EFFECTS OF PREVENTIVE MAINTENANCE OF ASSETS ON QUALITY OF PRODUCTION AND SERVICE DELIVERY IN SELECTED HOTELS IN KENYA

BY

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DECLARATION

Declaration by the Candidate

This thesis is my original work and has not been presented for a degree in any other university. No part of this proposal may be reproduced without the prior written permission of the author and/or The University of Eldoret.

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To my dear wife Julie Makomere and children Reuben, Rose and Robert for their endurance, in seeing me through the tiring toil incessantly in pursuit of education.

ABSTRACT

The hospitality industry in Kenya is regulated by the central government and all hotels are categorized into five classifications (1-Star to 5-Star). The classification and ranking of hotels reflect the operational standards as stipulated in the statutes and regulations, and it also mirror the level of asset management and maintenance systems in the industry. The purpose of this study was to establish the relationship between maintenance and quality production and service delivery in selected hotels in Kenya. Porter's Five-Force model was used to guide the study. The specific objectives of this study were: to determine the maintenance systems practiced in the hotel industry; to evaluate the capacity and capability of the hotel to implement preventive maintenance; to analyze the effect of preventive maintenance on the quality of production and services; to determine the relationship between preventive maintenance and quality of production and service delivery in the hotels; and to examine the challenges affecting the implementation of preventive maintenance programme in the hotel establishments. This study adopted a descriptive survey research design. The target population was five town hotels in the range of 3-Star to 5-Star in Nairobi, Kisumu, Nakuru and Eldoret. Purposive sampling was used to select the study area, while stratified and simple random sampling were used to select the respondents. The study sample was 100 respondents consisting of middle management, supervisors and personnel in the production and service delivery sections. Questionnaires were the main data collection instruments and data was analyzed using statistical package for social sciences (SPSS), Spearman rank correlation and χ^2 test analysis. The study concluded that there was a relationship between preventive maintenance and quality production and quality service (X^2 = (30.00), (7) $p<0.05$), and further that preventive maintenance did not affect service delivery(X^2 = (13.33), (7) $p>0.05$), and that continuous staff training and development, customer loyalty, and repeat guest visits were also influenced by preventive maintenance in the hotel industry. The study recommends that for sustainable quality production and services in Kenyan hotels, there is need for adoption of preventive maintenance and asset management programmes.

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LIST OF ABBREVIATIONS AND ACRONYMS

CMMS	Computerized Maintenance Management System
HACCP	Hazard Analysis Critical Control Points
JIT	Just-in-Time
OEE	Overall Equipment Effectiveness
PM	Preventive Maintenance
SaaS	Software as a Service
TQM	Total Quality Management

DEFINITIONS OF OPERATIONAL TERMS

Tourism: refers to a social, cultural and economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes.

Maintenance: refers to all those activities that relate to keeping facilities and equipment in good working order and making necessary repairs when breakdowns occur.

Planned Maintenance: refers to a maintenance system based on scheduled service carried out to ensure equipment is in good operating order and therefore avoid breakdown.

Condition Based Maintenance: refers to a maintenance system based on data collected on the status of equipment through measurement of its physical condition such as temperature, vibrations, noise and corrosion.

Work Order: refers to a key document used in maintenance operations to request for work to be done and is serially numbered.

Competitive advantage: refers to an edge or position of superiority an organization has or acquires over its competitors in their industry.

Corporate Strategy: is the organization's decisions and actions to ensure that it fits in the environment for its growth.

Strategy: refers to a set of decisions and actins that managers take to attain superior company performance relative to rivals.

Business-Level Strategy: refers to decisions and actions a firm takes to achieve competitive advantage or superiority in a particular business; specifies the advantages the firm will pursue in that business and how available resources will be deployed to acquire it; also referred to as business-level strategy, competitive strategy.

Corporate-Level Strategy: refers to decisions and actions a firm takes to gain advantage by expanding the product line; value chain activities; or the range of business in which it will compete.

Functional-Level Strategy: refers to decisions and actions a firm takes to achieve strengths in functional activities, manufacturing; marketing; research and development; human resource management, and finance.

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CHAPTER ONE

INTRODUCTION

1.1 Overview

The chapter focuses on the background of the study. The chapter also highlights the statement of the problem of the study, the purpose of the research, the significance of the study, the research objectives, the scope of delimitations, the assumptions of the study, and the conceptual framework.

1.2 Background to the Study

Service industry includes education, retailing, tourism and hospitality, medical and hospitals, as well as communications and construction. As at early 2007, it was estimated that services already accounted for 72% of the gross domestic product (GDP) of developed economies, and 52% of the GDP of developing economies (Hill, 2007). The hospitality industry was expected to grow by 6.2% and the tourism industry by 4.1% in 2007 (*Economist* Intelligence Unit, 2005). The hospitality industry has grown tremendously since 2001 and has been driven by both leisure and business demand (Kloppers, 2005). Henley *et. al.*, (2004) highlighted that maintenance is significant in hotels because a room reflected the price paid for it and further that, when room rates are raised, it should be based on quality because guests must be able to perceive the quality increase.

The role of service is more important than ever, and is expected to become even more critical with time (Choi and Chu, 2001). Irrespective of the efforts of service organizations to introduce competitive strategies to attract customers and efficiently

manage the supply of services they offer, customers do not always purchase from the same organization – nor do they always remain loyal. Successful customer retention allows the hotel to build relationships with its customers (Hoffman *et al*., 2005). Hotels that have the ability to attract, satisfy and thus retain customers, are more likely to survive than hotels that do not do so (Petzer *et al*., 2008). Chan *et. al*., (2001) observed that in the development of maintenance strategies and programmes, health and safety have become fundamental requirements for business success because they depend on good maintenance practices to avoid hazards in the buildings or workplace.

Maintenance is a combination of all technical and administration activities aimed at retaining an item in, or restores it, to a state in which it can perform its intended function (Inman, 2009). Lind and Muyingo (2009) gave the meaning of maintenance as 'restoring to or retain to a state in which an item can perform an initially specified functions and all actions aimed towards this are maintenance activities'. In reference to the British Standard Institute 1993, Chan *et al.*, (2001) explains maintenance as 'the effort in connection with different technical and administrative action to keep a physical asset in, or restore it to a condition where it can perform a required function'. The effect of maintenance on quality of production and service delivery has awakened the attention to maintenance as an essence to improvement in productivity and customer satisfaction. Inman (2009) took note of this development trend and asserted that maintenance is rapidly evolving into a major contributor to the performance and profitability of manufacturing systems.

Quality is one of the most important parameters in the hospitality services and

production. The key performance factors that determine the level of quality in the hotels are: the level of performance and condition of equipment; quantity and modernity of equipment; selection, conduct and professionalism in staff; functional and organizational processes of problem solving; external environment and conditions such as culture, economic development, distribution of wealth and competition; reliability processes, confidence and speed of service; and individual personality and approach to clients (Parasuraman *et. al.*, 1988). Performing preventive maintenance is almost always the best long-term strategy to maintain equipment (Cozens *et al.*, 2004). A result-oriented hotel must then successfully tackle these challenges in the most effective manner possible. Hotels which make use of preventive maintenance programmes have a definite competitive edge because of reduced capital expenditure, lower labour costs, and increased energy efficiencies.

Preventive maintenance, therefore, is a logical choice only if the following two conditions are met: i) the component in question has an increasing failure rate, which with time, implies wear and tear; and ii) the overall cost of the preventive maintenance action must be less than the overall cost of corrective action: noting that overall cost includes downtime costs, loss of production costs, loss of goodwill, lawsuits over aspects of failures and liabilities. The plan can be based on equipment running hours, date based or for vehicle distance travelled, and a good example of preventive maintenance is car maintenance whereby after so many kilometers, oil should be changed and parts renewed or replaced (Stipanuk, 2002). PM can also be based on a manufacturer's recommendations for equipment servicing (for example manuals).

In general, a preventive maintenance schedule can be customized to conform to the type and size of the hotel and frequency of equipment used. The inspection and monitoring of engineering systems such as boilers, coolers, and air extractors can provide a forecast on when and where system failure would arise, or replacement made, before a breakdown occurs. There are many misconceptions about the value of preventive maintenance: one of which is that preventive maintenance is costly in that it would cost more for regularly scheduled pauses or downtime and maintenance, than it would normally cost to operate equipment until repair is necessary. As this may be true for some facilities, one should not only compare the cost, but the long-term benefits and savings arising from preventive maintenance which include improved system reliability, decreased cost of replacement, decreased system downtime, and better spares inventory management. The training and development of the human resource to match the skills and attitude required for implementing a preventive maintenance is another significant factor for its success.

The performance and competiveness of manufacturing companies is dependent on the reliability, availability and productivity of their production lines; to ensure the plant achieves the desired performance, maintenance managers need a good track of performance on maintenance process and maintenance results (Muchiri *et. al*, 2010). In an effort to compete with other firms in the global marketplace, manufacturing firms have been investing a lot to improve their manufacturing performance in terms of cost, quality, and flexibility (Karsak and Tolga, 2001). The importance of maintenance has now been recognized particularly its role in enhancing product quality, safety and plant cost-effectiveness levels. Maintenance costs contribute an

important part of operating budget of manufacturing firms (Al-Najjar and Alsyuof, 2003). A maintenance system is designed based on various sub-systems and interpersonal relationships, culture, structure and management style, and dynamic internal structures (Karlof and Lovingsson, 2005) for control of the uncertainties in the competitive environment whose result is more than the sub-systems or items (Aghaee and Fazli, 2002). According to Levitt (2003) the goal of maintenance is to keep the physical assets in an existing state.

While maintenance management at small and medium size hotels can be operated effectively using paper records, larger hotels are turning to computerized maintenance management systems (CMMS). CMMS is a software application designed to provide logical, easy to use tools to manage all maintenance functions – it supports and enhances the responsiveness and effectiveness of the maintenance department. Preventive maintenance includes routine inspection; taking reading from recording devices; monitoring of lubrication and adjustments; minor repairs and parts replacement, and work orders (similar to job cards used in small enterprises) initiation for more extensive problems (Stipanuk, 2002). Preventive maintenance as a process keeps machine and equipment under acceptable standards while controlling and preventing unexpected malfunctions and potential pauses (downtime) as much as possible, so that production activity could go on regularly according to plan.

In Kenya, the hospitality and tourism industry was the best performing sector of the economy contributing the highest foreign exchange to the exchequer in the 1970s to 1980s but today, it has been reneged to second place after agriculture. According to Kenya Vision 2030 strategy, tourism accounts for close to 10 per cent of Kenya's

GDP and 9 per cent of total formal employment. Between 2004 and 2006, tourism was one of the fastest-growing sectors when the number of guests grew by 22 per cent each year. While tourism remained a leading earner of foreign exchange for the country bringing in US$800 million in 2006 and the number of international visitors increased to a record 1.6 million, other top tourist destinations like South Africa and Egypt attracted four to five times more tourists than Kenya (8.2 million in Egypt and 7.5 million in South Africa).

1.3 Statement of the Problem

Preventive maintenance in the hotel industry enhances productivity and quality services delivery resulting in multiple benefits to the establishments. It enables the hotels sustain its standards by ensuring fittings, fixtures and machinery are in optimum operating conditions, for example the heat, ventilation and air conditioners (HVAC), ovens, boilers, banquette and conference facilities, rooms car parks, and swimming pool.

The consequence of poor implementation of preventive maintenance or its absence altogether, is deterioration of service delivery and unsustainable production coupled with many defects and deficiencies. This scenario arises out of the lack of understanding of the potential importance of preventive maintenance in the hotel industry.

Thus, there is need to carry out this study to impact the understanding of he relationship between preventive maintenance of assets, and the production and service delivery standards in the hotels.

1.4 Objectives of the Study

1.4.1 Main Objective

The main objective of the study was to show the effect of preventive maintenance on quality of production and service delivery in the hotel industry in Kenya.

1.4.2 Specific Objectives

The specific objectives were:

i. To determine whether preventive maintenance is practiced in the hotel industry.
ii. To evaluate the capacity and capability of the hotels in implementing preventive maintenance programmes.
iii. To analyze the effects of preventive maintenance programmes on the quality of production and services offered.
iv. To determine the relationship between preventive maintenance and quality of production and service delivery in the hotels.
v. To examine the challenges affecting the implementation of preventive maintenance programmes in the hotel establishment.

