

Challenges Hindering the Implementation of Preventive Maintenance in Hotels in Kenya

¹Peter Makomere, ¹Paul Odwori, ²Ruth Tubey & ¹Julie Makomere

¹University of Eldoret & ²Moi University, Eldoret, Kenya

Abstract

In Kenya, the hospitality industry is regulated by the central government and all hotels are categorized into five classifications (1-Star to 5-Star). The classification and ranking of the hotels reflect the operational standards and also the level of asset management and maintenance systems in the industry as a whole. The purpose of this study was to examine the challenges affecting the implementation of preventive maintenance in the hotel establishments. The target population was five town hotels in the range of 3-Star to 5-Star in Nairobi, Kisumu, Nakuru and Eldoret towns. Purposive sampling was used to select the study area, while stratified and simple random sampling was 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. Miles and Snow Generic Business-Level Strategies model was used to guide the study. Questionnaire was the main data collection instrument and data was analyzed using statistical package for social sciences (SPSS), Spearman rank correlation and χ^2 test analysis. The study concluded that challenges do exist in the hotels in the implementation of preventive maintenance programmes in an unplanned and unstructured manner coupled with inconsistent staff training. The paper proposes that for a sustainable and continuous production and service delivery in Kenyan hotels, there is need for adoption of preventive maintenance and asset management programmes.

Key words: *Implementation, preventive maintenance, asset management, production*

Introduction

The hospitality industry has grown tremendously since 2001 and has been driven by both leisure and business demand (Kloppers, 2005). Chan, Lee & Burnett (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. Hentley, Cotter & Henington (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.

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). Many organizations seeking to gain competitive advantage, base it on cost, quality, service and on-time deliveries. The effect of well implemented maintenance programme on these variables has awakened the attention to maintenance as an essence to improvement in productivity. Inman (2009) asserts that maintenance is rapidly evolving into a major contributor to the

performance and profitability of manufacturing systems. As a process, maintenance, involves planning, implementation and control levels that enable production and service systems to operate in accordance to schedule; and keep them under expected standards of output (Ayyidiz, 2000).

Preventive maintenance scheduling and strategy is crucial in maximizing output while reducing work-in-progress inventory. Performing preventive maintenance is almost always the best long-term strategy to maintain equipment (Conzens, Hiroshige & Smith, 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 and implement them as prescribed in the routine in-house repairs and maintenance schedule or manufacturers' manual, 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: the component in question has an increasing failure rate, which with time, implies wear and tear; and the overall cost of the preventive maintenance action must be less than the overall cost of corrective action. This denotes that overall cost includes downtime costs, loss of production costs, loss of goodwill, lawsuits over aspects of failures and liabilities. Implementation of preventive maintenance can be based on equipment running hours, date based or for vehicle distance travelled - 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). 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. This is realized based on a plan drawn up to decrease breakdown frequency (Karaoglan et. al., 2007). Great losses stemming from sudden breakdowns can be prevented.

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.

A maintenance system is designed based on various sub-systems and interpersonal relationships (Bowesex & Closs, 1996); culture, structure and management style; and dynamic internal structures (Karlof & Lovingsson, 2005) for control of the uncertainties in the competitive environment whose result is more than the sub-systems or items (Aghaee & Fazli, 2002). According to Levitt (2003) the goal of maintenance is to keep the physical assets in an existing state.

Hospitality industry distinguishes itself by a high level of outstanding quality of service and its finest enterprises have become benchmarks for other service organizations such as health care, retail, banking, non-profits, voluntary, and many others (Pizam, 2011). The industry caters for all types of clientele virtually across the social class and economic divide, and that perhaps, explain why hotels are classified into higher, medium and lower standards in terms of patronage. Serving both the local and foreign guests as tourists, businessmen, and corporate as a whole, the hospitality industry is obliged to offer quality services and products that meet the expectations and satisfaction of the clients.

Statement of the Problem

Preventive maintenance (PM) in the hotel industry enhances productivity and quality services delivery; hence profit maximization through increased patronage. The key challenge in the hotel industry in Kenya lies in lack of understanding that preventive maintenance when well implemented could be a business unit strategy that leads to a competitive edge in an industry.

The Purpose of the Study

This study aims at showing the relationship between implementation of preventive maintenance and quality of production and service delivery in the hotel industry in Kenya.

