will be only those that embrace continuous change as a business paradigm. Since in today's business climate is so competitive with new technologies cropping up overnight which change the terms of competition radically, such organizations are capable of adapting to the changes and lead the market in directions optimal to the organizational goals.

As it is now, most manufacturing organizations have embarked on various programs such as Business Process Re-Engineering, Total Quality Management, Employee Involvement, Lean production, Just-in-time distribution, and so forth. This is all in a bid to meet the challenge ahead as it is now clear that past success is no guarantee for future performance. For instance, the Japanese automotive industry used the concept of lean production to achieve the success in the technological and competitive edge that we see today (Clack et al, 1999).

Most manufacturing companies are developing best practices by looking out in the world for all kinds of shifts and they take advantage of what they see. Companies are sharpening their focus to establish excellence in all aspects of business such as customer service issues, training of employees, designing of products and services, marketing, and delivery of products and services.

In the search for ways of perfecting their businesses, companies have discovered that best practices do not belong to any single company or industry but have universal application to companies large and small across industries (Andersen, 1998). The search for best practices is all about looking outside oneself and is referred to as Benchmarking.

The manufacturing sector has been relatively quick in responding to the changing business environment while the construction industry lags behind. Marosszeky and Karim (1997) attribute this to three primary factors; due to its fragmented rather than integrated approach; secondly due to the fact that the industry is involved in a unique process and finally the fact that the construction environment is much more complex than manufacturing. The other reason could be that contractors also face a disincentive to innovate. Clark (1988) noted that as each project is a one-off, it is not possible to predict a firm's next project and its method of construction.

In today's competitive environment, just as there is need for enhanced productivity and reduced costs in manufacturing the same pressure is felt in construction. It is important for construction companies to realise that significant improvement in management and productivity is needed to survive in the market and also maintain market share. They also need to realise that management and technical innovations in manufacturing have direct relevance for the construction industry and that valid comparisons can be made towards improving performance. One such comparison is lean Construction which has been derived from Lean Production by use of the benchmarking technique (Marosszeky and Karim ,1997).

1.1.1 THE CONSTRUCTION INDUSTRY IN KENYA

The construction industry plays a leading role in the process of national development. It is a vital part of the economy due to the direct relationship which exists between capital formation and economic growth. There is no aspect of development that does not have a part in construction. The construction industry contributes 45 – 60% of the gross capital

formation of most economies (Turin, 1973). Its contribution to the Gross Domestic Product (GDP) ranges between 1 - 3% (Central Bank of Kenya, 2003).

For the current Kenyan government, the provision of employment is of primary concern and it is one of the key priorities in its endeavours to revive the economy. The construction industry's contribution to employment is quite significant as it employs 4 – 6 percent of all wage earners, thus offering good sector for the alleviation of the employment problem in the country (Kithinji, 1988).

Another important characteristic of the Construction industry noted by Hillebrandt, (1985) is the government as its client. Most Governments outline policies that provide for physical infrastructure and housing in their economic development plans. Substantial amounts of money are usually allocated to construction of these facilities. These policies are implemented by the construction industry hence the need for prudent management by all the industry players.

Unfortunately, the Kenyan construction industry does not encourage and facilitate innovation easily and has a well deserved reputation for its slowness in accepting change (Omufira, 2001). This report therefore attempts to identify the reasons why this is so and what challenges the contractors could be facing that bars them from adopting best practices.

In view of the important role played by the construction industry in the economy, it is important to employ good management skills at all levels of participation so that higher performance levels are achieved to the benefit of both the industry players and the economy as a whole.

1.1.2 CURRENT ISSUES IN CONSTRUCTION FIRMS

A fundamental shift is occurring in the world economy. We are moving progressively further away from a world in which national economies were relatively isolated from

each other by trade barriers, distance, culture and business systems to a world in which economies are merging into an independent global economic system. This has introduced increased competition at an international level in all the industries. Contractors have now to worry about foreign firms such as Chinese, Israeli, Lebanese, and Japanese contractors who are already operating in the local market. Kenyan Contractors also have to take advantage of this and expand their business further into other parts of the world. We already have many contractors operating in the East Africa Region.

A galloping technological change has impacted positively on construction methods, quality of building materials, transportation methods and in communication of information. For instance, Contractors can now precast complete floor slabs, walls, etc in their workshops and assemble them on site thus reducing project completion periods to a minimum. Those who are able to do this will definitely be ahead of competition in cases where time is a determining factor. Advanced plant and equipment and computerized production of working drawings will be preliquisites to securing projects among others.

There is increased customer awareness and clients are now becoming more and more aware of issues to do with costs and quality of building materials, and their contractual rights. They are demanding higher speeds of delivery, more accountability of project costs and professional project administration.

Environmental concerns have also impacted upon construction firms negatively. Some building materials are sourced from natural resources which are rapidly getting depleted at an alarming rate. Forests, the main source of timber, are now threatened with extinction if the trend continues. To counter this trend, governments have now imposed serious restrictions to save our natural resources and this is a major threat to construction industry. They have now to acquire other methods or other materials in place of timber and this has resulted in increased costs, for instance in replacing timber formwork with steel formwork.

Uncertainty in workload especially where most of the work is obtained on the basis of tendering, it is not possible to anticipate very far in advance exactly which tenders will be successful hence one can not plan in advance effectively. This makes the contractors avoid investing in research and development programs.

1.2 STATEMENT OF THE PROBLEM

The Kenyan construction sector has recorded a decline in performance over the last few years both in the public and private sector. The value of reported private and public buildings works from selected major towns declined by 23.1% between 1998 and 2000. Budgetary allocations for new buildings have dwindled overtime and construction in the public sector literally came to halt by year 2002 (Economic survey, 2002).

The poor economic conditions that prevailed in the last five or so years largely contributed to the poor performance in the private sector. Since 2002, the construction industry has indicated some growth and this trend is expected to continue. However the business climate is still very competitive and companies have to develop means of staying afloat. Currently, competition among contractors is not just in cost and time but also in terms of management systems (Economic survey, 2002).

Benchmarking is one of the ways construction companies can realize improved performance yet this technique may not be largely employed by many construction companies in Kenya. A pilot study carried out in Europe (EU Benchmarking Coordination office, 2000) revealed that various contractors are involved in benchmarking and have achieved commendable performance improvement.

There is increased need to compete internationally as there are some international construction companies based here in Kenya, which are giving local companies a run for their money and also international clients are on the increase. Some clients require that certain aspects of construction be ISO certified.

Many companies in other industries have embraced developing best practice through benchmarking across the country with varied levels of success. They have been able to achieve such benefits as process improvement, quality improvement, and increased speed of service.

Research Questions

- i. Can Kenyan Construction companies achieve performance improvements through the application of benchmarking techniques?
- ii. Are the Kenyan construction companies up to date with the international construction industry?
- iii. Have the construction companies that have embraced benchmarking achieved as many benefits as the manufacturing industry

1.3 OBJECTIVES OF THE STUDY

- i. To estimate the extent to which Kenyan Construction Companies use benchmarking.
- ii. To establish whether there has been improved performance in those companies that are using benchmarking.
- iii. To document the challenges facing the Kenyan construction companies in their endeavour to embrace benchmarking.

1.4 IMPORTANCE OF THE STUDY

- i. This study will provide an insight to the benefits of using benchmarking as a tool for continuous improvement in construction companies.
- ii. Since available literature is full of cases from the west, this study is will also provide some knowledge of what is happening in Kenya. It is hoped that the study will demystify existing beliefs that local contractors cannot attain world-class performance through benchmarking.

- iii. Research findings may also attract further research into the various tools and strategies for continuous improvement such as benchmarking.

CHAPTER 2: LITERATURE REVIEW

2.1 OVERVIEW

The construction industry is a cocktail of business activities that includes both manufacturing and service delivery of made to order outputs. It is one industry that brings different people from different areas of expertise into one team where they work together towards a common course, in this case, a project. The team comprises mainly of the client or the owner, consultants, and the construction firm commonly referred to as the main contractor. The main contractor together with specialist subcontractors implement the designs produced by the consultants, which are in turn based on the client's brief.

The implementation process requires careful coordination of all the parties involved and it calls for a very coherent project management team. Construction management is concerned with dealing with suppliers, subcontractors of specialist installations, fabrication workshops, materials management on site, plant and equipment management and dealing with workers just to name a few. For a long time in the 1970s and 1980s, many construction firms managed to stay in business without necessarily having strong project management teams within the company. This can be attributed to the fact that the economy was growing at the time and the industry was active, competition was not cutthroat, managerial requirements were not major, and that there were few construction companies competing for many projects.

With the growing number of construction companies and declining economic growth leading to low construction activity, construction companies are now facing a tough competitive situation where only the best in various aspects will remain in business. Consultants are now demanding professional construction management teams in construction companies with proper accounting procedures, documented construction methods and safety procedures as well as preparation of final accounts. This has led to a significant increase in overhead costs in terms of skilled labour, acquisition of information systems within the offices and investment in plant and equipment in a bid to meet changing client's and consultants requirements and thus to beat the competition.

Construction firms must now craft strategies that will transform all operations within the firm into strategic weapons that will form a coherent system that provides specific capabilities for a competitive advantage. It is the high time that construction companies look around, all over the world, to find out what other organizations are doing to stay ahead of competition. This is the core of Benchmarking.

2.2 DEFINITION OF TERMS

2.2.1 Benchmarking

The term benchmark is derived from land surveying where a mark, cut in the rock, would act as a reference point. In business terms, a benchmark is a standard of excellence against which to measure and compare (Slack, 1998). American Production and Quality Centre (1997) defines benchmarking as the process of improving performance by continuously identifying, understanding and adapting outstanding practices and processes found inside and outside the organization and implementing the results.