1.5 Research Questions

The study was aimed at answering the following questions:

a. Is preventive maintenance practiced in the hotels?
b. What is the capacity and capability of the hotels in implementing preventive maintenance?
c. What are the effects of preventive maintenance programmes on the quality of production and services offered?

d. What is the relationship between preventive maintenance and quality of production and service delivery in the hotels?
e. What are the challenges affecting the implementation of preventive maintenance programmes in the hotels?

1.6 Significance of the Study

The linking of corporate goals to maintenance calls for the consideration of the external and internal corporate environments and the development of a basic maintenance policy in congruent with the environments. Identification of key points for maintenance improvements results in defining the importance and values of preventive maintenance. These values, referred to as overall equipment effectiveness (OEE), serve as a measurement tool to identify the real areas of opportunity in an operation, which are commonly referred to as the "six big losses." Ricetti (2011) described these six big losses as: a) breakdowns of equipment and equipment failure, b) set up and adjustments of product changes and minor adjustments necessary to get the equipment operating properly after line change, c) idling and minor stoppages due to abnormal operation of the equipment causing momentary lapses in production, but not long enough to track as downtime, d) reduced speeds and the discrepancy between designed and actual speed the equipment operates at, e) process defects due to scrapped production and defects needing re-work, and f) reduced yield and loss of materials during the manufacturing process, from start-up to end of production run.

The hotel industry stands to benefit from implementation of preventive maintenance in two aspects: i) the linkage of preventive maintenance to sustainable improvement

of quality in production and service delivery; and ii)emerging developments in maintenance technology, information technology, and decision making systems.

Preventive maintenance is a major component in business process re-engineering programmes such as Just-in-Time (JIT) and Total Quality Management (TQM). JIT requires high performance machine, which in turn requires PM. Also TQM requires equipment that is well maintained in order to meet the required process capabilities. The benefits of preventive maintenance have also been seen in the monitoring and rating of management practices and total performance excellence. Among the beneficiaries of preventive maintenance programme are the hotels, in two aspects: i) emerging developments and advances in maintenance technology, information and decision technology, and methods, and ii) the linking of maintenance to quality improvement strategies and the use of maintenance as a competitive strategy.

Considering few studies having been done on this problem and the high number of poorly performing hotels in Kenya, there is need for sustainable growth in the hotel industry based on adoption of preventive maintenance programmes.

1.7 Scope and Delimitations of the Study

The study focused on hotels in four towns namely Nairobi, Kisumu, Nakuru and Eldoret, within the sampling range of 3-Star to 5-Star. The respondents were the functional-level personnel in the production and service areas, the business-level personnel particularly the supervisory staff, and the corporate-level staff, that is the management staff, whose information formed the primary data of the study.

1.8 Assumptions of the Study

The study assumed that: i) all respondents were honest and were to respond positively to the questionnaires and interviews, ii) all the personnel were well trained, skilled and knowledgeable in their respective fields, iii) all hotel establishments had the capability and resources to implement a maintenance programme.

1.9 Limitations of the Study

The employees were apprehensive in giving information. This behavior was a hindrance to collection of data alongside the limited time available to the respondents. The researcher overcame the limitations by exercising tolerance and patience and had to wait for the opportunity for the respondents to be available to complete the questionnaires and also respond to the interviews.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a critical review of literature on preventive maintenance. Firstly, it examines the theories and undertakes a critical review of these theories, and then secondly, it reviews the empirical evidence and testing the conceptual framework.

2.2 Review of Theories

Michael Porter (1985, 1991) put forward two concepts that can be applied to attain competitive advantage in business competition: the 5-Forces Model that is concerned with shaping the nature and intensity of competition in any industry, or superiority in a particular business; and the 3-Generic Business-Level Strategies Model that provides competitive options that are based on distinct ways in which value addition activities can be configured to make or allow a firm to be different from the rivals.

The essence of a business strategy is competitive advantage, which is achieved by organizing and performing value chain activities differently from competitors (Porter, 1991). In brief, the Porter's 3 generic business-level strategies consists of three strategic elements Cost leadership, Differentiation and Focus: Cost leadership which is a strategy in which a firm aims for the lowest cost position in a region or country, as a means attain a competitive edge over competitors - by offering the same product or services at a lower price in the marketplace, a firm gains a sustainable cost

advantage in the industry; Differentiation which is a strategy in which a firm positions its product or the process of service delivery as unique and different to that performed or produced by the competitors - the firm intends to achieve a sustainable product (or service delivery) advantage in the marketplace; Focus which is a strategy in which a firm chooses to concentrate on a unique tailor-made or customized product or service to meet the specific needs of a particular group or status of customers - by choosing an appropriate narrow line and niche market, a firm realizes a sustainable advantage over competitors in the industry.

Miles and Snow (1978) also suggested another 3-Generic Business-Level Strategies Model as alternative options, that is Prospector, Defender, Analyzer (and Reactor) where a prospector is an entrepreneurial firm which constantly exploits new products or market opportunities to achieve high growth - it relies heavily on research and development (R & D) and innovation to develop and market new products; a defender is a survivor firm whose main aim is to protect its current business and maintain current market position. It prevents competitors encroachment by effectively serving existing customers; an analyzer is a combination of both the prospector and defender - a firm adopting an analyzer strategy seeks to protect its current business and at the same time, pursues new opportunities; while a reactor has no consistent strategic approach - this type of firm has no coherent plans and always anticipates change and therefore ever reacts to environmental threats.

The researcher found the Porter's 5-Forces Model as the appropriate theory to use since it addresses the problem of the study. The model shown in Figure 2.1, can be explained as follows in terms of its application to this study:

1. *Threat of New Entrants* – this phenomenon is based on the belief and intent that a fraction of the existing market share in the hotel industry will be captured. However, to counter the new competitors, the existing hotels need to enhance their maintenance operations by adopting preventive maintenance programmes that will ensure quality

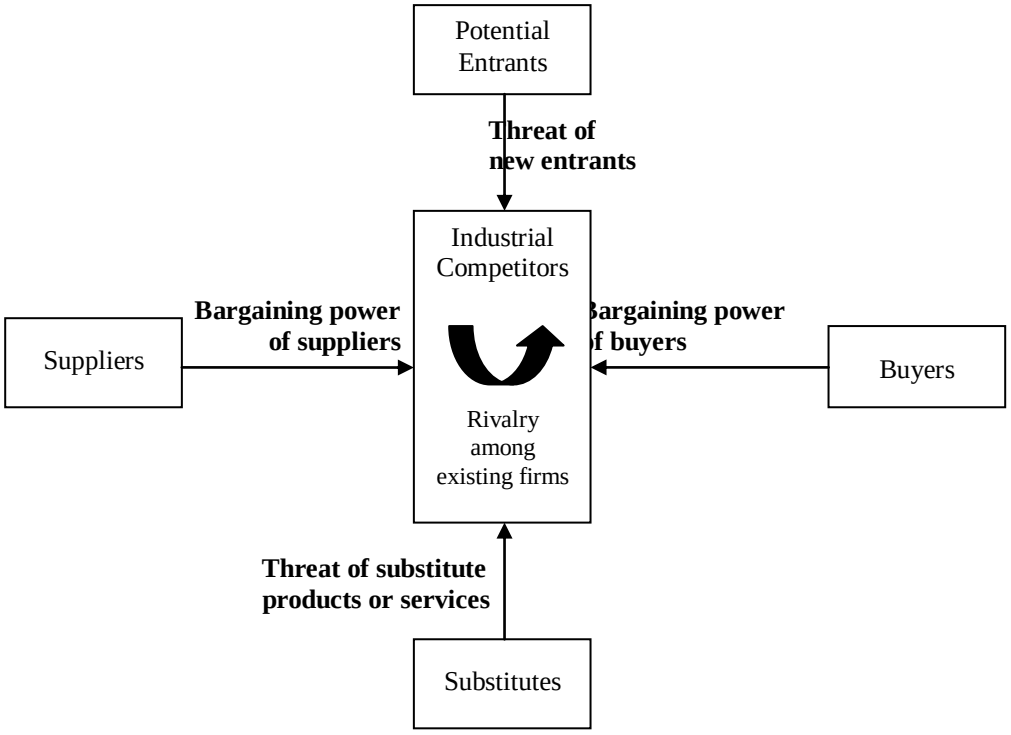

Figure 2.1: The 5-Forces that Shape Competition and Determine Profitability in an Industry

Source: Porter, M.E. (1985) *Competitive Advantage,* New York: Free Press, p 5

and standards of production and services are realized in an efficient manner. The variety of facilities and services offered to the customers in an appropriately applied preventive maintenance system, neutralizes the threats by the new entrants.

2. *B*

argaining Power of Customers – to counter the force of bargaining, which is an appeal from a client for reduced charges or rates and not necessarily value for money, the existing hotels ought to have impeccable services and outstandingly efficient production from its facilities that not only meet the needs of the guests, but exceed their expectations. This level of quality performance shall mitigate against any bargaining attempts of a customer or group of customers from a competing hotel.

3. *Bargaining Power of Suppliers* – the hotel industry in Kenya has abundance of suppliers due to its sustainable development of its economy, agriculture, infrastructure and the education system. As such, hotels in Kenya have an opportunity to react to the bargaining power of suppliers by having several reliable sources of its inputs to sustain a continuous quality production and services. By ensuring lowest mean time before failures and nil downtime, effective and efficient service delivery and good standards of products enables the hotels to meet organizational set targets and help in neutralizing the aggressiveness of suppliers and minimize their bargaining power.

4. *Rivalry Among Current Players* – in the hotel industry in general, rivalry can be circumvented through the adoption of an appropriate business strategy. In this study, the adoption of preventive maintenance provides a continuous impetus to overcome competition. Optimum functioning of equipment such as cookers, central ventilation and swimming pool filters and pumps, enhanced by efficient asset management and maintenance policies and practice results in setting up of high quality levels in production and service delivery that would be unique and even unprecedented in the

industry. Hence, preventive maintenance can be successfully used to mitigate against rivalry in the hotel industry in Kenya.

5. *Threats from Substitutes* – in many instances unethical business practices are adapted such as price undercutting, imitation of products and services, imitation of packaging style and design, and misleading advertisements and information. In the hotel industry, implementation of preventive maintenance on assets such as car park, buildings, furniture and fittings, and the gardens, provides a cutting edge over combating these threats by other hotels that assume to be substitutes of a quality hotel. Achievement of seamless production and services with low defects and cost of inputs, realizes an unassailable level of quality that could be beyond the reach of substitutes in the competition.

Porter (1980) contends that the collective strength of these forces determine the ultimate profit potential in the industry which is measured in terms of long-run return on invested capital. Hunger and Wheelen (2002) agree with Porter and add that the Porter's 5-Forces Model looks at a long-term potential of a firm to change the strength of one or more of the forces to the firm's advantage through a specific strategy.

Parthasarthy (2007) summarized the five-forces model graphically in a linear representation shown in Figure 2.2 and further supported this with three distinct characteristics as a business-level strategy: i) it is a strategy for a single business: the focus of business-level strategy is the competitive success in a single business. Multi-business firms, whose business units are independent of each other and compete in

distinct industries, need a business-level strategy for each of their business units; ii) its main focus is dealing with competitive threats, that is, business-level strategy is the firm's (or the business unit's) overall and integrative approach to overcoming competitive threats. It is, therefore, also called competitive strategy; and iii) it

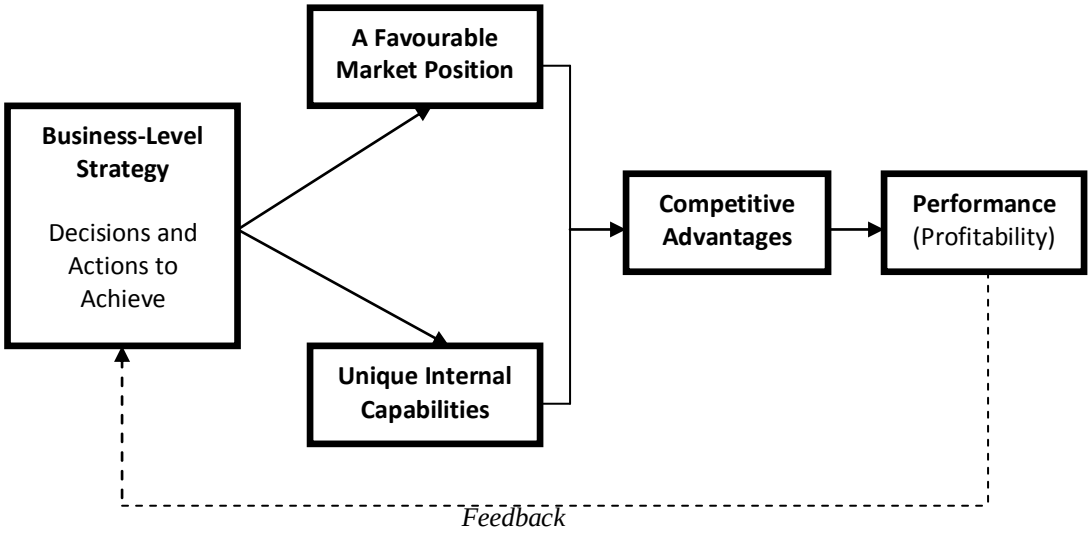

Figure 2.2: How Business-Level Strategy Influences Performance

Source: Parthasarthy, R (2007) *Fundamentals of Strategic Management*, Boston, MA: Houghton Mifflin Company

facilitates the attainment of business goals by building and monitoring competitive advantages meaning business-level strategy leads to higher performance by building competitive advantages through a favourable market position and/or the acquisition of unique internal competencies.

2.3 Criticism of Theories

While criticizing the 5-Porter's Model, some scholars have suggested that it is through developing and exploiting unique internal competencies, not market position,

that a firm gains enduring competitive advantage, and that it is relevant to static markets only: where changes are slow and sustaining a chosen market position makes sense (Parthasarthy, 2007). Parthasarthy (2007) adds that the 5-Forces Model has no coherent plans, does not anticipate changes, and reacts to the environmental events as it deems fit. Today's markets are highly dynamic, that a continuous development of new advantages is necessary for company survival, and that the model is an inappropriate analytical tool for today's environment. .

Mill's and Snow' generic and Porter's 3-generic business-level strategies models appear to be responding to and directed toward solving external threats and weaknesses directly. The internal environment and resources are ignored to a very large extent where: cost advantages can easily be imitated by newcomers and rivals; lifestyle changes may make the bases of differentiation less important to buyers; small size market or niches do not permit economies of scale; and also adverse change in demand can affect a focuser drastically. Successful strategies are those that create a good fit among the firm's several competencies, its overall strength, and the needs for the external environment (Hambrick and Fredrickson, 2001). Strategies and organizational resources need to compete successfully and differently at each stage of a business life-cycle with continuous monitoring and evaluation of industry conditions alongside the internal strength, would enable a firm to select a business-level strategy that intertwines industry opportunities with the firm's competencies (Parthasarthy, 2007). It is the firm's internal resources and capabilities that are a source of competitive advantage and not market position (Barney, 2002).

2.4 Review of Empirical Evidence

Considerable research has been carried out on: the impact of preventive maintenance on manufacturing performance (McKone *et. al*., 2001); the effect of optimized maintenance system in vehicle industry (Aghae and Fazli, 2012); the application of preventive maintenance on parquet enterprises; and the implementation of preventive maintenance at a palm oil mill among others.

Despite the similarity with the hospitality industry in many aspects, it is noted that the manufacturing industry has experienced an unprecedented degree of change in approaches, product and process technologies, customer expectations, supplier attitudes as well as competitive behaviour (Ahuja e*t. al*., 2006). In today's highly and rapidly changing environment, the global competition among organizations has led to higher demands on the manufacturing organizations. The global marketplace has witnessed an increased pressure from customers and competitors in the manufacturing as well as service sectors (Basu, 2001; George, 2002). This calls for effective improvements in the company's performance by focusing on cost cutting, increasing productivity levels, quality and generating deliveries in order to satisfy customers.

However, steady improvements in manufacturing do not guarantee sustained profitability or survival of an organization (Oke, 2005). Attention has, therefore, been shifted from increasing efficiency by means of economies of scale and internal specialization to meeting market conditions in terms of flexibility, delivery performance and quality. These changes have left unmistakable marks on the different facets of the manufacturing organizations (Gomes *et. al.*, 2006). To meet the challenges posed by the contemporary competitive environment, the manufacturing

organizations must infuse quality and performance improvement initiatives in all aspects of their operations to improve their competitiveness (Pintelon *et. al*., 2006).

Maintenance is normally perceived to have a poorer rate of return than any other major budget item. Yet, most companies can reduce maintenance costs by at least one-third, and improve the level of productivity by giving maintenance the management priority it requires (Ahuja and Khamba, 2007). That priority must span all levels of an organization's management structure to develop an understanding of the significant effect maintenance can have upon the success or failure of organization objectives. The maintenance processes can be streamlined to eliminate waste and produce breakthrough performance in areas valued by customers. In financial terms, maintenance can represent 20 to 40 per cent of the value added to a product as it moves through the plant. Therefore, equipment maintenance is an indispensable function in a manufacturing enterprise (Ahmed *et. al.*, 2005).

The recent competitive trends and ever increasing business pressures have been putting maintenance function under the spotlight as never before (Garg and Deshmukh, 2006). For maintenance to make its proper contribution to profits, productivity, and quality, it must be recognized as an integral part of the plant production strategy. Thus, in achieving excellence, maintenance has to be treated as a strategic issue for manufacturing organizations to create world-class-manufacturers (Brah and Chong, 2004). The effective integration of maintenance function with engineering and other manufacturing functions in the organization can help to save huge amounts of time, money and other useful resources in dealing with reliability, availability, maintainability and performance issues (Moubray, 2003).

In the hospitality industry, the concept of product is taken deceptively simple, at first glance. A tourism product presumably is whatever one buys while away from home. From a marketing perspective, one can define a product as "anything that can be offered to a market for attention, acquisition, use or consumption that might satisfy a need or want. It includes physical objects, services, person, places, organization, and ideas. Marketers, however, tend to view tourism products and services - in general - as being fairly complex phenomena. Some authors suggest tourism products consist of a number of components or layers. One model suggests that tourism products consist of two parts: "tangible" good or service, and its symbolic value. Another model suggests that there is a core component (such as an airline flight) and peripheral component (such as reservations and baggage handling).

However, the quality of hospitality services is one of the most important parameters in the hotel industry. The key factors of determining the level of quality are: the level of performance and condition of the object; quality and modernity of equipment; selection, professional preparation and conduct of staff; external condition (culture and wealthy society, the level of economic development, the existence of competition); reliability of implementation; speed of service; confidence and professionalism of service; and individual approach to clients.

In Britain, the standards in hospitality and quality of service offered are strictly under the Hospitality Assured (HA) and Service Quality (ServQual) qualifications respectively (Boella and Goss-Turner, 2006). HA is the Standard for Service and Business Excellence in the hospitality industry developed by the Hotel and Catering

International Management Association (HCIMA) and supported by the British Hospitality Association (BHA).

One of the advantages and benefits realized by establishments accredited to HA is a powerful desire to exceed customer expectations in an environment of continuous improvement and business excellence. Customers can therefore be confident that they will be satisfied by any organization that is HA (Boella and Goss-Turner, 2006).

Table 2.1 shows a number of significant advantages enjoyed by HA accredited organizations.

Table 2.1: Advantages gained by HA accredited organizations.

	ADVANTAGES
1.	Being seen as one of the very best organizations in the hospitality industry by customers, employees, stakeholders, and competitors.
2.	Being able to use powerful business tools and objective external assessment to eliminate and measure performance improvement in service delivery and business excellence.
3.	Being able to benchmark the accredited organization against the best-in-class.
4.	Using the HA mark to promote the accredited organization to existing and new customers.
5.	Demonstrating that the accredited organization is a quality employer.
6.	The most appropriate standard for the particular real of business.
7.	For local authorities, it helps significantly with preparation for "*best value"* review, by demonstrating *"best value."*
8.	It helps protect existing dimensions.
9.	It proves that a catering service is reputable.
10.	The methodology used in the HA process demonstrates the importance placed on customers.
11.	The standard's criteria stand up to the external scrutiny of stakeholders.
12.	Improved listing of customers.
13.	Faster reaction to customers.
14.	It encourages staff motivation and team-building at all levels.
15.	It can create a new mission statement and service promise.
16.	It finds gaps in the service delivery.
17.	It highlights good practice.
18.	It underpins on-going improvement.
19.	It facilitates target-setting and performance monitoring.

Source: Boella, M. and Goss-Turner, S. (2006) *Human Resource Management in the Hospitality Industry – An Introductory Guide*, 8Ed, Oxford: Elsevier Butterworth-Heinemann

Service quality (ServQual) approach was developed in the 1980s by Parasuraman, Zeithasml, and Berry (1988). Customers are asked to complete a questionnaire: the first part identifies their expectations and the second part identifies their perceptions of the actual offering. Using a value (Likert) scale, the value gap between expectations and perceptions of the offering are determined. This process identifies a company's strength and weakness. Boella and Goss-Turner (2006) tend to agree with Parasuraman, Zeithasml, and Berry and noted that this is one of the well-reported approaches to evaluating the effectiveness of service delivery.

ServQual is based on a generic 22-item questionnaire that considers five broad aspects of service quality: tangibles (appearances of physical elements); reliability (dependability, accurate performance); responsiveness (promptness and helpfulness); assurance (competence, courtesy, credibility and sincerity); empathy (easy access, good communication and customer understanding). In operations, servqual helps firms to identify following five fundamental gaps in the service delivery processes.

Gap 1 - *A Gap between Consumer Expectations and Management Perceptions* – Manager thinks customers want one thing whereas customers may prefer something else.

Gap 2 - *A Gap between Management Perception and Service Quality Specification* – Management may not specify clearly what is needed or they may set unachievable quality standards.

Gap 3 - *A Gap between Service Quality Specification and Service Delivery* – Simply put, a service provider fails to meet the standard set.

Gap 4 - *A Gap between Service Delivery and External Communication* – This may result from expectations being unrealistically raised through intermediaries such as sales offices, agencies or promotional materials.

Gap 5 - *A Gap between Perceived Service and Expected Service* – This gap is the result of one or more of the previous gaps - basically, the customer does not get what he or she expects.

The servqual then goes on to identify a zone of tolerance which is effectively the zone between what customers expect and what they consider to be the minimum acceptable service level (Boella and Goss-Turner, 2006).

However, customer dissatisfaction does occur in the hospitality industry and the cause is always specific. When a customer is dissatisfied with the service then there is a distortion of the quality of hotel services. Typically, dissatisfaction is associated with the following causes: the hotel has not kept all points of offer; hotel did not present offer quite clearly; the client was not effectively acquainted with the offer; inadequate information about prices, service was not sufficiently prompt; the hotel uses impractical solutions; equipment failure; and reduced efficiency of service. Causes of dissatisfaction should be regarded as objective defaults and reasons. Any kind of customer dissatisfaction should be subject to an immediate reaction from the hotel

management. Action, therefore, should be taken to ensure quality production and customer service at all times.

The basic key criteria and indicators of quality are: accuracy, stability, speed of the employees' reaction within the specified procedures, and complexity of services. At the same time it must emphasized that, legal regulation, treated broadly, refers to the building laws, sanitary regulations or environment, but the principal way of influencing the legislature on the level of hotel services should be the considered category (Witkowski, 2002).

Computerized maintenance management systems (CMMS) assist in managing a wide range of information on maintenance workforce, spare-parts inventories, repair schedules and equipment history. It may be used to plan and schedule work orders, to expedite dispatch of breakdown calls and to manage the overall maintenance workload. CMMS can also be used to automate the PM function, and to assist in the control of maintenance inventories and the purchase of materials. CMMS has the potential to strengthen reporting and analysis. The capability of CMMS to manage maintenance information contributes to improved communication and decision-making capabilities within the maintenance function.

Accessibility of information and communication links on CMMS provide improved communication of repair needs and work priorities, improved coordination through closer working relationships between maintenance and production, and increased maintenance responsiveness. Hotel ServicePro is a hotels' inspection software and it

provides a platform for conducting consistent inspection. It allows the scheduling of inspection, provides reports and helps management identifies training opportunities for maintenance team members, and it improves quality assurance inspection scores.

The concept of Software as a Service (SaaS) has been in use for a number of years. Its concept is based on the idea to provide support and run software from the Internet. Simply put, SaaS means delivering software over the Internet (Thoma, 2011). Through the use of SaaS, today small companies can access state-of-the-art applications for a reasonable fixed subscription fee. The web-based model uses system applications operated by service providers rather than themselves.