Camp (1989) defines benchmarking as the search for best practices that lead to superior performance. It is a technique that enables organizations to compare performance to relevant and achievable standards from other companies. The benchmark does not have to be in the same industry but from any other industry any where in the world.

Benchmarking is further described as the practice of being humble enough to admit that someone else is better at something and wise enough to try and learn how to match and even surpass them at it. Thus, benchmarking is both a means by which new practices are discovered and understood, as well as a goal setting process (Camp, 1989).

Bicheno and Gopalan (2000) noted that benchmarking is really not new. People and organizations have always compared themselves with others. Example given here is how Germans visited the Barnum and Bailey circus to study the world-renowned methods it

used to move materials and animals from city to city. But because it is now being done in a systematic and comprehensive way to bring about competitive change, then this technique has come to prominence.

As Andersen (1999) found out, benchmarking has been widely used to identify, understand, and adapt outstanding practices and processes from organisations anywhere in the world to help an organisation improve its performance. It provides answers to questions such as how are we doing? Are we tracking the right measures? How do we compare with others? Are we making progress fast enough? Are we using the best practices? These questions arise due to the need for continuous improvement that companies have to seek in their products and services in order to remain afloat.

2.2.2 Continuous Improvement (CI)

We are living in business climate that is so competitive, so unstable and uncertain that we can easily be blindsided. Andersen (1999) found that the companies developing best practices always seek ways to make improvements in their products and services as well as enhance their relationships with suppliers and customers. Leading businesses also want to retain their status as “best-in class” and other businesses want to achieve that status. It is important for managers to realise that what ever they are doing now, there is always a better way of doing it. In world-class companies, everyone does well what they do now and part of doing well is looking for and finding better ways. Most of these better ways are small changes and improvements, collectively and over time they add up to continuous improvement, and are a major contributor to organization’s success. (William 2001). Continuous improvement seeks continual improvement of machinery, materials utilization, labour utilization, procurement and production methods through application of suggestions and ideas of team members. (Chase et al 2001).

Benchmarking has become a key tool for Continuous Improvement which goes outside the organization to examine what industry competitors and excellent performers outside

the industry are doing. As McNair and Leibfried (1992) pointed out, benchmarking is a never-ending process used to give real meaning to the intent of continuous improvement.

2.2.3 Best Practices

Many organizations are continually looking for best ways to perform their businesses. Best Practice is therefore simply defined as the best ways to perform a business process (Andersen, 1998). Best practice sharing involves the capture, dissemination and sharing of work method, process, or initiative to improve organizational effectiveness, service delivery and employee satisfaction (McGrath, nd). This goes hand in hand with benchmarking.

2.3 ORIGINS OF BENCHMARKING

Benchmarking was developed by Xerox Corporation, the document and copying company, in 1979 and used the term competitive benchmarking. What first drove it to benchmark was the shock of finding that Japanese manufacturers were selling midsize photocopiers at considerably less than its production cost (Jeremy et al, 1992). The management made a detailed study of the competition costs and processes whose results were so bad that they decided to face the facts and this marked the beginning of benchmarking.

Xerox embarked on a radical restructuring of the entire organisation including strategy, systems, and behaviours. Each element of the structure, strategy and behaviour would be established by comparisons with the best available comparators. In this particular instance, Xerox sought comparison from the best available competitor, namely Canon Corporation. Xerox established performance benchmarks for Canon and within a few years, it had reduced costs by fifty percent (Eaton, 2002).

Among other companies that Xerox benchmarked against was L.L Bean, a firm that outfits the outdoor set which was known for fulfilling orders quickly and accurately.

What we learn from this is that business practices are business practices and can be applied in any business regardless of industry (Jeremy et al, 1992).

Benchmarking was used mainly by Xerox manufacturing function to revitalise itself by comparing the features, assemblies and components of its products with those of competitors (Camp, 1989). Since that time, the term benchmarking has widened its meaning in many ways (Jeremy et al, 1992):

- It is no longer restricted to manufacturing operations but also in other functions such as marketing and purchasing
- It is no longer confined to manufacturing firms but also in services such as hospitals, banks, contractors, and schools.
- It is no longer being done by experts and consultants only but involves all employees in an organization
- The term benchmarking is now more than just a comparison with competitors but it is taken to mean benchmarking to gain a competitive advantage

2.4 TYPES OF BENCHMARKING

2.4.1 Internal Benchmarking

Internal benchmarking is a comparison between operations within the same total organization. For instance, a large garment manufacturer with several factories might choose to benchmark each factory against the others. It is an excellent measurement tool when comparing one facility with others in a company's portfolio. At Insignia/ESG, a property management company in the US, the results of surveys helped the company to benchmark facilities against one another to measure tenant satisfaction and the level of service provided to clients (Andersen, 1998). Avon, a US based manufacturer of cosmetics, used internal benchmarking to improve its customer services operations after realizing that while each of their branches excelled in some areas of customer service, there was need to develop a uniform standard of customer service adopted by all

branches. They picked the best practices from each of the geographically dispersed branches and set it as the goal for all (Marosszeky and Karim, 1997).

2.4.2 External benchmarking

External benchmarking, as opposed to internal benchmarking, is a comparison between an operation and other operations which are part of a different organization. For instance, a garment manufacturer compares its purchasing function with that of another garment manufacturer. Mobil Oil found a way to provide a fast, friendly, consistent, and knowledgeable service through external benchmarking. Roger Panske's pit crew provided a benchmark for speed, Ritz-Calton Hotels provided benchmark for friendly service while the plumbing parts department of Home depot provided a benchmark for consistent and knowledgeable service (Andersen, 1998).

2.4.3 Competitive benchmarking

Competitive benchmarking occurs between firms within the same industry sector who deal in identical or similar good or service. It is a comparison directly between competitors in the same or similar markets. Spenley (2003) explains that in competitive benchmarking, the competitive position of each business driver is measured against the competition.

A customer never buys simply a product itself, but a set of tangible and intangible attributes that they perceive as delivering value such as quality, delivery time and cost. Competitive benchmarking is when each attribute is measured against the competition. This is what Xerox did.

Janssen Pharmaceutica, a large manufacturing company in the US, used competitive benchmarking to reduce its administrative overheads. They undertook two benchmarking studies which enabled them to identify opportunities for reduction of costs in administration and marketing (Marosszeky and Karim, 1997).

Non-competitive benchmarking, on the other hand, is benchmarking against other organizations that do not directly compete in the same products.

2.4.4 Performance benchmarking

Performance benchmarking is a comparison between the levels of achieved performance in different operations. For instance, an operation might compare its own performance in terms of some or all of its performance objectives – quality, speed, dependability, flexibility and cost – against other organizations' performance in the same dimensions (Slack et al, 1998). Benchmarking is an integral component of a performance management process where the relative comparisons to the benchmarks become the indicators for performance

2.4.5 Strategic benchmarking

Strategic benchmarking is using best practices to develop corporate, program, product strategies, and results. It includes the strategic study of the characteristics of effective continuous improvement strategies of the organization, the change processes, and leadership styles to establish a vision, leadership competencies and customer satisfaction. Specific studies of the strategies and approaches of high performing organization are also done. Strategic benchmarking also considers results of other comparisons in light of the strategic focus of the company. (Gilgeous, 2000).

Christopher and Thor (2001) further explain that strategic benchmarking uses confidential industry comparisons to get 'macro' information on how the organization might be different in such decision areas as Research and Development, marketing resources, computerization and training practices.

2.4.6 Process Benchmarking

Benchmarking is not only practised by those organizations that lag behind but also by internationally renowned successful companies as a tool for maintaining their competitive edge. Exxon chemical, a multi billion dollar multinational, used benchmarking to analyse how they managed their information system and whether it could be improved. This was referred to as process benchmarking since it focused on a particular process (Marosszeky and Karim, 1997).

2.4.7 Operational benchmarking

This is a comparison between an organization's operations practices and those adopted another organization. It involves assessing and implementing the best practices to improve processes to the extent that meets organizational goals such as, creating awareness and support at the senior executive level, establishing benchmarking resources, building benchmarking into business planning and continuous improvement, establishing performance levels to sustain competitive advantage and using systematic benchmarking process to improve business and work processes, and customer satisfaction (McGrath, nd)

2.4.8 Project Benchmarking

This is focussing on project processes and outcomes. This involves collecting and comparing data with other projects. Practices are then altered accordingly for continuous improvement (Procurement guide, 2003).

It is important to note that benchmarking can be used across a wide variety of business outfits and positive results could be obtained in each one of them. It should also be noted that benchmarking is not a period or size specific tool. It has proved its usefulness over a long period of time for outfits of varying sizes.

2.5 BENCHMARKING METHODOLOGY

Many consulting firms offer training in benchmarking models, tools and techniques. Xerox, Price Waterhouse, McKinsey and A T & T are among the many firms which have developed models as a result of their own experience. The models may vary in their design but the basic steps remain the same (Eaton, 2002).

It all begins with identifying the core issues under scrutiny and deciding what to benchmark. Robert Camp (1989) states that benchmarking is 'first a goal setting process'. You have to know what to benchmark which goes back to the customer. One has to identify who the customers are, present and future. Internal data collection can then begin which involves understanding organisations' own performance, assessing customers' needs and the necessary core processes where the organisation needs to perform really well.

The next question then becomes who to measure. As mentioned earlier, the aim of benchmarking is to find the 'industry best' performance. This involves studying other organisations and collecting external data. The code of conduct established by various benchmarking organizations must be observed here which includes legality, confidentiality, exchange (give and take, not just take) among others. (Bicheno and Gopalan, 2000)

The other steps that follow include analysis of data, production of conclusions implementation of responses to the conclusions and using the findings. As soon as a set of improvements has been implemented, it all begins again which then forms the feed back loop.