Smith (2011) stated that just like meeting a person for the first time, it takes hotel travelers less than 60 seconds to form an initial impression of a hotel or resort. Travelers may first take notice of the parking, signage, décor, carpet, or even the smell. Although each visitor is keyed to something different, each first impression is influenced by aspects of asset management and maintenance.

Competitive pressure has forced many organizations to optimally utilize any potential opportunity arising from the existing situation of the organization, using the best strategy. A well defined strategy is one which is consistent to the business and production strategies of the organization and works at aiming to create competitive advantage for the organization (Pinjala, 2006). There are three types of maintenance strategies: 1) Reactive Strategies (corrective maintenance); 2) Proactive Strategies (Preventive and predictive maintenance); and 3) Invader Strategies (Total Productive Maintenance). Kauppi and Paavo (2005) described maintenance processes and

procedures as being of preventive maintenance type when: there is prevention of equipment breakdown before it happens and this includes inspection, adjustments, regular service and planned shutdowns; repair work, that is, repairing equipment and troubleshooting malfunctions in an effort to return the equipment to its previous condition, and these repairs may be reactive or prevention; and improvement of work, for instance, searching for better materials and improved design changes to facilitate equipment reliability, while repair is often a part of improvement.

In pursuit of acquiring an edge over its competitors, and using preventive maintenance processes as a strategy for its business, an organization could develop a business-level strategy. A business-level strategy is a comprehensive mechanism employed to gain competitive advantage or superiority in a particular business or industry. It specifies the advantage the firm seeks in that business, relative to competition and how available resources will be applied to acquire it – this is the means a firm employs to give strength which provides a foundation on which to organize its business decisions and (Parthasarthy, 2007). Selecting preventive maintenance as a business-level strategy is an attempt to answering the question how will the firm compete in its business or industry?

A firm's analysis of its internal environment based on information generated from its own competencies and that of the industry in general, aids in selecting an appropriate strategy for its business, while the industry analysis identifies the competitive pressures in the industry and helps in determining whether to pursue the opportunities in the overall industry or within specific market segments. Evaluating industry condition side by side with internal strengths, enables a firm to select an appropriate

business-level strategy that integrates industry opportunities with the firm's competencies (Parthasarthy, 2007).

Markides (2004) argues that there is no single universally accepted definition of the term strategy. Several theories and empirical models have been presented on the criteria for selecting an optimal maintenance strategy. Al-Najjar and Alsyouf (2003) believe that the conditional life span of significant components of a maintained system depends on three sets of factors: operating and environment condition; quality of surveillance; and maintenance activities. Sharma *et. al.,* (2005) on the other hand brought forward a spectrum of conditions: operation mode (as a continuum or intermittent operation); load; speed; operating temperature, lubricant temperature, vibrations, dirt and dust. Wang *et. al.*, (2007) used a set of Security; Cost; Added Value; and Feasibility. Shygith *et. al.,* (2008) applied environmental condition components; training; and flexibility. Mardani (2010) suggested the following as effective factors on selecting sound maintenance strategy: cost; operational conditions; personnel security; facilities security; personnel training cost; personnel acceptance; reliability, failures frequency; spare parts cost; mean time between failures (MTBF) and effects on competition power.

Globalization and innovations influence the development of technology and growth in the industries while identifying competition strategies, thus creating a path towards the changes and challenges (Tiwari *et. al.,* 2007). This leads to the alignment of technological solutions within the business, that is, the application of technology to be used in value realization (Al-Hatmi and Hales, 2010).

At the higher levels of the organizational hierarchy, organizational strategic goals are achieved through application of sound and appropriate asset management systems. With reference to the British Standard PAS 55 (soon to be known as ISO 55000), (Woodhouse, 2012) asserted that the typical priorities and concern in setting the right standards in asset management shown in Figure 2.3, can be broken down into four stages in ascending order as: management of assets for efficiency and effectiveness and this includes acquisition of right equipment, proper utilization of equipment,

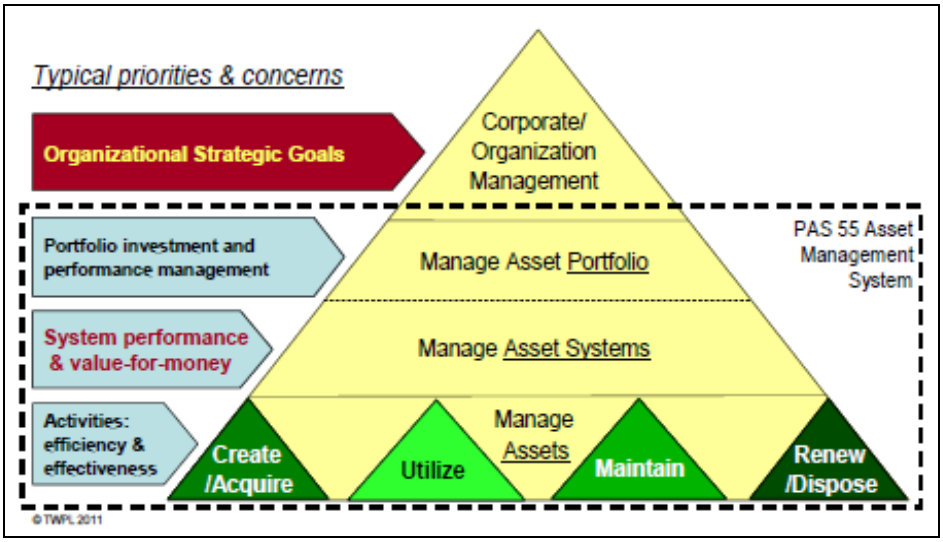

Figure 2.3: Typical priorities and concerns

Source: Woodhouse, J. (2012) Setting the Right Standards in Asset Management, *Asset Management and Maintenance Journal*, Vol. 25, No 3. Pp. 4 – 6

maintenance and renewal or disposal; management of asset systems for optimum performance and value-for-money operation; management of asset portfolio for performance management, innovations, inventions and profitability; and corporate or organizational management for policy and operational strategies.

An organization with a good asset management system is one that clearly understands what and where such critical assets and values are, directly reflecting the organization's purpose and stakeholder expectations (Woodhouse, 2012).

2.5 Conceptual Framework for the Study

The conceptual framework for the study represented in Figure 2.4 illustrates the

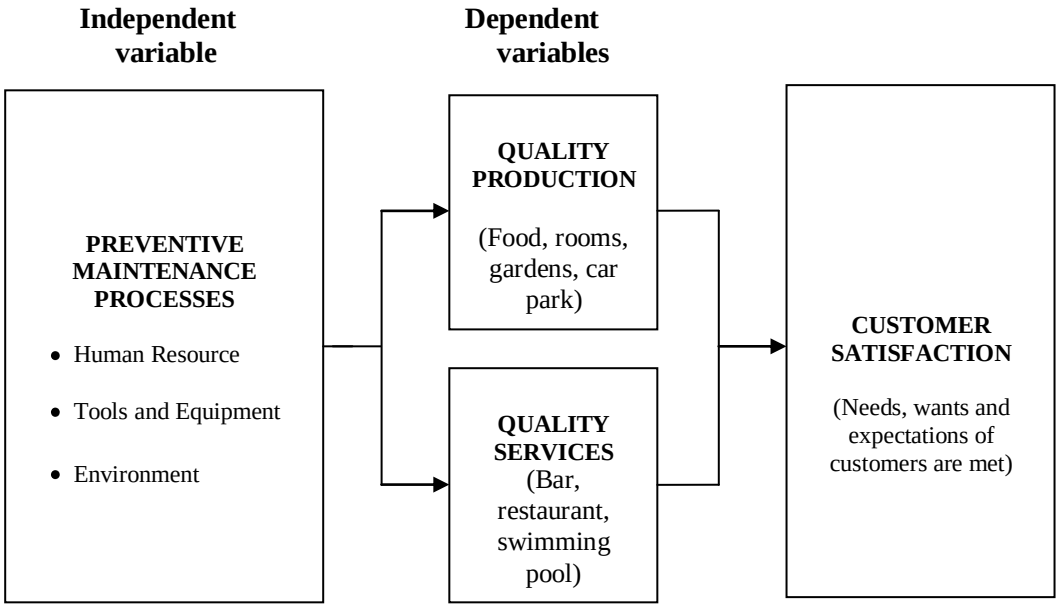

Figure 2.4: The Conceptual Framework

Source: Researcher (based on the theoretical framework and the objectives)

relationship between the independent variable, preventive maintenance process, and the only be successful when there is harmony at the workplace where tools and equipment are optimally functioning and the personnel motivated. The human resource at all levels is to be trained and developed in appropriate technical skills and knowledge to handle and operate equipment and appliances or deliver efficiently appropriate services. This boosts the confidence of hotel personnel and enhances efficiency in the implementation of preventive maintenance for quality products and

services. Quality production and quality service delivery is thus assured and actualized to meet and satisfy the needs, wants and expectations of the customers. In turn, this actualization translates into a corporate branding and competitive advantage in this competitive hotel industry.

The indicators and measures for quality products comprise pricing, branding, increased sale volumes and reliability. To measure service quality has proven difficult since it is a subjective experience. However, five categories that have been found to be reliable indicators of customer satisfaction are: assurance, empathy, reliability, responsiveness, and tangibles as expounded by Parasuraman *et al.,* (1988). Customer expectations can be known to have been met from the resultant loyalty to the establishment. This is manifested in regular repeat patronage or visits, referrals, generous tips to hotel personnel, compliments in writing or face-to-face with the hotel personnel, and increased sales volumes and profitability. Indicators for a sound preventive maintenance programme are equipment reliability to perform continuously and efficiently, cost reduction in maintenance and operational costs, increased life cycle of equipment, sustainable continuous productivity that meets delivery timelines, and improved profitability.

2.6 Research Gap

Standards of operations are improved through the resultant formulation of corporate strategy and a competitive edge in the marketplace. Business unit strategies adopted in the production and service levels in the context of preventive maintenance, ensures guests' needs and expectations are met at all times. This achievement brings to fore a new front in corporate branding in the hotels industry that has never been appreciated

before. This gap in the hotel industry when fulfilled through the adoption of a preventive maintenance programme, would realize zero tolerance on reduced cost of operations, job security, developed skills and personnel acceptance, minimum mean time between failures, and improved market position.

CHAPTER THREE

MATERIALS AND METHODS

3.1 Introduction

This chapter is the plan of action for the study. It shows the study area; the research design; the instruments for data collection and the data analysis process. It also identifies the target population and sampling procedures.

3.2 Research Design

The research design in this study was survey, which according to Oso and Onen (2005) assists in achieving a quantitative and qualitative description of the study. It involved the use of questionnaires and interview guide to assess the effect of preventive maintenance on the quality of production and service delivery in the hotels in Kenya. The study used the responses from the management, engineers, and production and service personnel to get their perceptions and opinions on the research problem.

3.3 The Study Area

The study area was town hotels in Kenya covering Nairobi, Kisumu, Nakuru and Eldoret. Due to the large size of the population which should cover resorts, beach hotels and lodges in the game parks, the researcher confined the study in the above named towns which gave an adequate representation of the universe. Stratified random sampling was used to select five hotels for the study consisting of three 3-Star hotels, one each in Kisumu (Sunset Hotel), Nakuru (Kunste Hotel) and Eldoret

(Sirikwa Hotel), and two 5-Star hotels in Nairobi(New Stanley Hotel and Serena Hotel). The target population was derived from these hotels.

3.4 Target Population

The total eligible participants in the study was 100, as shown in Table 3.1, made up of personnel in the maintenance, food production and service, supervision and management.

Table 3.1: Sample design

SAMPLE DESIGN							
	RESPONDENTS	**NAIROBI**		**KISUMU**	**NAKURU**	**ELDORET**	**TOTALS**
1.	**Management:**	**New Stanley**	**Serena**	**Sunset**	**Kunste**	**Sirikwa**	
	Engineer	1	1	1	1	1	**5**
	Chef	1	1	1	1	1	**5**
	Housekeeper	1	1	1	1	1	**5**
	F&B Manager	1	1	1	1	1	**5**
2.	**Supervisory:**						
	Maintenance	1	1	1	1	1	**5**
	Sous Chef	1	1	1	1	1	**5**
	Room Stewards	1	1	1	1	1	**5**
	Bar/Restaurant	1	1	1	1	1	**5**
	Swimming Pool	1	1	1	1	1	**5**
3.	**Workforce:**						
	Maintenance	3	3	2	2	2	**12**
	Sous Chef	3	3	2	2	2	**12**
	Room Stewards	3	3	2	2	2	**12**
	Bar/Restaurant	3	3	2	2	2	**12**
	Swimming Pool	2	2	1	1	1	**7**
	Totals	**23**	**23**	**18**	**18**	**18**	**100**

3.5 Sampling and Sample Size

According to Gay and Airasian (2003), a sampling size 10 to 20% of the population for a descriptive educational research, is acceptable and valid. A total of 100 questionnaires were issued to the respondents who were selected using census sampling for the management while stratified sampling for the supervisory and the

personnel in the production and service delivery sections. 30 respondents completed and returned the questionnaire representing 19% of the population which is in agreement with Gay and Airasian (2003).

3.6 Pilot Testing

Pilot testing is normally conducted to test suitability of the questionnaire to the research study, and to identify and eliminate any problems, thus allowing corrective changes before actual data collection from the target population. The researcher used five respondents for the pilot testing who were asked to fill the questionnaires in the presence of the researcher. Pilot testing is an important way to improve the usefulness, reliability and validity of data collected for performance (De Vaus, 1996).

3.7 Secondary and Primary Data and Data Collection Instruments

The instruments for data collection used were the questionnaire, interview schedule and observation tools. The questionnaire and interviews provided the primary data for the study while the literature provided the secondary data.

Questionnaires - The questionnaire method is popular because of its suitability in that it is free from the researcher's bias and it allows respondents to answer questions in their own words. It also gives enough time to the respondents to think over the responses they are to give. The responses are gathered in a standardized form thus making the questionnaires more objective and reliable. The questionnaire had five sections consisting of the demographics of the respondents and the hotel profile, and the four specific objectives of the study. The questionnaires were administered to the management, supervisory staff and the workforce in specific operational areas of

production and services.

The questionnaires contained open-ended, closed-ended, and 5-point Likert Scale type of questions. Advantages of open ended questions are that they permit greater depth of the response; they are also simpler to formulate, and may give an insight into respondents' feeling, background and motivation. However, open ended questions are time consuming and could easily put off respondents.

Interview Schedule - The researcher carried out individual interviews with the respondents and guests using simple random sampling. This gave an opportunity to the respondents to ask questions to the researcher. The questions helped in giving standard information.

3.8 Data Analysis

The researcher used Statistical Package for Social Sciences (SPSS) Version 20 software for data analysis. Non-parametric tests including Chi-square were conducted to test whether there was a significant difference between quality production and quality service delivery under preventive maintenance programme. The independent variables examined were: maintenance systems practiced in hotels; capacity and capability of hotels to implement preventive maintenance; effect of preventive maintenance on the quality of production and services; to determine the relationship between preventive maintenance and quality of production and services; and challenges affecting the implementation of preventive maintenance in hotels.

A 5-Point Likert scale was used to allow the respondents to indicate their opinion and perceptions as: Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree (Kothari, 2008). The information collected was then coded and analyzed using the SPSS package.

Objective one was concerned with the type of maintenance used in the hotel while objective two was descriptive on the ability and synergy in terms of capacity of capability of the hotels to implement preventive maintenance. In both cases, Pearson's product moment correlation was used to test the relationships. The cause-effect relationship was tested using simple regression analysis.

Objective three was to examine the effect of the independent variables on the dependent variable over customer satisfaction and dissatisfaction while objective four looked at the significance of preventive maintenance on standards of production and service delivery in the hotels. The 5-Point Likert scale was used to determine the impact of the independent variable over the dependent variables, and to validate the correlation between the independent and dependent variables.

Objective five was descriptive on the experience and challenges faced by the hotels arising from the effects of the independent variable and the coping mechanisms adopted on the dependent variables. Pearson's product moment correlation was used to gauge the significance of the relationship between the experiences and skills of the workers, and the challenges encountered when implementing preventive maintenance.

CHAPTER FOUR

RESULTS

4.1 Introduction

This chapter presents and explains the results of the study. The chapter has five sections which aim at answering the objectives of the study: information on the demographics variables and the status and ownership of the hotels; examination of the maintenance systems adapted at the hotels; information on the capacity and capability to implement preventive maintenance; effect of preventive maintenance on quality of production and service delivery; evaluation of the relationship between preventive maintenance and the quality of production and services; and challenges that hinder implementation of preventive maintenance.

4.2 Demographic Information of the Respondents and Hotel Profile

Demographic Information of Respondents - The results revealed that majority of the respondents 14(46.7%) had held their positions for one year, with 7(23.3%) for 2 years and 5(16.7%) for 3years. The study showed that most of the employees had worked for less than 3 years. The duration or period of employment has a significant bearing on the competence and skills of the worker in carrying out preventive maintenance**.**

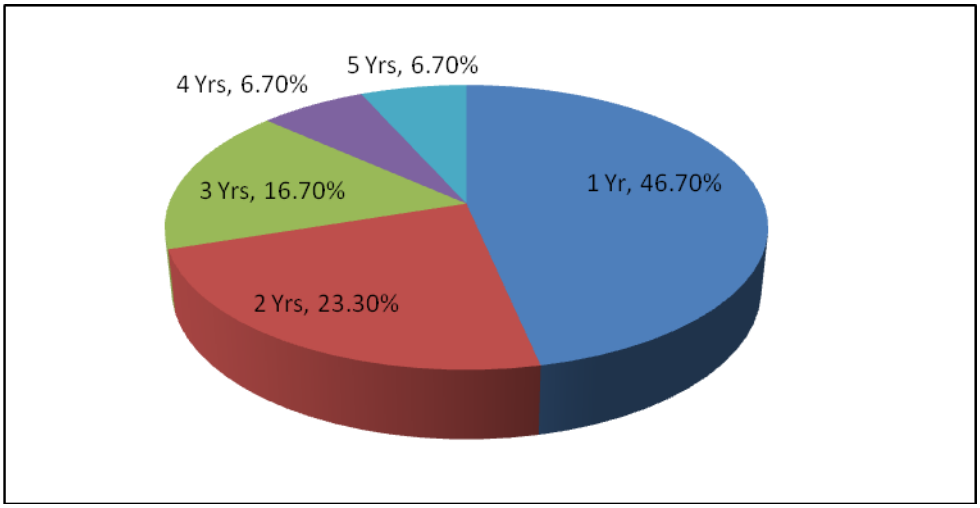

Figure 4.1: Number of years employees worked in the hotels worked

Hotel Profile - Figure 4.2 shows ownership of hotels comprising of 11(36.7%) joint venture, 7(23.3%) partnership, 6(20%) co-operative society and 4(13.3%) sole

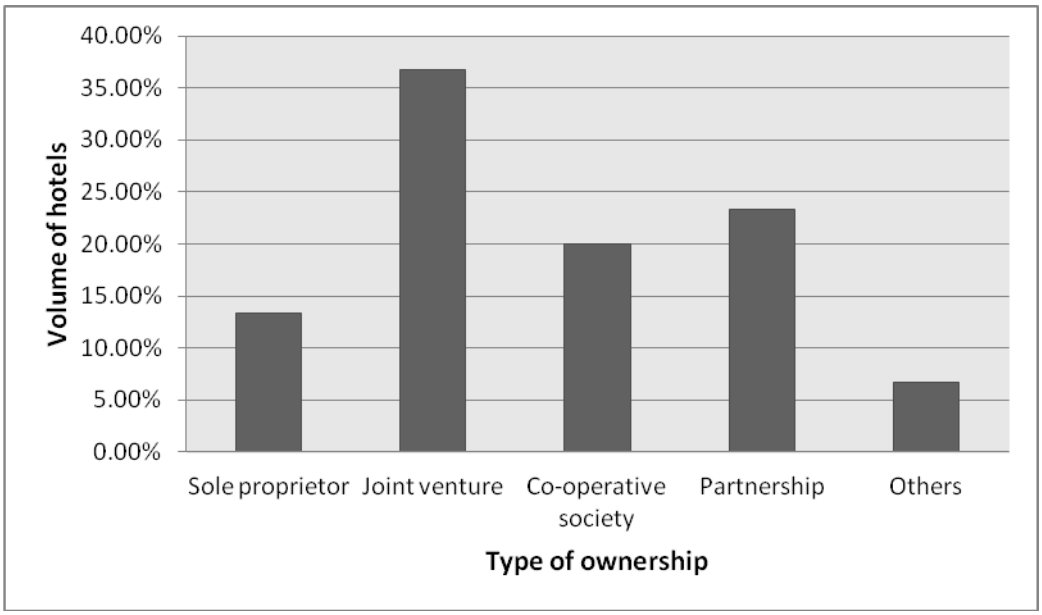

Figure 4.2: Ownership status of the hotels

proprietorship. The findings showed that very few hotels are owned by individuals due to the high cost of investment.

The operation of the hotels was found to be mostly conducted as a single unit 20(66.7%), 5(16.7%) as domestic, 4(13.3%) international and franchising at 1(3.3%) as in Figure 4.3.

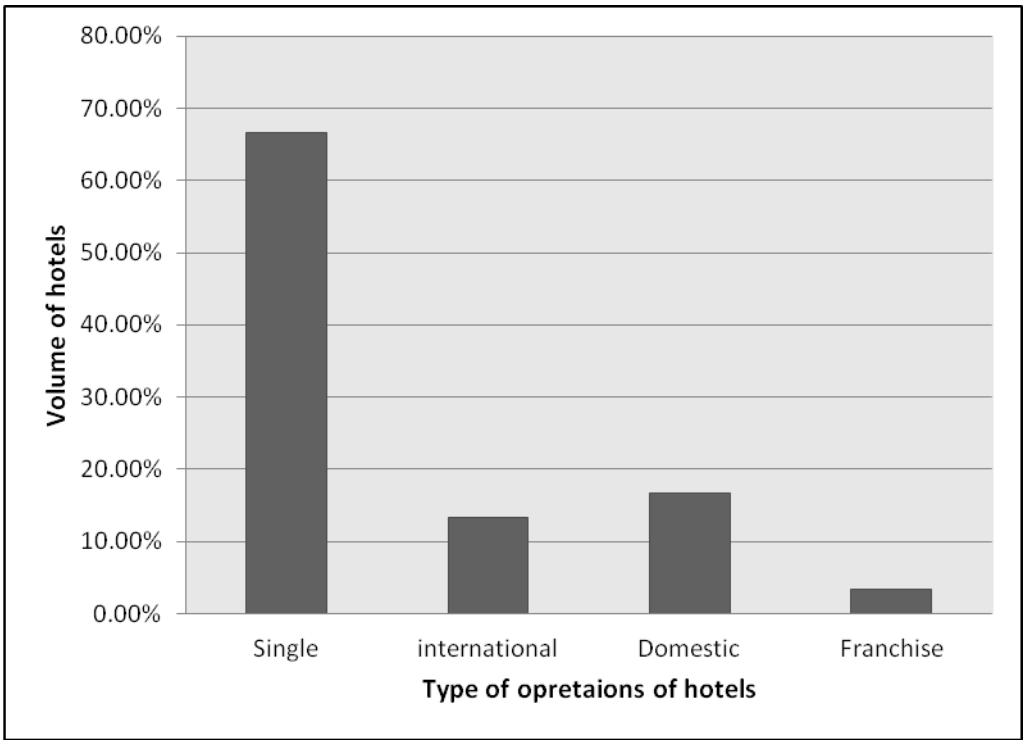

Figure 4.3: Type of operations of the hotels

The results showed that investors preferred to operate their own establishments as single hotel units without branches or subsidiaries and this was due to lack of adequate skills, knowledge, entrepreneurial drive and other limitations as opposed to franchise agreement and management contracts. This trend in the hotels in Kenya is against the norm globally wherein the party that owns the hotel does not operate the

hotel due to a number of operating structures (Turner and Guilding, 2010). The low number of hotels that operate through international arrangement and franchising in Kenya, is also against the trend where separation between ownership and management through the use of hotel management contracts is the driving mechanism for fast internationalization of hotels (Turner and Guilding, 2010; Beals and Denton, 2005).