Bicheno and Gopalan (2000) also noted that benchmarking is not static. It aims at projecting future trends. Once the gap between own and competitor performance is established, the management can develop a philosophy that aims at achieving industry best position.

2.6 PRELIQUISITES OF BENCHMARKING

The benchmarking activity should be stakeholder driven. Commitment to such fundamental review of processes and practices requires acceptance by the stakeholders. Participation of all people within an organization is of prime importance. The aims and objectives of the benchmarking process should be communicated properly and the entire procedure should be made transparent (Eaton, 2002).

Benchmarking requires a specific skill mix and therefore organisations need to carefully select the right people to conduct the exercise (Eaton, 2002). The resultant conclusions can only be as good as the person who implemented it.

Camp (1989) has identified other success metrics for benchmarking to run effectively such as:

- A willingness to change and adapt based on benchmark findings
- A realisation that competition is constantly changing and there is need change as well
- Openness to new ideas

2.7 RESPONSES TO THE BENCHMARKING PROCESS

Once a benchmarking process has been taken and resolutions implemented, a typical response in most organisations is the alteration of structure, strategy, systems or behaviour. Eaton (2002) emphasize that a more holistic and comprehensive alteration is when all the four elements change simultaneously. He further cites some examples of responses to benchmarking such as:

- Structural change towards lean and empowered organizations
- Strategic change such as product, market or process differentiation
- Systemic change towards backward or forward value chain integration
- Behavioural change such as process reengineering and value added initiatives.

The main value of benchmarking is in using outside sources to develop ways of breakthrough improvement. This wake-up call carries with it more aggressive performance goals which will be more acceptable because others have walked the same path (Christopher and Thor, 2001).

2.8 BENEFITS OF BENCHMARKING

A study done by Jarrar and Zairi (2001) revealed that most companies that undertake benchmarking achieve high benefits in many areas within the organization. Most benefits are associated with organisational effectiveness, efficiency and opportunity. Such benefits as the influence of the strategic decision-making process and hence improved strategic planning, allowing more effective deployment of resources, quality improvement, increased speed of service, innovative approaches to business improvement, process improvement that leads to significant cost savings, improved products, and services and better understanding of customer requirements.

Benchmarking also helps to identify and fill key gaps that may exist in the operations of a company like it happened at Millennium Specialty Chemicals in the US where gaps in their automation strategy were filled as a result of learning from those who previously travelled the same path (Maurice, 2003).

Through benchmarking most organisations are able to achieve competitive advantage, improved profitability, new markets, and new products and services. These achievements come about through integration, improved cycle times, improved quality, cost reductions, customer focus, improved image, and reduced wastage (Eaton, 2002).

Benchmarking has been found to be an effective tool for effective and efficient performance and has a useful role to play in bringing about improvements. This is mainly because it assists with identifying examples of good practices from various organisations in various industries, monitoring progress in making improvements against leading edge organisations, and encouraging individual and organisational learning.

In addition, benchmarking delivers wider benefits such as encouraging involvement of staff in making changes happen, helping in setting appropriate performance measures and helps develop a culture of continuous improvement and willingness to look outside one's own organisation (Benchmarking to improve performance, 2003).

Synergy with other improvement schemes is another very beneficial aspect of benchmarking. Bicheno and Gopalan (2000) noted that this technique can be seen not just as a technique on its own but one of a mutually reinforcing family. It is used with other improvement tools such as value management to identify what is technically possible and in force field analysis as a powerful force for change.

In a study carried out in Europe among construction companies, benchmarking was found to be just the first step, especially for organisations which were new to improvement techniques. Managers will understand their strengths and weaknesses relative to their competitors. It is therefore the catalyst that allows the start of effective improvements within a company (Voss, 1997). Benchmarking can spark action and create a learning organization that can lead to superiority and achievement of competitive advantage.

Achievement of these benefits is not automatic. It depends on the organization's understanding of benchmarking and the systematic following of the right methodology of implementing the benchmarking process.

2.9 CHALLENGES FACING THE BENCHMARKING PROCESS

Developing best practice through benchmarking is a critical activity in the business world. Finding partners who are willing to participate in the benchmarking process is not easy. This is because most managers lack understanding of the process and may not get acceptance for the use of benchmarking information. Another difficulty is experienced where competitors are reluctant to share information because they fear losing their competitive advantage. Inappropriate organisational structure and weak management are also barriers to benchmarking process (Cartin, 2000).

Voss (1997) has noted that manager's self opinions seem to be biased towards over-estimating their businesses competitiveness. Those who are over-optimistic about their position relative to others tend to overlook benchmarking. They become complacent and thus delay adoption of improvement programmes. Companies which are realistic however will increase their chances of identifying the areas that need improvement and be able to compete more. He further notes that companies who underestimate their competitiveness may become stuck in a vicious cycle of failing to improve and falling further behind.

Belle (2000) found that, quite often, benchmarking processes end at the analysis stage. This occurs as a result of reasons such as – costs, staff morale and perceived difficulty. Belle also found that small businesses employing less than 10 workers may not be keen on a benchmarking process. Other companies make small profit margins and may often regard research and development as a luxury.

There exist certain myths about benchmarking that hinder most managers from undertaking benchmarking. Most people believe that benchmarking is very expensive and is only for large organisations. Others believe that it is only for manufacturing organisations. Others even say it is a fad (Jarrar and Zairi, 2001). Lack of comprehensive quality programs may also hinder benchmarking process to be adopted.

2.10 THE CONSTRUCTION PROCESS

The construction industry embraces a wide range of loosely integrated organisations that collectively construct, alter, and repair a wide range of different building and civil engineering structures (Seeley, 1994). The industry is unique in that no two projects are identical and also site characteristics vary extensively. Seeley (1984) further explains that the construction industry is really an assembly industry, assembling on site the products of other industries. Construction firms deliver their outputs through a process called the "Construction Process".

The construction process is a transformation process. This is a process that uses resources to change the state or condition of something to produce outputs (Slack et al,1998). Inputs are taken, assembled or used to produce a finished product. In the case of construction, the finished products include buildings, roads, a bridges, newly refurbished buildings etc.

As outlined by Seeley (1994), the construction process follows a certain pattern in the preparation and implementation of a building project with various stages and various members being involved at every stage. Starting from inception when the client appoints consultants and gives them a brief and then to design stage where the brief is translated into layouts and specifications. A contractor is then identified through tendering or negotiations. This is a very crucial stage for contractors, as they have to make sure that they are included in the tender list. This they do by:

- a. Providing complete pre-qualification information as and when required
- b. Keeping in close contact with consultants and even sometimes clients
- c. Carrying out ongoing projects with diligence and on time so as to help build a good name
- d. Keeping contractual claims to a minimum and avoiding getting into litigation as much as possible. No client wants to get involved with a contractor who has cases pending in court.
- e. Marketing through sponsoring activities of professional.

The construction stage is where the client's dream is actually translated into reality by the contractor and it is a very crucial stage for the stakeholders. The Construction work is continually checked for quality or workmanship and time deviations from the set programme. The contractor's capability is put to test here and his performance determines future competitiveness.

2.11 TYPES OF CONTRACTORS

There are various types of contractors depending on the nature of the work carried out, nature of the organisation and the ability of the management. They are classified broadly according to the type of work they undertake and the capacity in terms of resources to handle different sizes of projects (Seeley, 1994).

2.11.1 General Builders

These are the contractors who do much of the maintenance work and construction of buildings. They may be classified further into large, medium and small contractors depending on the number of employees in the organization, capacity in terms of plant and equipment, ability to operate in different regions and capital base (Seeley, 1984).

2.11.2 Specialists Subcontractors

It is difficult for a general contractor to possess the specialised knowledge and experience required to deal effectively with all aspects of modern building schemes. Hence, there is the need for specialist subcontractors who are able to concentrate and perfect various particular aspects of a building and achieve the required standards of performance and efficiency in the particular area. These subcontractors can be broadly classified into two main categories: Constructional firms which specialise in aspects of structural work such as piling and structural steel work and firms who specialise in the mechanical and electrical installations such as air-conditioning, lifts, generators and associated services. (Seeley, 1984). In Kenya, the two mainly recognized are electrical and mechanical. These are also registered by the Ministry of Public works as well as the other Government bodies such as Nairobi City Council.

2.11.3 Civil Engineering Contractors

These are firms which specialise in such work as highways, bridges, treatment plants and dams. In some cases, the general building contractors also carry out civil works especially those that are associated with the buildings they undertake to construct.

2.11.4 Categorization of Contractors

All contractors are required by the laws of Kenya to be registered by the Ministry of Roads and Public Works in various categories depending on the contractor's capacity to handle different sizes of projects and also the type of work one specializes in. The categories range from the highest 'A' through to the lowest 'G' (Ministry of Roads and Public Works Contractors Register, 2000)

2.12 PERFORMANCE OBJECTIVES IN CONSTRUCTION

The central element in Benchmarking is measurement and comparison (Euro and Steve, 1995). Construction projects, like in any other industry, are judged in terms four main performance indicators: time, quality, cost, and safety.

2.12.1 Time

Time is concerned with how long clients have to wait to receive their product (Slack, 1998). In construction, the importance of completion time is twofold; First, Construction products are capital goods required for use by others such as factory facilities, residential facilities or for social amenities provision. Secondly, clients need to pay back the investment outlays and start realizing income from their investment in construction.

Contractors usually make an assessment of the time they require to complete a project and construction program is drawn at the onset. Accurate assessments of the progress are made against the program and necessary actions taken so as to remain on schedule.