4.3 Maintenance Systems Practiced in the Hotel

The results show that most 27(90%) of the hotels did not have a designated department responsible for maintenance. Only 3(10%) had one. These findings indicated that the importance of maintenance systems has not been fully embraced by many hotels in Kenya as a strategy for sustainable quality production and services. For those hotels without a maintenance programme, maintenance services were obtained from external expertise through occasional contracts or outsourcing system.

The objectives of any maintenance systems are two fold: to be consistent with goals of production (cost, quality, delivery, safety) and to be comprehensive including specific responsibilities. This is emphasized by Hassanien (2007) assertion that hotels need minor renovations because the industry is influenced by technology and social changes: that maintenance is an investment spent today in order to reduce costs in the future, enhancing margins for gainful outcomes.

Reporting of maintenance jobs – From the findings, the respondents stated that maintenance jobs were reported to the maintenance department through various forms. For example, the employees would log into the computerized operating system

to relay the information to the maintenance department for action. However, to those without an electronic maintenance system, the employees reported verbally to the maintenance department either through telephone calls or by personally visiting the department. Most of the maintenance jobs were carried out on monthly basis.

The study also revealed that the time frame for action varied from hotel to hotel from within 10 and 15 minutes, to 30 minutes, 1 hour, 1 day and 2 days. The time variation depended entirely on the urgency of the maintenance. Once the reports are received by the supervisor on duty (or the duty manager, the deputy engineer, the chief engineer, and unit engineer), he ensures that action is taken as per the request.

4.4 Capacity and Capability of the Hotel to Implement Preventive Maintenance

The second objective of the study was to establish the capacity and capability of the hotel to implement preventive maintenance. This objective sought to examine the level of development of the hardware (equipment and machines) and the software (human resource) deployed in the hotels.

Capacity was measured through productivity that met delivery times expected by the guest and the availability of the product on time, and this includes having rooms ready for occupation upon guests' arrival, swimming pool prepared for guests once the guests move in for a swim at any time of the day; gardens cleaned and furniture set whenever a guest(s) desired to use them; and car park well cleaned with visible signs and an attendant ready to receive guests' cars when needed. Capability was measured against the ability, knowledge and skills to meet customer expectations, specifications and wants. It is thus confined to the human resource and specifically

the personnel in the production and service sections. The study showed that the capability of the hotels to implement preventive maintenance was enhanced through training and development, pay rise, reward schemes and motivation.

However, staff training and development on maintenance personnel was not conducted by 22(73.3%) of the hotels, while only 8(26.7%) conducted staff training and development. The study revealed that majority of the hotels could not afford to hold staff training and development programmes. It was found that of those hotels that hold training for staff, most of them 19(63.3%) held training at venues outside their establishments, while 11(36.7%) of them held training in-house. Certification of training was found to be based on the evaluation of the workers' performance after training had taken place. This appraisal was done through the dispensation of tests and examinations with pre-determined pass mark.

On employees' perception on capability of the hotel on implementation of preventive maintenance most employees agreed that preventive maintenance reduces costs of repairs and maintenance, increases life span and running time of equipment and machines in general, and it realizes savings in cost of production and services thus ensuring profit maximization.

Table 4.1 shows varied perception of employees in the hotel industry on the capability of the hotels to implement preventive maintenance where 28(93.3%) of the employees agreed that the validity of preventive maintenance programme is the

Table 4.1: Employees' perception on capability of the hotel on implementation of preventive maintenance

STATEMENT	SA		A		UD		D		SD	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Preventive maintenance reduces costs of repairs and maintenance	24	80.0	6	20.0						
Validity of preventative maintenance programme is the overall cost cut in production and service delivery	9	30.0	19	63.3	2	6.7				
The life span and running time of equipment and machines in general is increased	16	53.3	14	46.7						
Through saving in costs of production and services, preventive maintenance indirectly ensures profit maximization	21	70.0	9	30.0						
The initial cost of preventive maintenance could be high and prohibitive	9	30.0	15	50.0	4	13.3	2	6.7		

Legend: SA – Strongly agree, A – Agree, UD – Un-decided, D – Disagree, SD – Strongly disagree

overall cost cutting in production and service delivery and only 2(6.7%) were undecided. However, 24(80%) employees agreed that the initial cost of preventive maintenance could be high and/or prohibitive, while only 2(6.7%) disagreed that initial cost of preventive maintenance could be high and/or prohibitive and 4(13.3%) were undecided.

Attention to maintenance needs is paramount in determining the universally accepted

skills to manage preventive maintenance; human relations and personnel needs; financing and procurement practices; use of information technology; effective contract specifications; compliance with legal requirements; and effectiveness of preventive maintenance. Involvement and participation of the personnel in decision-making in the hospitality industry builds up the capacity to implement preventive maintenance, while effective communication and recognition enhances the capability of the personnel to execute the management system for quality production and service delivery.

4.5 The Effects of Preventive Maintenance on the Quality of Production and Service – The third objective of the study sought to establish the effect of preventive maintenance on quality of production and services. The aim of the objective was to assess the status of the relationship between the independent variable and the two dependent variables, and measure the level of customer and employee satisfaction through ascertaining the quality of productivity and service delivery process and procedures.

The indicators for customer satisfaction and dissatisfaction varied amongst the hotels. However, the key indicators for guests' satisfaction were found to be the direct guests' verbal compliments, guests' repeat visits, and increase in number of guests' arrival apart from written commendation and referrals. The key indicators for dissatisfaction were negative comments from management to employees periodically, low guest's repeat visits, and high number of cancellations. From the study, most employees 21(70%) had encountered or experienced a customer/guest dissatisfaction complaint at least once, while 6(20%) experienced a customer/guest dissatisfaction

complaint twice. It can be concluded, therefore, that customer/guest dissatisfaction complaint was, at the maximum, experienced only once as indicated in Figure 4.4. Subsequent to an effective maintenance system, quality in production and service delivery was also assessed and evaluated through customer satisfaction forms and customer relationship management.

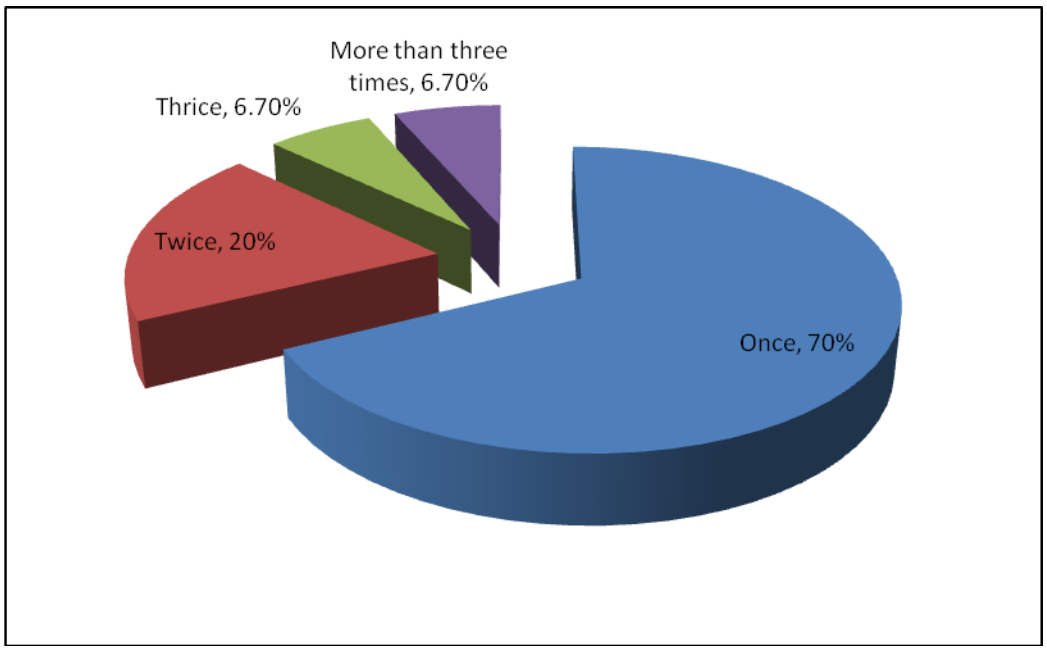

Figure 4.4: Periodicity of guest satisfaction/dissatisfaction reaction

On standard procedures for maintenance operations in the hotel, the study showed that 96.7%(29) of the hotels did not have standard procedures for all maintenance operations, while only 3.3%(1) had standard procedures. The finding further showed that adoption of preventive maintenance in the hotel industry is still low.

On the employees' perception on the effect of preventive maintenance on quality of production and service delivery, results show that employees in the hotel industry had

varied perception. Most of employees 96.7 %(29) agreed that optimum production and timely service delivery brought about by preventive maintenance are measurable parameters for operational standards, competitiveness and customer satisfaction. About 76.7%(23) of the employees agreed that the effect of preventive maintenance on quality of production and service delivery override other key operating factors. A majority of employees 86.7%(26) agreed that preventive maintenance as a system, dictates the type of equipment and technology to be adopted for quality performance and further that, preventive maintenance as an effective tool for accomplishing tasks and achieving team and individual needs, is used by many hotels as a business-unit strategy in the competitive hospitality industry.

80%(24) of the employees agreed that an effective and reliable preventive maintenance programme can overcome the zone tolerance effectively, that is the zone between what customers expect and what they consider to be minimum acceptable product/service satisfactory level. It is right, therefore, to state that customer satisfaction rating was correlated to the level of quality performance that was built on the right preventive maintenance programme. Most of employees 90 %(27) agreed that a gap between products/services quality standard and actual product/service delivery can be corrected by implementing an appropriate preventive maintenance system. A majority of employees 83.3 %(25) agreed that customer satisfaction is determined by the quality of the product and service delivery process and an appropriate preventative maintenance system ensures a sustainable corporate advantage and competitive edge.

Table 4.2 shows the employees' perception on the effect of preventive maintenance on quality of production and service delivery

Table 4.2: Employees' perception on effect of preventive maintenance on quality of production and service delivery

STATEMENT	SA		A		UD		D		SD	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Optimum production and timely service delivery brought about by preventive maintenance are measurable parameters for operational standards and competitiveness	19	63.3	10	33.3	1	3.3				
The effect of preventive maintenance on quality of production and service delivery override other key operating factors	6	20.0	17	56.7	6	20.0	1	3.3		
Preventive maintenance as a system, dictates the type of equipment and technology to be adopted for quality performance	8	26.7	18	60.0	3	10.0	1	3.3		
Preventive maintenance, as an effective tool for realizing tasks, team and individual needs, is used by many hotels as business-unit strategy in fragile hospitality industry	16	53.3	10	33.3	3	10.0	1	3.3		
An appropriate preventative maintenance system ensures a sustainable corporate advantage and competitive edge	16	53.3	9	30.0	5	16.7				
Customer satisfaction is determined by the quality of the product and service received	22	73.3	7	23.3	1	3.3				
Customer satisfaction is determined by the quality of the production and service delivery process	10	33.3	15	50.0	5	16.7				
The gap between products/services quality specification and product/service delivery can be corrected by implementing an appropriate preventive maintenance system	11	36.7	16	53.3	3	10.0				
An effective and reliable preventive maintenance programme can overcome the zone tolerance which is effectively the zone between what customers expect and what they consider to be minimum acceptable product/service level	4	13.3	20	66.7	6	20.0				
It is right to state that customer satisfaction rating is correlated to the level of quality performance that is built on the right preventive maintenance programme		36.7	13	43.3	2	6.7	4	13.3		

Legend: SA – Strongly agree, A – Agree, UD – Un-decided, D – Disagree, SD – Strongly disagree

However, the importance of quality in service delivery cannot be underrated. Service, which is a social act, takes place in direct contact between the customer and representative of the service company. In service delivery, the distinctive features that ensure quality is different from that for manufacturing, are: the time (how long) a customer waits; timeline – the specific delivery time of the day; completeness – all

items ordered are delivered ; courtesy – do front-of-the-house staff greet each guest appropriately; consistency – are services delivered in the same manner for every guest; accessibility and convenience – is the service delivery executable; accuracy – is the service carried outright the first time; and responsiveness – can service personnel react fast and resolve unusual demands? Thus the quality of interaction is significant in every service delivery which involves human contact, hence service oriented organizations including hotels, develop quality assurance systems though they may be based on technical specifications in areas such as housekeeping, car park and swimming pool.

The study showed that setting service levels and measuring them may be difficult in that, standards of service are closely related to human behaviour. In contrast, in production or manufacturing, standards are measured by output, defects, and rework, while customer attitudes and employee competence are not easily measurable. Work must be performed at the convenience and upon the demand of the guest, for preventive maintenance to have any effect on the quality of production and delivery of service. Hence training of employees and capacity building is necessary especially when it is directed towards overcoming the zone of tolerance which is the zone between minimum acceptable product/service quality and satisfactory level from the customer's perspective.

4.6 The relationship between preventive maintenance and quality of production and service delivery in the hotels

The chi-square test (χ^2 test) of independence was used to test the relationship and the results in Tables 4.3 show that there was significant influence of preventive

maintenance quality production (X^2 = (30.00), (7) p<0.05) as the *p* value was below 0.05.

Table 4.3: The relationship between preventive maintenance and production

	Value	***df***	**Asymp. Sig. (2-sided)**
Pearson's correlation	30.000[a]	7	.000
Likelihood Ratio	19.505	7	.007
Linear-by-Linear Association	0.168	1	.682
N of valid cases	30		

The results in Table 4.4 show that there was no significant influence of preventive maintenance on service delivery (X^2 = (13.33), (7) p>0.05) since the *p* value was above 0.05.

Table 4.4: The relationship between preventive maintenance and service delivery

	Value	***df***	**Asymp. Sig. (2-sided)**
Pearson's correlation	13.333[a]	7	.064
Likelihood Ratio	10.508	7	.162
Linear-by-Linear Association	4.852	1	.028
N of valid cases	30		

This was an indication that preventive maintenance influences quality production and not service delivery.

4.7 Challenges Affecting the Implementation of Preventive Maintenance

The challenges facing the implementation of preventive maintenance programme in hotel establishments were enormous depending on the type and size of the hotels. The

aim was to establish whether the employees understand what preventive maintenance is and its benefits to the workforce and specifically to productivity. Sections on the employees' perception on preventive maintenance, annual inspection and maintenance planner, maintenance job logs and monitoring tools used are also included.

Figure 4.5 shows that 22(73.3%) of the hotels do not have an organizational master or annual planner for the maintenance of equipment, while 8(26.7%) of the hotels had a master or annual planner for asset management as shown in. Those hotels with master or annual planner for assets and facilities, located the planner in the engineering or maintenance department's office and that the deputy engineer or supervisor is in-charge of the implementation of the scheduled work. Hotels without a master or annual planner conducted inspections and service review on monthly basis.

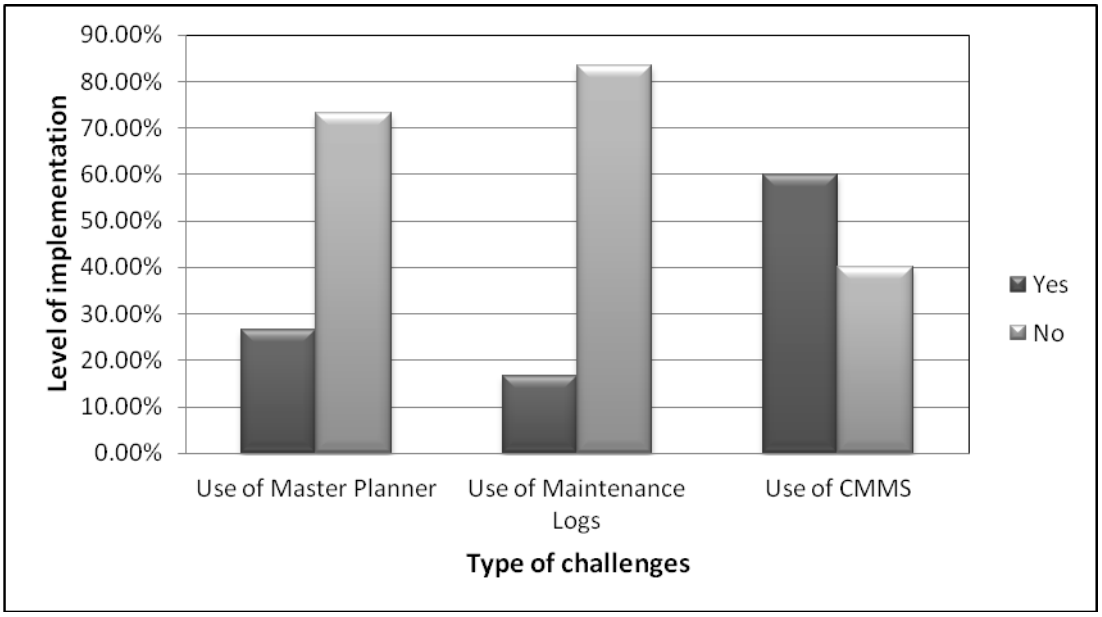

Figure 4.5: Challenges affecting preventive maintenance implementation

The study revealed that most of the hotels 25(83.3%) do not fill the maintenance logs for every maintenance job or request, and that only 5(16.7%) of the hotels actually filled the maintenance logs for every maintenance job or request. The maintenance job logs are normally filled by the artisan or engineer after he had finished the maintenance work indicating the problem and the solution or remedy done. Majority of the hotels 60%(18) used computerized (CMMS) monitoring tools and devices during maintenance and inspection work, when 40%(12) of the hotels used non-computerized (manual and conventional) monitoring tools and devices. From the study it was noted that it was the team leader (engineer, department head or supervisor) who analyzed the maintenance inspection reports.

Most of the employees 96.7 %(29) agreed that preventive maintenance improves machine and equipment performance, however, 3.3%(1) were undecided. 93.3%(28) of the employees agreed that loss of time due to equipment breakdown was reduced and productivity of both the individual worker and teams improved to competitive levels, but 6.7%(2) were undecided on that opinion. Majority of the employees 83.3%(25) agreed that reliability of preventive maintenance boosted workers motivation and morale and that the adaption of a preventive maintenance programme ensured a continuous staff training and development process, when 16.7%(4) disagreed over the statement.

The perception on the importance of preventive maintenance in the hotels varied amongst the employees as shown in Table 4.5.

Table 4.5: Employees perception on the importance of preventive maintenance

STATEMENT	SA		A		UD		D		SD	
	f	%	*f*	%	*f*	%	*f*	%	*f*	%
Preventive maintenance improves machine and equipment performance	23	76.7	6	20.0	1	3.3				
Loss of time due to equipment breakdown is reduced	16	53.3	12	40.0	2	6.7				
Productivity of individual workers and teams is improved to competitive levels	10	33.3	18	60.0	2	6.7				
Reliability of preventive maintenance boosts workers motivation and morale	16	53.3	9	30.0	1	3.3	4	13.3		
Installation of a preventive maintenance programme ensures continuous staff training and development process	10	33.3	15	50.0	1	3.3	4	13.3		

Legend: SA – Strongly agree, A – Agree, UD – Un-decided, D – Disagree, SD – Strongly disagree

CHAPTER FIVE

DISCUSSION

5.1 Introduction

This chapter presents the researcher's interpretation of the findings of the study based on the specific objectives. The chapter comprises of five sections which include: demographic information on the respondents and the hotels profile; maintenance systems practiced in the hotels; capacity and capability of the hotels to implement preventive maintenance; effects of preventive maintenance on quality production and service delivery; and challenges affecting the implementation of preventive maintenance programme in the hotels.

5.2 Demographic Information of the Respondents and Hotel Profile

Demographic Information of the Respondents – the study revealed that most employees in the hotel industry in Kenya were recently employed and below 3 years of continuous service. This finding indicated that reliability and capability of the human resource on a sustainable preventive maintenance programme for quality production and service delivery cannot be ascertained in the hotels. This argument was evident in the finding that preventive maintenance had no effect on service delivery in the hotels, thus services depended on the physical human element of the worker as an input.

Hotel Profile – The ownership of the hotels was to the majority (80%) based on shareholding venture either as a joint venture, partnership or cooperative society and few hotels (20%) were under sole proprietorship as individual or family units. Thus

the hotel industry profile in Kenya evolved to the current status as a result of the trend in recruitment practices where persons with inadequate skills, knowledge and experience were employed in large numbers. This scenario further underscored the management style in the hotels which in majority was the owner-operated management type as opposed to the international practice of contractual management by professional international firms or franchising.

5.3 Maintenance systems practiced in the hotels

The study showed that the hotel industry in Kenya had not fully embraced preventive maintenance for the enhancement of quality production and service delivery. In most hotels, it was found that maintenance reports were made manually instead of the use of electronic devices.

5.4 Capacity and capability of the hotel to implement preventive maintenance

The findings of the study indicated that the levels of skills, training and general development of the human resource and inventory of the equipment to carry out preventive maintenance in the hotels varied greatly from hotel to hotel. It was found that 73.3% of the hotels did not conduct staff training programmes or workshops and that it was only 26.7% of the hotels that undertook some training and development to the maintenance personnel. Subsequently, majority of the hotels (73.3%) lacked the ability to conduct staff training and development in maintenance processes. This translates into incapacitation to implement preventive maintenance as expected. The study, however, showed that for these hotels that could not afford to hold training opted for on-job-training. The majority of the hotels (63.3%) held trainings outside their hotels while 36.7% held training in-house.

The findings of this study further indicated that 93.3% of the hotel employees agreed that preventive maintenance cut costs of production and service delivery, and undecided 6.7%; 80% of the employees agreed that the initial cost of adopting preventive maintenance was high and prohibitive considering staff training and computerized monitoring systems; 100 % of the employees agreed that cutting costs in production and service delivery ensured maximization of profits; 100% of the employees agreed that preventive maintenance increased the life span of the equipment and machine in the hotel and further agreed that preventive maintenance also reduced time and cost of repairs ad maintenance.

5.5 Effects of preventive maintenance on the quality of production and services

The study suggested that most hotels did not have standard procedures in their operations, however, majority of the employees affirmed that preventive maintenance was a measurable parameter for standards of operations, competitiveness and customer satisfaction. A high number of employees indicated that a preventive maintenance system superseded other operational systems on quality of production and quality service delivery and further that preventive maintenance had an influence over the type of equipment and machinery used in hotels.

Majority of the employees suggested that preventive maintenance superseded the zone of tolerance which is the zone between what customers expect and what is the minimum acceptable level of quality production and quality service delivery and noted that the gap between quality specifications in production and service delivery and the actual production and service delivery, could be corrected and eliminated by

adopting preventive maintenance while customer satisfaction could be determined by quality production and quality service delivery.

5.6 The relationship between preventive maintenance and quality of production and service delivery in the hotels – In testing the relationship, the cross tabulation was used to determine the relationship between preventive maintenance and quality production and service delivery and it was shown that there was significant influence of preventive maintenance on quality production but no significant influence of preventive maintenance on service delivery.

According to Ayree (2011:55), preventive maintenance is the main technique adopted to save costs and it achieved this through teamwork via employee responses, customer reactions, inspection and training, and further that technology can assist hotel management and maintenance managers to determine what must be maintained and how frequent to schedule preventive maintenance.

5.7 Challenges hindering the implementation of preventive maintenance programme – The findings of the study showed varied opinion and perception among the workforce in the hotels on challenges of the implementation of preventive maintenance. Some respondents viewed preventive maintenance as actions taken to keep equipment in operating condition to forestall the need for major repairs, while others viewed preventive maintenance as a specific measure to have machines and equipment remain productive at all times. The findings indicated that 73.3% of the hotels did not have master planner for the maintenance of equipment, while only 26.7% had a master planer for asset management and maintenance. Of the hotels that

have adopted the master planner, 60% of them used computerized monitoring tools and devices during asset management processes and inspections, while 40% used manual or conventional monitoring systems.

CHAPTER SIX

SUMMARY, CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This chapter contains the summary, conclusion and recommendations from the study. It comprises two sections: the conclusions and the recommendations, which aim at giving a conclusive opinion of the researcher on study, and gives recommendations both in general and specific to the management in the study area. Included is also gives a recommendation for further research in this field.

6.2 Summary

The capability of a hotel to implement a maintenance system varied from hotel to hotel with the sole proprietor or owner-operated and single unit hotels finding it difficult to adopt a preventive maintenance programme as compared to the well established and large hotels operating as joint-ventures or international. Small hotels lacked the capability to invest in an effective and efficient maintenance department owing to the cost of investment while large hotels enjoyed scale advantage in operations and were therefore capable to have a well equipped functioning maintenance department. Thus the capability to implement preventive maintenance revolved around financial ability to recruit qualified maintenance personnel, procurement of equipment and technology, and provision of continuous training and development to enhance skills and confidence.