Accurate time forecasting and assessing progress against program are some of the activities contractors can benchmark against other leading companies

Performance of a contractor in relation to time is indicated by issues such as start on site predictability, completion period, period of preparation of final accounts, and claims for extension of time.

2.12.2 Cost

In any industry, the attraction to the buyer is being able to buy the product or service at the lowest price (Gilgeous, 1997). Nigel (1997) noted that the lower the cost of production the lower the price of the product. Construction companies compete directly on price; hence cost will be a major operations strategy. Construction costs fall into four main categories; staff costs, facilities, plant and equipment and material costs. A project's overall price is set at the outset but this price gets altered in the cause of a construction period when variation orders are issued by consultants or the client and the management's task is therefore to control resources so that the planned cost is not exceeded. Performance of a construction project in respect to cost is measured in terms of the difference between the final account sum and the original contract sum and the number of variations orders issued by the client and consultants.

It is also the primary concern of every contractor to maximize profits and minimise costs. Seeley (1994) classifies factors that need to be controlled as the tangible physical resources of men, machines, and subcontractors and intangible ones such as progress and productivity, methods of construction and performance of subordinate staff.

2.12.3 Quality

While time and cost of a construction project are a short term consideration, quality of the final product will determine the life time of the product. 'Quality products are only expensive once! Quality is simply defined as conformance to the client's requirements

(Rory, 2001). Quality also means that the output must be fit for its intended purpose (Slack, 1998). In construction, quality means conformance to design specifications which in turn must match the client's brief.

Quality is measured in terms the number of snags at practical completion, number of defects during defects liability period, conformance to specified building standards, level of workmanship, and client's satisfaction.

2.12.4 Health and Safety

Slack et al (1998) note that whatever the job, it must not endanger the well being of the person who does the job, other staff within the operation area, the customers who might be present in the vicinity, or those who use the finished product.

The construction industry employs thousands of workers thus alleviating employment problem in the country. However, there is a darker side to it. A lot of accidents have been occurring despite the efforts of some contractors to prevent them. The risks that accompany construction activities are high but not inescapable. It has been shown that the possibilities of accidents and subsequent injuries can be minimized by recognizing the existence of risk and taking measures to avoid it (International Labour Office, 1981). The International Labour Office has published guidelines on measures which could and should be taken to bring down the number of accidents in the construction industry and to ensure an improved working environment. The task of the managerial staff in a construction firm is to ensure that these guidelines are being followed. Modern clients are indeed demanding safety policies from competing firms as a point for consideration while awarding tenders.

The main performance indicator in respect to health and safety is the total number of reportable accidents in a project. Other indicators include existence of safety policies, trained safety officers, regular training programs for employees and safety regulations on notice boards.

2.13 APPLICATIONS OF BENCHMARKING IN THE CONSTRUCTION INDUSTRY

According to Eaton (2002), the benchmarking process has two main uses: as a method of highlighting qualitative data relating to performance and generate quantitative measures of performance. The qualitative data can be used in the development of strategies for quality improvement within the organisation such as facilities management procedures and Costing methods. On the other hand, quantitative data can be used to promote cost reduction and control improvements.

Construction, because of the diversity of its products and processes has taken long to embrace benchmarking as a tool for improvement. Marosszeky and Karim (1997) identified some potential areas for benchmarking and performance measurement as follows.

Issues	Benefits
Improvements within a project	<ul style="list-style-type: none"> • Reduced rework and reduced waste • Improved quality • Lift client satisfaction • Improved Safety • lifts team morale, manage risks
Comparing Projects and enterprises	<ul style="list-style-type: none"> • Drives process innovation • Improved client's satisfaction • Identify and promote best use of information technology • Reduced tendering costs • Increased tender success rate
Enterprise efficiency	<p>Internal Coordination of Human Resource Management</p> <ul style="list-style-type: none"> • Reduces project completion time and Cost • Team building for better participation and improved

	<p>overall performance</p> <ul style="list-style-type: none"> • Development and utility of skills for competitive advantage <p>Overheads and tender efficiency</p> <ul style="list-style-type: none"> • Reduced overhead costs • improved success rates and reduced tender costs
Upward appraisal	<p>Decisions and approval procedures</p> <ul style="list-style-type: none"> • Improved performance at all levels <p>Information requests</p> <ul style="list-style-type: none"> • Greater degree of constructability <p>Resource Coordination</p> <ul style="list-style-type: none"> • Improved coordination – lower costs • Better performance of contracts • Customer satisfaction at all levels

CHAPTER 3: RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

The objectives of the study are to determine the extent of the use of benchmarking as a tool for continuous improvement, establish whether there has been improved performance and to establish the challenges facing the construction firms in their endeavour to use benchmarking. The survey method was adopted to obtain the information in respect of these objectives with the respondents being project managers or equivalent.

3.2 POPULATION

All contractors are registered by the Ministry of Roads and Public Works as the primary registering body. The total number of contractors registered with the Ministry of works from all over Kenya is currently at about 5000. This forms the universe from which the population will be derived. Due to constraints of time and cost, only general building contractors whose registered office is in Nairobi were used in the study. This population was found to be quite representative in that Nairobi, being the capital city, records the highest construction activity and that most of the work is done by contractors in these categories.

3.3 SAMPLING

The contractor's register is not in any format and hence a list of general building Contractors registered in Nairobi was obtained in categories A, B and C to form the sampling frame. A random sample size of 60 was obtained using stratified sampling method as follows.

POPULATION AND SAMPLE BY CATEGORY OF CONTRACTORS BASED IN NAIROBI

Category of Contractor	Total No. in each	%age proportions	Sample size
A	153	48%	28
B	75	23%	14
C	94	29%	18
Total	<hr/>		<hr/> 60

This sample was considered large enough to provide a general view of the entire population and hence a good basis for valid and reliable conclusions.

3.4 DATA COLLECTION

Primary data was collected by use of a questionnaire (see appendix 2) with both closed and open ended questions addressed to the managerial staff or the equivalent. The questionnaires were sent to the respondents both by 'drop' and 'pick' method and also through guided interviews.

3.5 DATA ANALYSIS

Descriptive analysis was mainly used. However, Statistics such as percentages and proportions were also used to determine the levels of the use of benchmarking and other indicators relating to the research objectives. Other statistics such as bar graphs and pie charts were used to present findings in relation to the research objectives.

CHAPTER 4: DATA PRESENTATION AND RESEARCH FINDINGS

4.1 BACKGROUND INFORMATION AND ORGANIZATION STRUCTURE

4.1.1 Organisational Profile

The various firms in Kenya undertake works of different kinds and some are specialised towards a specific type of work while others undertake a wide spectrum of works.

Table 4.1: Type of work undertaken

Type of work	Frequency	Percent
Structural steel work	3	12.5
Plumbing and drainage	7	29.2
Civil engineering works	4	16.6
Electrical installation	4	16.6
Total	24	100.0

Most general building contractors in Kenya also engage in other specialist works that are associated with the buildings they undertake to construct. They engage in such other works as: plumbing and drainage, electrical installation, structural steel work, civil engineering works, joinery work, maintenance works and works of renovation. This they do as a combination of several of these trades as depicted in the data generated from the field survey (table 1). This indicates that some contractors are well diversified thus providing a good organizational structure for benchmarking.

The establishment of the various firms' dates back to pre-independence days (before 1963) and investment in the same has taken place steadily over time. The average number of year of experience of Kenyan firms is 24 years which is quite a long duration and hence the expectation that having come of age there would thus be major developments evident from within the operations of the various companies.

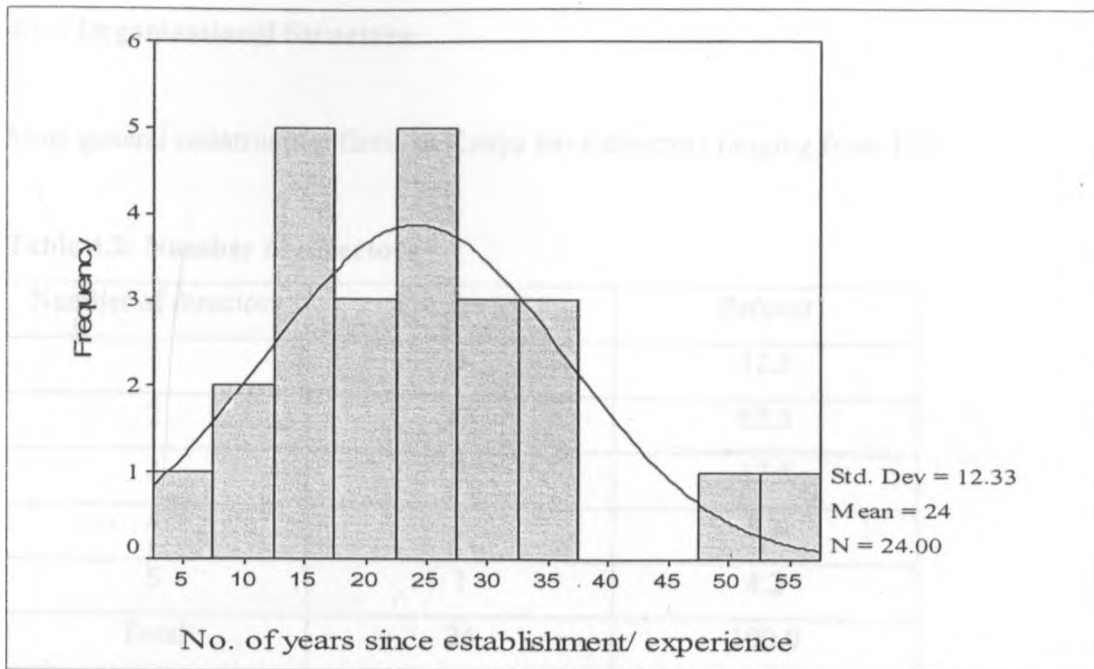


Figure 4.1: Years of experience

In Kenya the prevalent kind of organization amongst construction firms is the private limited liability companies. This is reflected by the 100 per cent response from the sample which well illustrates and can be generalized to reflect the kind of organizations across the construction firms.