Preventive maintenance, as a planned maintenance, when implemented properly had

an observable and measurable effect on quality production while it had insignificant effect on service delivery. Whereas service is intangible and determination of service quality being subjective, standards in production were ease to detect and measure particularly whether they met and satisfied the needs and expectations of the customers and guests. Repeat visits by guests and increased volume of business from visitors who have been referred by regular clients was thus a key indicator of quality production and service delivery. Customer loyalty was another indicator of implementing preventive maintenance in the hotel industry.

In the few hotels in Kenya (10%) that had a maintenance department, and these were the large hotels of both domestic and international holding, computerization helped in the dispatching of job orders and maintenance of job logs. Majority (90%) of the hotels which did not have a maintenance department, used manual reporting that included use of telephone, verbally in person and on order papers which was significantly slow and subject to unclear, distorted or ambiguous particulars. It is thus evident that the importance of a maintenance system had not been fully embraced by many hotels in Kenya for sustainable quality production and services.

6.3 Conclusion

The relationship between preventive maintenance and production existed and was significant in that preventive maintenance affected the quality of production. The relationship between preventive maintenance and services was negligible or indirect since preventive maintenance did not affect service delivery in the hotels.

Despite the difficulties and challenges facing Kenyan hotels in the implementation of

preventive maintenance programme, majority of the hotel employees affirmed that the reliability of preventive maintenance on quality of production and services enhanced the workers motivation and morale at the workplace. It also improved the competitive advantage of the hotel over its competitors as a corporate strategy and brand.

6.4 Recommendations

6.4.1 Recommendations for Management

Owner operated and single unit hotels in Kenya should co-operate and form partnership or franchises that will leverage their capability to the adoption and implementation of preventive maintenance programmes.

6.4.2 Recommendations for Further Research

To determine the correlation between quality production and service delivery systems and customer loyalty.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR HOTEL PERSONNEL AND MANAGEMENT

EFFECTS OF PREVENTIVE MAINTENANCE OF ASSETS ON QUALITY PRODUCTION AND SERVICE DELIVERY IN SELECTED HOTELS IN KENYA

QUESTIONNAIRE FOR HOTEL PERSONNEL AND MANAGEMENT

Name of your hotel, star classification, and city in which it is located:

Name:_____ Classification:_____ City:_____

SECTION A: Personal and Hotel Profile

1. What is your job position/title? _____

2. For how long have you held the position/title in years? _____

3. What is the status of ownership and operation of the hotel?
   a) Ownership: Sole Proprietor ☐ Partnership Proprietor ☐
   Joint venture ☐ Joint stock company ☐
   Co-operative society ☐ Any other (please specify) ☐

a) Operation: Single hotel unit ☐ Domestic hotel chain ☐
International hotel chain ☐ Franchise ☐

SECTION B: Maintenance Systems

1. Does the hotel have a maintenance programme? Yes ☐
   No ☐

2. a) If Yes, what type of maintenance programme?

_____

_____

b) If No, explain how maintenance is carried out in the hotel?

_____

_____

3. a) Is the maintenance programme adopted useful to the operations? Yes ☐ No ☐

b) If No, how does the hotel get maintenance activities carried out satisfactorily?

_____

_____

4. How are the maintenance jobs reported to the maintenance department?

_____

_____

5. What is the time frame for action?

_____

_____

6. Who ensures action?

_____

_____

SECTION C: Challenges Hindering Preventive Maintenance Implementation

1. What in your perception is preventive maintenance?

_____

_____

2 a) Does your organization have a Master or Annual Planner for equipment inspection and maintenance? Yes ☐ No ☐

b) If Yes, where is it located and who is in-charge of the schedule of works and implementation?

_____

_____

c) If No, how are periodic inspections and maintenance work carried out?

_____

_____

7. a) Are maintenance job logs (work request forms) filled for every job?

Yes ☐
No ☐

b) If Yes, when is it filled and where completed (acted upon) job logs or work request forms kept (filing)?

_____

_____

c) If No, how do you record maintenance jobs carried out?

_____

_____

8. a) What type of monitoring tools and devices do you use during maintenance inspections?

Computerized (electronic) ☐
Non-computerized (manual/conventional) ☐

b) Who analyses the maintenance inspection reports in the hotel?

_____

_____

9. Are all maintenance jobs carried out by the hotel personnel or the services are out-sourced?

_____

_____

10. Please respond to the statements in the table below by placing a tick (√) at your appropriate answer.

	STATEMENT	STRONGLY AGREED	AGREED	UNDECIDED	DISAGREED	STRONGLY DISAGREED
1.	Preventive maintenance improves machine and equipment performance					
2.	Loss of time due to equipment breakdown is reduced					
3.	Productivity of individual workers and teams is improved to competitive levels					
4.	Reliability of preventive maintenance boosts workers motivation and morale					
5.	Installation of a preventive maintenance programme ensures continuous staff training and development process					

SECTION D: Capacity and Capability to Implement Preventive Maintenance

1. a) Are staff training and development programmes carried out for the maintenance personnel? Yes ☐ No ☐

b) If Yes,

(i) What criteria are used to select those to attend training?

_____

_____

and which job specifications/titles?

_____

_____

(ii) Where are the training workshops/seminars held?

In-house ☐

Outside ☐

(iii) How are the training certified?

_____

_____

c) (i) How are the maintenance staff motivated?

_____

_____

(ii) What are the channels of communication?

_____

_____

(iii) How are instructions, procedures and processes communicated to the artisans?

_____

_____

2. a) What is your staff establishment in the maintenance department? _____

b) What is the job title of the head of the maintenance department or team?

_____

3. a) Is the monitoring of equipment and facilities done on request or periodically as planned?

_____

_____

4. a) What type of maintenance works is out-sourced?

_____

_____

5. Explain how job logs (work request forms), work orders, and maintenance analysis reports maintained?

_____

_____

6. Please respond to the statements in the table below by placing a tick (√) at your appropriate answer.

	STATEMENT	STRONGLY AGREED	AGREED	UNDECIDED	DISAGREED	STRONGLY DISAGREED
1.	Preventive maintenance reduces costs of repairs and maintenance					
2.	Validity of a preventive maintenance programme is the overall cost cut in production and service delivery					
3.	The life span and running time of equipment and machines in general is increased					
4.	Through saving in costs of production and services, preventive maintenance indirectly ensures profit maximization					
5.	The initial cost of preventive maintenance could be high and prohibitive					

SECTION E: Effects of Preventive Maintenance on Quality of Production and Services

1. a) Are there standard procedures for all operations in the hotel? Yes ☐ No ☐

b) How do they ensure an effective maintenance system?

_____

_____

2. To whom do you report the deviances in the standard operation procedures?

(i) For repairs and maintenance: _____
(ii) For food production: _____
(iii)For food and beverages service: _____

3. How do you measure quality in the production and service delivery processes?

_____

_____

4. a) What are the indicators of customer/guest satisfaction and dissatisfaction?

Satisfaction:_____

_____

Dissatisfaction:_____

_____

b) How regularly in a period of two weeks do you experience a case of customer/guest dissatisfaction?

Once	☐	Twice	☐
Thrice	☐	More than 3 times	☐

(i) If you had, of what nature was it and how did you handle it to meet the need

of the that customer/guest?

_____

_____

c) If none, what was the ultimate reaction of the customer/guest?

_____

_____

5. At your workstation, how do you assure quality production and quality service delivery? Briefly explain.

_____

_____

6. What is quality?

_____

_____

7. a) From your experience and professional observation, please respond to the following statements. Please tick (√) where appropriate:

	STATEMENT	SA	A	UD	DA	SDA
1.	Optimum production and timely service delivery brought about by preventive maintenance are measurable parameters for operational standards and competitiveness.					
2.	The effect of preventive maintenance on quality of production and service delivery override other key operating factors					
3.	Preventive maintenance as a system, dictates the type of equipment and technology to be adopted for quality performance					
4.	Preventive maintenance, as an effective tool for realizing task, team and individual needs, is used by many hotels as a business-unit strategy in the fragile hospitality industry					
5.	An appropriate preventive maintenance system ensures a sustainable corporate advantage and competitive edge					
6.	Customer satisfaction is determined by the quality of the product and service received					
7.	Customer requirements (needs) and reactions are built into production and service delivery processes					
8.	The gap between product/service quality specification and product/service delivery can be corrected by implementing an appropriate preventive maintenance system					
9.	An effective and reliable preventive maintenance programme can overcome the zone of tolerance which is effectively the zone between what customers expect and what they consider to be the minimum acceptable product/service level.					
10.	Is it right to state that Customer Satisfaction Rating is					

	correlated to the level of Quality Performance that is built on the right preventive maintenance programme					

Legend: SA – Strongly agree, A – Agree, UD – Un-decided, D – Disagree, SD – Strongly disagree

Thank you for taking your time to complete the questionnaire. Please check to ensure that you have not left any questions unanswered.

APPENDIX II: QUESTIONNAIRE FOR HOTEL GUESTS

EFFECTS OF PREVENTIVE MAINTENANCE OF ASSETS ON QUALITY PRODUCTION AND SERVICE DELIVERY IN SELECTED HOTELS IN KENYA

QUESTIONNAIRE FOR HOTEL GUEST

SECTION A: Guest's Profile

1. a) Are you a resident or non-resident guest of the hotel?

   Resident ☐
   Non-resident ☐

   b) If non-resident, are you resident of another hotel? Yes ☐ No ☐

2. Do you live in Kenya or are you a traveler? _____

3. How did you know of this hotel?

_____

_____

4. What is your nationality? _____

SECTION B: Satisfaction

1. What specific aspect of the hotel product, service or value attracted you to the hotel?

_____

_____

2. a) Does the hotel appeal to you and meet your expectations? Yes ☐
No ☐

b) What are your expectations from the hotel?

_____

_____

3. a) How many times do you visit the hotel?

Once a year ☐ Twice a year ☐ Monthly ☐ Weekly ☐ Daily ☐

b) When did you last visit the hotel? _____ (date)

c) (i) Do you get satisfaction from the products and/or service delivery in the hotel?
Yes ☐
No ☐

(ii) Kindly briefly explain your experience and satisfaction?

_____

_____

4. a) Do you think the maintenance of the equipment effectively makes the hotel meet your needs?

Agree (3) ☐ Disagree (2) ☐ Not Sure (1) ☐

b) Kindly briefly explain to support your opinion.

_____

_____

SECTION C: Quality

1. What is quality?

_____

_____

2. a) If today the hotel was to change its management, would you still visit it?
Yes ☐
No ☐

b) Whether Yes or No, kindly explain your stand?

_____

_____

3. a) And if you are asked to change and visit another hotel in the city, which one would you choose? _____ (name)

b) Kindly explain your opinion?

_____

_____

Thank you for taking your time to complete the questionnaire. Please check to ensure that you have not left any questions unanswered.

APPENDIX III: INTERVIEW SCHEDULE (GUIDE)

EFFECTS OF PREVENTIVE MAINTENANCE OF ASSETS ON QUALITY PRODUCTION AND SERVICE DELIVERY IN SELECTED HOTELS IN KENYA

INTERVIEW SCHEDULE (GUIDE)

1. When was preventive maintenance programme last implemented in the hotel?

2. What maintenance system was used before adopting the preventive maintenance programme?

3. How relevant is preventive maintenance to efficiency in production and effective service delivery processes?

4. Do you think quality production can be realized through excellent maintenance of equipment and tools?

5. Do you think effective and efficie nt service delivery can be realized through optimum preventive maintenance?

6. What do you think is the relationship between a good parking bay (car park) and preventive maintenance?

7. How do you find preventive maintenance as a strategy towards realizing competitive advantage?

8. Explain your understanding of the relationship between optimum preventive maintenance and quality production process, and quality service delivery operation in the hotel?

9. Do you believe that customer satisfaction is a product of good preventive maintenance?

10. What do you like about the preventive maintenance programme?

APPENDIX IV: THE MAP OF KENYA SHOWING THE STUDY AREA NAIROBI, KISUMU, NAKURU AND ELDORET CITIES

Source: www.worldatlas.com/webimage/countrys/africa/Igcolor/kecolor.htm