4.1.2 Regional or International Relationships

Several of these firms have association with other firms within and outside this country. This is either as a parent, subsidiary or joint venture kind of organization. The existence of such association is important, as it would readily provide benchmarking partners. 28.6 per cent have association with other firms as subsidiaries while 71.4 per cent do not have any existing association. Some of these associated firms are found in such towns such as Nairobi, Dar-es-salam, Tanzania and in countries such as Seychelles. Hence most of these associations are regional

4.1.3 Organizational Structure

Most general construction firms in Kenya have directors ranging from 1-5

Table 4.2: Number of directors

Number of directors	Frequency	Percent
1	3	12.5
2	15	62.5
3	3	12.5
4	2	8.3
5	1	4.2
Total	24	100.0

Most of the firms are basically owned and ran by a close family unit. A great number of firms have only two directors representing lean managerial structures at the top which makes it easier for decisions making.

4.1.4 Experience

Different firms in Kenya have over the last five years had experience of undertaking projects in wide ranging categories of being below 50 million Kenya shillings and well above 500 million Kenya shillings. Most of the general building contractors are registered in category 'A' representing 40% of the population. Others are 32% in category 'B' and 28% in category 'C'.

4.2 GENERAL PERFORMANCE

The performance of construction firms has been gauged through the following aspects: time, cost, quality, health and safety, client and consultants' management, and tender success. These aspects of construction will be looked at in turn below:

4.2.1 Time

The performance of a construction firm with regards to time can be determined by the firm's ability to complete the works in the time provided by the contract as the contract period. The firms' performance in relation to time is as shown in the table below:

Table 4.3: Time performance of projects

Time of completion	Number of projects	Percentage of total	Average no. of projects
Before completion date	67	27.6	3
On contract completion date	56	23	2
Within extended time	106	43.6	4
After the extended period	14	5.8	1

The time performance of projects completed within the last five years is as shown in the table above. According to the table 50.6 per cent of projects are completed within the contract period with some being completed before the contract completion time and some on the contract completion date. The remaining 49.4 per cent are completed after the contract period has expired. However most projects 43.6 per cent are completed within the extension of time provided.

According to the respondents, 70.8 per cent of delays in construction projects are not attributable to the company, while only 25 per cent stated reasons that arise within the company as a result of underestimation and lack of appropriate plant. This implies that most construction firms consider themselves to perform adequately in the time aspect but reasons beyond the firms may cause delays, which in turn leads to an extension of time.

When asked to grade their performance in relation to time, most of the construction firms rate themselves very highly in terms of performance with 50 per cent rating themselves as

good performers while the other 37.5 and 12.5 per cent rate themselves as being very good and excellent respectively.

In relation to comparison for benchmarking, 75 per cent of contractors have not applied any benchmarking techniques so as to improve speed of delivery. For those firms that have compared themselves with others, 8.3 and 16.7 per cent have achieved significant and substantial benefits on improved speed of delivery.

Among the activities that construction firms undertake to improve on completion periods, only 16.6 per cent compare themselves with other firms or with companies in other industries as illustrated in table 4. Most contractors undertake improvements within their own firms and these include: improvement of work productivity/ efficiency, procurement, good management and proper planning, computerising firm operations, personal intervention of directors, subcontracting specialist works, innovation of construction methods, staff motivation and training.

Table 4.4: Activities undertaken to improve on completion periods

Activity undertaken	Frequency	Percent
Comparison with other contractors	2	8.3
Copying ideas from other industries	2	8.3
Involving employees in project planning	11	45.8
Other activities	6	25.0
Combination of the above factors	3	12.6
Total	24	100.0

4.2.1 Cost

Construction firms in Kenya rate their general costs of production as high, moderate or low at 25, 70.8 and 4.2 per cent respectively. The level of production costs can be attributed to the following factors:

Table 4.5: Factors Influencing Cost Of Production

Factors	Frequency	Percent
Sourcing of materials	6	25.0
Labour costs	2	8.3
Plant requirements	2	8.3
Tender competition	7	29.2
Managerial and technical personnel	2	8.3
Combination of the above factors	3	12.5
None	2	8.3
Total	24	100.0

As shown in the table above, the moderate costs of production are influenced mainly by the sourcing of materials and the competition in tendering for projects.

Costs of production within a construction firm also influence the profit margin to be achieved after the completion of a project. A construction firm can realise a profit margin that is either above the expected, equal or lower than the expected margin. For the projects completed within the last five years 17.5 per cent achieved higher than expected profit margins, while 41.5 and 41.0 per cent realized the expected profit margin and lower than expected profit margins respectively.

Contractors have made modest effort to compare themselves with other contractors or with companies in other industries. This is expressed by the fact that only in 37.5 per cent of cases have any contractors compared themselves with others, both locally and internationally. This includes 20.8 per cent who do compare themselves with other local contractors, while 12.5 per cent do so with contractors at international level and 4.2 per cent compare themselves with companies in other industries. However, the predominant 79.2 per cent of contractors have made efforts to reduce costs by learning from previous projects, also known as project benchmarking. Other cost reduction activities have been used by 29.2 per cent of the contractors and these include better planning and management practices, employing experienced personnel, improved workmanship and speed of delivery as well as subcontracting all specialist works.

In an effort to reduce costs, contractors have undertaken cost reduction programs as shown in table 6:

Table 4.6: Cost Reduction Programs

Cost Reduction Programs	Frequency	Percentage	Cumulative Percent
Retrenchment	3	12.5	12.5
Employee training	5	20.8	33.3
Computerization	2	8.3	41.7
Other programs	3	12.5	54.2
None	1	4.2	58.3
Combination of above programs	10	41.7	100.0
Total	24	100.0	

4.2.2 Quality

Construction firms in Kenya rate the quality of their work as follows:

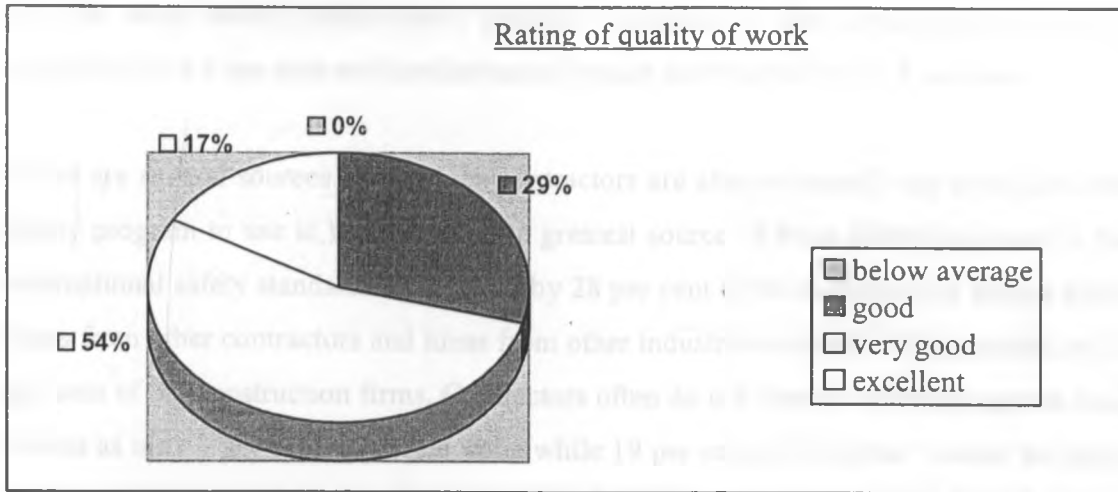


Figure 4.2: Rating of quality of work

All the respondent firms consider the quality of their work to be above average, with 54 per cent rating their work as being very good. However, only 16.7 per cent have won any quality awards. In terms of international certification, only 8.3 per cent are ISO 9001 – 2000 certified. Implementation of quality improvement programs, such as Total Quality Management (TQM) has only been done by 12.5 per cent of the firm. Where implemented, these firms have used quality checks and quality pass stickers.

The study found that there is a strong positive association between those firms which are ISO 9001 – 2000 certified or which have won quality awards and the awareness and application of benchmarking in these firms. There is also a high correlation between firms which are ISO 9001 – 2000 certified and quality awards won.

4.2.4 Health and Safety

According to the study, reportable accidents occur more frequently than fatal accidents with an average of 8.42 reportable accidents per contractor over the last five years as compared to an average of 0.75 fatal accidents over the same period of time. However, undertaking safety improvement programs can reduce the occurrence of accidents.

Construction firms in Kenya have implemented various safety improvement programmes and 37.5 per cent of the construction firms have implemented the training of employees as their main safety improvement program followed by the development of safety programs at 34.4 per cent and conducting of regular safety drills by 28.1 per cent.

There are several sources from which contractors are able to identify the most desirable safety program to use in their firms. The greatest source of these safety programs is the international safety standards being used by 28 per cent of the contractor in Kenya while ideas from other contractors and ideas from other industries are each being applied by 25 per cent of the construction firms. Contractors often do not identify safety programs from clients as only 3 per cent apply the same while 19 per cent of the firms' source for ideas from a combination of all the identified areas. However, 25 per cent of the firms have not undertaken any safety improvement programs.

4.2.5 Clients and Consultants Management

The performance of construction firms can also be indicated by the management of the clients and consultants with whom they work. This can be measured by considering the turnover from projects done together for the same clients or the same team of consultants.

Table 4.7: Turnover Associated With Clients and Consultants

Turnover	2003	2002	2001	Mean annual turnover
Proportion of turnover from repeat clients	36.0	33.4	34.3	34.6
Proportion of turnover from new clients	29.3	33.3	36.0	32.9
Proportion of turnover from repeat consultants	40.0	45.5	43.1	42.9
Proportion of turnover from new consultants	21.0	25.6	23.7	23.4

The respondent construction firms indicate that there is a higher proportion of turnover from repeat clients and the same consultants as compared to new ones. However, the difference between the two is very small. On average, the proportion of turnover from

repeat clients is only 1.74 per cent higher than the turnover from new clients. However, the proportion of turnover from repeat consultants is significantly higher i.e. 19.4 per cent more than the proportion of turnover from new consultants.

4.2.5.1: Factors Influencing Turnover from Repeat Clients and Consultants

Contractors cite good quality and good management systems as the most likely factors. Low claim consciousness is the least likely reason. Failure of turnover from repeat clients and consultants for the contractors' services was influenced by the following factors as cited by the contractors:

- Lack of new projects.
- Disputes between the contractors and the clients.
- High competition amongst contractors, leading to very low and uncompetitive rates.
- Client dissatisfaction with speed of delivery and quality of workmanship.
- Inability to pay or delayed payments by clients.
- Investment disincentives especially for international clients.
- Misinformation from consultants.

4.2.5.2 Application of benchmarking techniques to improve turnover from repeat clients

Construction firms are making efforts to improve on turnover from repeat clients and consultants and. 29.2 per cent of construction firms are making efforts to look out for improvement programs and implementing them however, only 4.2 per cent are consciously getting ideas from other contractors, companies in other industries and other sources to ensure improvement respectively. 12.5 per cent use public relation activities to influence the same. While 29.2 per cent of the contractors use a combination of the various methods in order to improve on turnover. Use of informal benchmarking is quite insignificant with regard to client/consultant management with a mere 4.17 percent of the contractors doing it.

4.2.6 Tendering

Statistics for the year 2004 portrayed the following kind of findings for the total number of tenders handled by the construction firms' by the time of this research undertaking.

Table 4.8: Tender results Statistics for the Years 2003 and 2004

Year	Mean no. Of tenders	Mean No. Of successful tenders based on cost	Mean No. Of negotiated projects	Mean No. Of successful tenders based on time
2003	14.58	2.96	.96	1.83
2004	13.38	2.21	.92	.29

On average, tender success rate increased over the last two years for several firms. However, most firms are noted not to have participated in any meaningful work out of the tenders done and where there had been, the contractors were hesitant and rather unreasonably apprehensive to divulge such details by considering it sensitive, in fear of the information being disclosed to their competitors in the business. This was found to be a major constraint in sharing information for use in the benchmarking process within the construction industry.

4.2.7 Sharing of performance improvement ideas

In the various aspects of such as time, cost, safety and tender success, different firms do compare themselves and borrow ideas from diverse sources both locally and internationally. It's evident from the respondents that there is a great deal of sharing of ideas in the quest of improving their performance especially as far as tendering for various jobs is concerned. Majority of the firms constituting 58.3 per cent compare their works with the projects they have previously undertaken. Contractors also borrow ideas from other contractors, the Internet and publications as well as from companies in other industries. This is illustrated in table 12.

Table 4.9: Sharing of improvement ideas:

Sources of ideas	Frequency	Percent
Local contractors	10	41.7
Other industries	4	16.7
Previous projects	14	58.3
Other sources	2	8.3
Internet and publications	5	20.8
International contractors	6	25.0

Firms in the Kenyan construction industry have witnessed or achieved improvements in different areas over the last five-year, though it is also notable that a lot of changes have not been forthcoming in given areas for different firms.

4.2.7.1 Realized improvements resulting from sharing of ideas

There are notable results attributable to either of the sharing scenarios as witnessed in the following areas.

- i. **Cost reduction** :- The various firms that have achieved this attribute it to reasons that include: constant reviewing of the construction methods and implementing cost reduction ideas. Hiring professional staff who are able to negotiate with suppliers, make improvements on logistics and equipment, and practice effective planning and programming of operations. Moreover, they have also mechanized their works as well as sourcing for quality and cheap materials by sourcing for the best prices in the market
- ii. **Reduced completion periods** :- Similarly, 91.7 per cent of the respondent firms noted to have achieved positive changes in reducing completion periods which was attributed to reasons that included: appropriate staffing and scheduling of concurrent activities, trying to shorten the completion

period, efficiency, improved work scheduling and program co-ordination and mobilising more people.

- iii. **Reduced Number of Defects and Rework Items :-** An overwhelming 95.8 per cent of the companies had observed improvements on the issue and the reasons for such changes included: adherence to specifications, having right supervision to minimise defects, hiring professionals, quality control through testing and close supervision before approval of any project work.
- iv. **Reduced Number of Accidents:-** Likewise, 95.8 per cent of the contractors in Kenya have achieved great strides on this issue and these gains are attributed to reasons such as: safety awareness amongst workers, endeavour to reduce the accidents because they are problematic once they occur and taking caution and wearing protective gear while working. Also by ensuring the presence of safety personnel on every site, keeping proper records, use of work programs in all site activities, safety supervision on site, site precautions, safety instructions and equipment, and enhanced safety procedures. However, those who have witnessed the rate of accidents escalate attribute it to increasing scope of work, though they stand at 4.2 per cent in the construction industry.
- v. **Improved Turnovers:-** 87.5 per cent of the firms indicated to have notable positive changes in turnover which they attributed to: putting considerable effort to sustain them, good relationship with client and consultants, reduced transport costs, timely delivery of materials, improvement on logistics and equipment, improvement on production costs and ensuring accountability. Others include competitive tendering, good public relations and working relationship. Additionally, ensuring enhanced and proper services delivery, sourcing for new jobs, sourcing materials cheaply, effective planning from the beginning of a project and achieving maximum output in shortest time possible.

- vi. **4.2.6.6 Other Improvements:-** It was anonymously agreed across all the contractors that they had indeed experienced positive changes in other areas for reasons that include: always remaining in track with innovations carried out world over through magazines, avoiding claims for delay, more and better coordination between site and head office, receipt of many offers, staff training, minimized labour costs and increased plant holding.

4.3 BENCHMARKING AWARENESS AND APPLICATION

In the context of the Kenyan construction industry, a reasonable proportion of the project management teams within these firms are aware of benchmarking as a tool for continuous improvement. This notwithstanding a larger proportion is not familiar with the technique

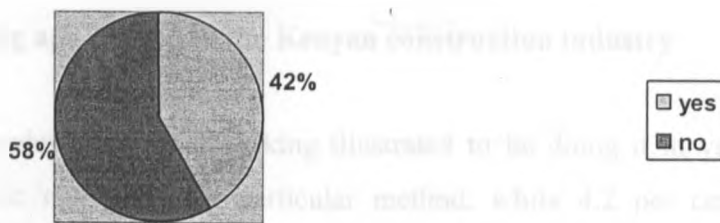


Figure 4.3: Benchmarking awareness in the Kenyan construction industry

The ones who are aware of the benchmarking technique have come to know of it through different ways and sources. 62.5 per cent of Kenyan construction firms are not aware of benchmarking as a best practise technique. 4.2 per cent of the contractors have each learnt of benchmarking through workshops, publications, consultants or a combination of the threesome. Though greater proportions are not aware of the technique, publications have played a big role in enlightening the respondents on the issue as indicated by 16.7

per cent of the total respondents, while the rest of the input has emanated from other diverse sources.

4.3.1 Application of Benchmarking as a technique for continuous improvement

Having been aware of the technique, application of the same has not been absolute due the different circumstances within the various firms. The practical application within the industry stands at 12.5 per cent across the entire sector.



Figure 4.4: Benchmarking application in the Kenyan construction industry

The proportion that has undertaken benchmarking illustrated to be doing it in various methods. 87.5 per cent do not have any particular method, while 4.2 per cent do comparisons with previous projects and 8.3 per cent use a combination of comparison with competitors, focusing on policies and previous projects.

Since the inception of benchmarking in the various firms different programs have been undertaken and as a result various identifiable changes have been observed.

Table 4.10: Programs Undertaken in response to the Benchmarking Process

Programs	Frequency	Percent
Structural changes	1	4.2
Business process re-engineering	2	8.3
Employee empowerment	1	4.2
Employee empowerment and backward integration	1	4.2
None	19	79.2
Total	24	100.0

4.3.2 Benefits accruing from application of benchmarking

Consequently, as a result of implementation of the benchmarking technique, various benefits have accrued to those firms that have applied the same in their firms. This is as far as quality, cost, speed of delivery, accidents, clients' satisfaction, reputation and image of the company, wastage on site, client retention and other issues are concerned.

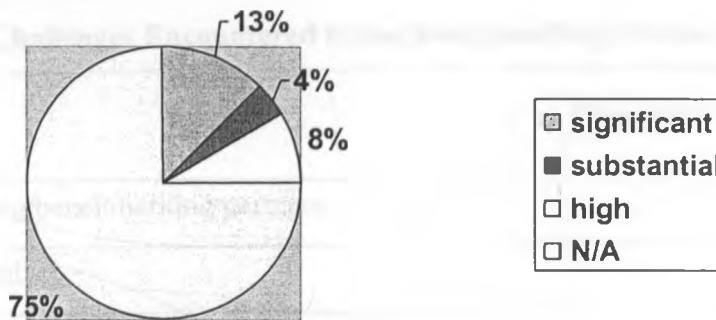


Figure 4.5 : Extent of improved quality

Table 4.11: Benefits accruing from a benchmarking process

Benefits	Not significant	Significant	Substantial	High
Cost reduction	83.3	8.3	4.2	4.2
Improved Speed of delivery	75	8.3	16.7	
Improved reputation	79.2		12.5	8.3
Reduced waste	75	4.2	16.7	4.2
Client retention	75	8.3	12.5	4.2

4.4 CHALLENGES FACING FIRMS IN THE IMPLEMENTATION OF BENCHMARKING PROCESS

The firms undertaking benchmarking are faced with a myriad of challenges in the endeavour to fulfil the requirements of the technique. These challenges emanate from within and without the peripheries of the concerned firm. Some of these are within the confines of the firms influence whilst others are of such nature that the affected firms can do little to influence. These challenges then hinder the smooth operation of the technique.

This is then manifested in the slow pace of the technique-taking root within the Kenyan construction industry.

Table 4.12: Challenges Encountered In the Benchmarking Process

Challenges	Frequency	Percent	Cumulative Percent
Lack of willing benchmarking partners	3	12.5	12.5
Lack of capital	1	4.2	16.7
Competitors reluctance to share information	1	4.2	20.9
Poor understanding and reluctance by management	3	12.5	33.4
Poor staff morale	1	4.2	37.6
Not applicable	15	62.4	100.0
Total	24	100.0	

4.5 OTHER IMPROVEMENT PROGRAMS

The firms that have not heard of benchmarking indicate to be undertaking alternative activities to ensure continuous performance improvement in their organization. Though, it's remarkable that large proportions are not making any conscious effort to continuously improve their performance. This is illustrated by the 62.4 per cent of the respondents to whom alternative activities to benchmarking were not of application in their firms. This is a trend that is of concern for an industrial sector that is expected to position itself competitively in the very dynamic international market place.

The contractors identified other alternative programs that they are undertaking to ensure continuous performance improvement in their organizations as follows:

- ◆ Client satisfaction through improved speed of delivery and quality workmanship.
- ◆ Employing adequate supervisors and implementing strict supervising standards.
- ◆ Staying informed on latest materials and trends, research on new products, computerization and project management.
- ◆ Strict scheduling, skilled personnel and increased supervision and use of plant.
- ◆ Following the traditional system of management and reducing the loss of time.
- ◆ Training personnel in team building, adhering to revenue remittance and accountability.
- ◆ Continuous phasing out of outdated practices, computerization and conducting refresher programs.
- ◆ Training and work performance appraisal, motivation, reduced wastage and maintaining a reliable data bank.
- ◆ Upholding quality standards and sourcing for cheap suppliers.
- ◆ Keeping the firm updated on market dynamics, more investments and close follow up on projects.
- ◆ Introduction of quality control procedures, standardization of quality control documentation, focusing on achieving QA accreditation and eventually applying TQM.

Some of these programs actually relate to certain aspects of benchmarking as they are borrowed from manufacturing sector. Such programs as computerization, refresher courses, and phasing out outdated programs inter alia require looking out of the industry, identifying what other companies are doing and then adopting those practices appropriately. This is the core of benchmarking but at an informal level.

Its evident that for those firms that have fully embraced the benchmarking technique, the improvements in the various aspects of their project management are noted as substantial, high or significant. It's notable that apart from the given benefits accruing to the companies that have embraced the benchmarking technique; the respondent companies could identify no other benefits, as an absolute 100 per cent of them did not indicate any such additional benefit.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 SUMMARY

The purpose of the study was to assess the level of awareness and implementation of benchmarking as a tool for continuous performance improvement in the Kenyan construction firms. The objectives being to find out the extent to which Kenyan construction companies are applying benchmarking. Secondly, to establish whether there has been improved performance in those companies that are using benchmarking. Thirdly, to document the challenges facing the Kenyan construction firms in their endeavour to embrace benchmarking. The sample consisted of general building contractors registered in categories A, B and C. Data was obtained by administering questionnaires to the contractors by drop and pick method, e-mailing and faxing the project managers or the relevant personnel in the construction firms who were in a position to respond adequately to the information sought.

5.2 EXTENT TO WHICH KENYAN CONSTRUCTION COMPANIES USE BENCHMARKING

The study has established that the pre-dominant type of organization is the private limited liability companies which are owned and ran by close family units. The firms are mostly applying lean management system by maintaining only a few qualified personnel at any given time to run the day-to-day activities of the firm. Most general building contractors are well diversified into other areas of speciality and have experience averaging over 20years. By the virtue of their long standing the older firms would be expected to be in the forefront in implementing such improvement programs as to totally embrace the benchmarking technique. Contrary to this expectation the field survey reveals otherwise and depicts both older and much younger firms to be still struggling to take in new concepts available in the market place.

Analysis shows a direct relationship of high magnitude between experience of the firm as from the time of establishment and its awareness of the benchmarking technique. But for

application of the same the analysis indicates there being a direct relationship but the association between the two variables is weak in magnitude. This is explained by the fact that the firms that have implemented this technique had mostly experience spanning over twenty six years but also others with an experience of fourteen years had done likewise. Therefore, this shows that the experience or the age of a firm does not necessarily influence its implementation of best practices such as the benchmarking technique.

Several firms have associations with other firms outside the country, which is important as it would readily provide benchmarking partners. However, analysis between the existence of such an association shows a weak and inverse relationship between the variables, meaning that such associations have not influenced awareness and application of benchmarking in the Kenyan construction industry.

Most firms are owned by close family members thus presenting a weak management structure that does not readily embrace improvement programs.

The firms in the Kenyan industry rate their performance highly as far as quality, time, cost, tendering and gains from turnover of clients and consultants are concerned. This indicates that many of them may not be motivated enough to improve their performance because they already satisfied. However, majority of the firms are making efforts towards improving their performance by both internal and external comparison but quite informally across the entire industry.

The study found that there is a positive association between those firms that are ISO 9001:2000 certified and the application of benchmarking. The findings also show a high correlation between firms which have won quality awards and benchmarking application. This indicates that the existence of comprehensive quality programs promotes the adoption of best practices techniques such as benchmarking.

Several construction firms have realized improvements in the various aspects of performance due to various reasons but none of the reasons given relates to any form of benchmarking.

The extent of awareness of benchmarking is fair in the industry as it stands at 42 percent, though the bulk of 58 per cent is still in the dark as far as this is concerned. On the contrary the extent of application is very minimal as it stands at 13 per cent and the rest of 87 per cent have not taken any decisive action towards aiming at implementing the same. There are a lot of misgivings towards sharing of information amongst contractors due to high competition for business, hence operating as tightly closed units. This notwithstanding, the firms are taking a lot of conscious effort towards improving their performance in various aspects as far as quality, time, cost, tendering and gains from turnover of clients and consultants are concerned. Notably, the main comparison taking place is from within the companies by learning from their past projects, formally referred to as project benchmarking.

5.3 IMPROVEMENTS REALISED UPON APPLICATION OF BENCHMARKING.

The study indicates that firms that have implemented benchmarking have realized benefits quite significantly in the various aspects of performance. The main benefits being; reduced costs of production, improved speed of delivery, improved company image, reduced number of accidents, reduced waste and improved client retention. All these lead to improved competitiveness and ensure continued business growth.

5.4 CHALLENGES ENCOUNTERED BY THE KENYAN CONSTRUCTION FIRMS IN THEIR ENDEAVOUR TO UNDERTAKE BENCHMARKING.

The firms undertaking benchmarking are faced with a myriad of challenges in the endeavour to fulfil the requirements of the technique. These challenges emanate from within and without the peripheries of the firm. Some of these challenges can be handled

by the firm while others are such that the firms can do very little to influence them. These challenges include:

- Poor management structures;- The study indicates that most construction firms are headed by family members who are not very keen on external programs and are sceptical about involving other managerial staff in the running of their business. Also due to their low level of education, these family heads have poor understanding of the such business paradigms.
- Competition:- There is stiff competition among the firms and this has created fear of sharing any information which is the core of benchmarking. There is lack of willing benchmarking partners and a reluctance to share information. Competition has also lead to reduced profit margins and firms are not keen to reserve any capital for research and development programs.
- High level of optimism:- Most of the firms' directors rate themselves highly in terms of performance in the various aspects and have not seen the need to look out for and implement improvement programs such as benchmarking.
- Lack of awareness of the improvement programs. Several firms operate in fairly unexposed way without being in any associations or in the Internet. This explains why they are not even aware of the benchmarking technique.

5.5 RECOMMENDATIONS

The researcher believes that the following recommendations if implemented would positively influence the Kenyan construction industry and enhance its international standing and competitiveness.

- i. The study has established that there are benefits accruing from application of benchmarking as a tool for performance improvement. Hence contractors through a legally recognised association should create a pool of their earned knowledge and experiences together from which members can subscribe and benefit from it from time to time.
- ii. Those companies that have embraced benchmarking should come out and encourage other contractors through the association of contractors, organized

workshop visits and publications so as to create a common competing ground while still maintaining a competitive edge.

- iii. In this era of liberalisation and globalization, Kenyan contractors should seek to raise their performance levels and competitiveness by learning from their counterparts in the developed countries. Benchmarking is one of the techniques that can help achieve this.
- iv. The contractors' who are way far from embracing such techniques like benchmarking should actively apply other techniques to ensure continuous improvement in their firms. This prepares the ground on which other techniques can build and improve on.
- v. The government in appreciating the construction industry, as a major employer and contributor to the Gross Domestic Product should put in place intervention measures that encourage application of best practices in the sector and laws to enforce the same.
- vi. Construction firms should move away from the family management structure to more formal structures that will incorporate professionals who will be able to understand and implement various improvement programs.
- vii. An association which is legally recognised should set performance indicators to be employed in assessing the performance of construction firms in their various undertakings for example time, cost, quality e.t.c.

5.6 LIMITATIONS

The Limitations encountered during the research undertaking included time that was limited for exhaustive data collection. The researcher was treated with suspicion due to the respondents considering the disclosure of what they considered as their business secrets to be sensitive leading to concealment of detailed information and general apprehension of the respondents. The firms are greatly disjointed such that there is little control on their operations, lack of a centralised source of information and their physical location keep shifting depending on the location of the current project they may be undertaking. The firms have few or no in-house professionals and the few are usually on

site hence their unavailability to fill in the questionnaires. These had several implications such that the time used to collect data and make observations was insufficient added to the hostility and suspicion led to withholding of information as well as apprehension on the side of respondents influenced the number of questionnaires issued as well as the number of questionnaires successfully completed, while others could not be comprehensively filled due to lack of professionals to assist in the exercise. This resorted to use of the reasonable number of questionnaires that were returned in time as the response rate was generally low.

5.7 AREAS OF FUTURE STUDY

- i. The main challenges facing construction companies can be attributed basically to lack of awareness on the improvement programs that are being developed. A study in the possible methods of enlightening contractors on the need for taking up on new best practices being developed by the manufacturing sector that may be applicable to construction business would therefore be very useful.
- ii. Construction business deals with one-off and unique projects and more so Kenya is a developing country. The current benchmarking techniques available have been developed by companies operating in developed countries, hence an investigation on benchmarking methodology that could be applicable to the developing countries like Kenya would be of great use.

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APPENDIX I

Lilian W. Gitonga
P.O Box 1992 – 00100
NAIROBI

Dear Respondent,

RE: MBA RESEARCH PROJECT

I am a student in the faculty of Commerce, University of Nairobi, pursuing a Masters in Business Administration (MBA) degree programme. I am undertaking a management research project entitled “Improvements through Benchmarking: A Survey of the Kenyan Construction Firms”

You have been selected as one of the respondents. I therefore request you to fill the questionnaire to the best of your knowledge. The information given is purely for academic purposes and will therefore be treated with strict confidence in no instance will your name be mentioned in the report.

Thank you for your valuable cooperation.

Yours faithfully,

L.W Gitonga
MBA STUDENT

APPENDIX II

QUESTIONNAIRE

Please provide the following information by either filling in the spaces provided or ticking against the alternatives given.

All your responses will be treated with strict confidence.

Organization Profile

1. Type of work undertaken
 - a) General Building ()
 - b) Plumbing and drainage ()
 - c) Electrical Installation ()
 - d) Structural steel work ()
 - e) Others, State
 -

2. Year established

3. Type of Organization
 1. Partnership ()
 2. Public Limited Liability Company ()
 3. Private Limited Liability Company ()

4. Is your company associated with any other company: Yes / No

5. If yes, Please state:
 - a) Name of associated company
 - b) Town and country of registration
 - c) Nature of association:
 - i. Parent ()
 - ii. Subsidiary ()
 - iii. Joint Venture ()
 - iv. Others ()

Organizational Structure

6. Number of Directors
7. Number of permanent employees
 - a) Technical
 - b) Managerial
 - c) Administrative

Experience

8. Please state the number of projects successfully completed in the last five years in the cost categories given below
 - a) Below Kshs 50 million
 - b) 50 – 100 million
 - c) Kshs 100 – 500 million
 - d) Over Kshs. 500 million

PERFORMANCE
TIME

9. Please state the number of projects completed over the last five years within the times stated below;-
- a) Before the contract completion date
 - b) One the contract completion date
 - c) Within the extension of time provided
 - d) After the extended contract period
10. Please state reason fro delay in projects that are attributable to the company
- a) Under estimation of the construction period
 - b) Poor coordination within the company
 - c) Lack of appropriate plant and equipment
 - d) Others
 - e)
11. How do you rate your performance in relation to time
- Good () Very good () Excellent ()
12. Please state any activities being undertaken to improve on completion periods
- a) Comparison with other contractors ()
 - b) Finding out how other companies in other industries do it and copying those ideas ()
 - c) Employee involvement in project planning ()
 - d) Others, please state

COST

13. How do you rate your general costs of production
- High () Moderate () Low ()
14. What do you attribute you response to 14 above to?
- a)
 - b)
 - c)
 - d)
15. Please state number of projects that have been completed within your estimated costs or profit margins expected over the last give years
- a) Higher than expected
 - b) Equal to expected
 - c) Lower than expected
16. Have you made any efforts to reduce costs by:
- a) Comparing your operations with other contractors at the same level ()
 - b) comparing yourselves with international contractors ()
 - c) Borrowing ideas from companies in other industries ()
 - d) Leaning from previous projects ()
 - e) Others

17. Please state any cost reduction programs undertaken in the last five years.
- a) Retrenchment ()
 - b) Employee training ()
 - c) Computerization ()
 - d) Others, please state
18. How do you rate the quality of work:
 Below average () Good () Excellent ()
19. Has your company ever won any quality awards? Yes / No
20. Is your company ISO900a – 2000 certified? Yes / No
21. Has your company implemented any quality improvement programs such as total Quality Management (TQM) Yes / No
22. If yes, which ones
- a)
 - b)
 - c)

HEALTH AND SAFETY

23. Kindly give the following information regarding health and safety on site:

Year	2004	2003	2002	2001	2000
Number of reportable accidents to employees					
Number of fatal accidents					

24. Has your company undertaken any safety improvement programs? Yes / No

25. If yes, which ones and how did the company come to know of the program

Program	How Identified				Year
	Ideas from other Contractors	Ideas from Clients	Ideas from other industries	Ideas from the International safety standards	
a) Development of safety policies					
b) Conducting regular safety drills					
c) Training of employees					
d) Others					

CLIENT / CONSULTANTS MANAGEMENT

26. Please state:

	2003	2002	2001
Proportion of Turnover associated with repeat clients			
Proportion of Turnover associated with new clients			
Proportion of Turnover associated with same consultants			
Proportion of Turnover associated with new consultants			

27. If there is work associated with repeat clients and consultants, what are the likely reasons why they come back?

Reasons	Unlikely	Likely	Most likely	Definitely
Good Quality				
Good Customer service				
Speed of delivery				
Low claim consciousness				
Good Management systems				
Others.....				

28. For those clients and consultants who do not come back, what are the likely reasons why do not come back?

- a)
- b)
- c)

29. What is the company doing to improve on the turnover from repeat clients and consultants?

- a) Finding out what other contractors are doing and getting ideas ()
- b) Finding out what other organizations in other industries do and copying ()
- c) Looking out for performance improvement programs and implementing them ()
- d) Involvement in public relations activities ()
- e) Nothing ()
- f) Others

TENDERING

30. Please state:

Year	Total No. of Tenders	No. of successful tenders based on cost	No. of successful tenders based on time	No. of negotiated projects
2004				
2003				

- 31 What measures is the company taking to improve on tender success rate?
- a) Finding out what other contractors are doing and getting ideas ()
 - b) Looking out for performance improvement programs and implementing them ()
 - c) Improving on accountability ()
 - d) Nothing ()
 - e) Others

- 32 In all the above mentioned aspects i.e. Time, Cost, Quality, Safety, Tender success, do you compare yourselves with or borrow ideas from;
- a) Other local Contractors Yes / No
 - b) Other international contractors Yes / No
 - c) Companies in other industries Yes / No
 - d) Other projects done previously Yes / No
 - e) Publications and the Internet Yes / No
 - f) Others, please state

33 Have you achieved any improvements in the following areas over the last five years? Please give reason for improvement.

Improvement	Yes/No	Reasons
Cost reduction		
Reduced Completion periods		
Reduced number of defects and reduced rework items		
Reduced number of accidents		
Improved turnovers		
Other improvements		

BENCHMARKING

34 Have you heard of Benchmarking as a tool for continuous improvement? Yes / No

35 If yes, how

- a) Through Workshops ()
- b) Consultants ()
- c) Publications ()
- d) Internet ()
- e) Parent Company ()
- f) Others, please state

36. Has your company applied this technique? Yes / No

37. If no, please give reasons why you have not applied?

- a.
-

38. If yes, do you do the following?

- a) Compare yourselves with fellow competitors Yes / No
- b) Compare some departments with your own other departments or branches Yes / No
- c) Compare your company with other companies in other industries Yes / No
- d) Focus on particular processes at a time Yes / No
- e) Focus on policies, strategies and the company's vision Yes / No
- f) Compare previously done projects to improve on upcoming projects
- g) Other, Please state
-

RESPONSES TO BENCHMARKING

39. Having commenced the benchmarking process, please state the various changes / programs undertaken.

- a) Structural changes, e.g. Retrenchment Yes / No
- b) Business Process reengineering Yes / No
- c) Employee empowerment Yes / No
- d) Backward Integration. Design and Build Yes / No
contracting
- e) Others, please state Yes / No
- f) None

40. Please indicate to what extent the following benefits have been achieved.

	Not significant	Significant	Substantial	High
Improved quality, i.e reduced number of defects				
Cost reduction				
Improved speed of delivery				
Reduced number of accidents				
Improved client satisfaction				
Improved reputation and image				
Reduced wastage on site				
Improved client retention				
Others, please state				

41. Please indicate the challenges that you encountered in the Benchmarking process

1. Lack of willing benchmarking partners
2. Poor understanding by the other managerial staff
3. Lack of acceptance by the Management
4. Competitors reluctant to share information
5. Lack of knowledgeable staff to undertake.
6. Lack of capital
7. Poor Staff Morale
8. Others, Please state

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.....
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42 If you have not heard of benchmarking, what are you doing to ensure continuous performance improvement in your organization?

1.
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2.
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3.
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4.
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5.
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