The specific objectives:

- a) To determine the maintenance systems practiced in the hotel industry.
- b) To examine the capacity and capability of the hotels in implementing preventive maintenance programmes.
- c) To analyze barriers which affect the implementation of preventive maintenance programmes in the hotels.

Literature Review

Review of Theories

Michael Porter (1991) put forward 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. 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 & Snow (1978) suggest a 3-Generic Business-Level Strategies Model 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; and 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 Miles & Snow (1978) 3-Generic Business-Level Strategies Model as the appropriate theory to use since it addresses the problem of the study.

Criticisms of Theories

Mill's and Snow's 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 & Fredrickson, 2001); strategies and organizational resources need to compete successfully and differently at each stage of business life-cycle; evaluating of industry condition side by side with internal strength enables a firm to select and appropriately apply a business-level strategy that meshes industry opportunities with the firm's competencies (Parthasarthy, 2007); and it is the firm's internal resources and capabilities that are a source of competitive advantage and not market position (Barney, 2002).

The main objective of carrying out PM is to reduce the frequent and sudden failures by performing repairs, replacements, overhauling, lubrication, clearing and inspection (Gits, 1992) at predetermined time intervals of, for example, weekly, monthly, bi-monthly, half-yearly or annually, regardless of the condition of the equipment. Thus, PM, reduces the probability of equipment breakdown by proper planning of interval (age-based or calendar time) for carrying out preventive maintenance tasks (Dekker, 1996).

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 the implementation 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 capabilities (Singer, 1999). The capability of CMMS to manage maintenance information contributes to improved communication and decision-making capabilities within the maintenance function.

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.

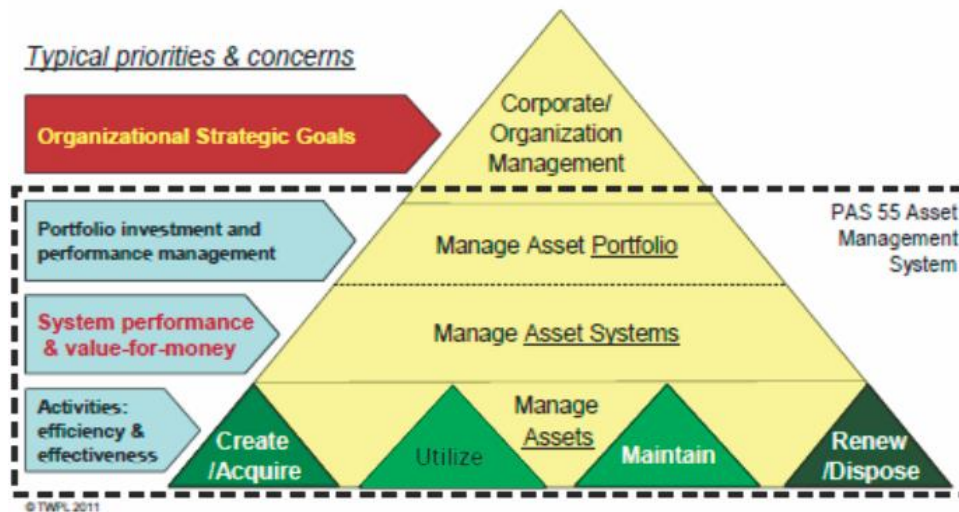


Fig. 1: Typical Priorities and Concerns
Source: Woodhouse, (2012)

At the higher levels of the organizational hierarchy, the system integration smoothens the activities into programmes of investment system performances, sustainability and risk profiles. Based on British Standard PAS 55 (soon to be known as ISO 55000), the strategies and plans for assets will have appropriate horizons that are widely different, depending upon technology, turnover rates, demand forecasts, asset degradation timescales, asset maintainability, optimum and renewal timing, among others, in asset management as shown in Figure 1.

Future implementation of maintenance will become more flexible and “service productivity oriented” than today. Today’s information technologies (IT) have only just begun to change the industrial service world. Historically, maintenance has been reactive where customers request the provision of repairs or maintenance, which is then executed by the service specialists.

Indicators for a sound implementation of a 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. A good implementation process also reduces interruptions brought about by breakdowns and hence decreased time loss, prompt and timely service delivery, and maintaining of optimum stock levels for spare parts (Sarac, 1991).

Hassanien (2007) asserts 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.

Methodology

The study area selected were town hotels located in Nairobi, Kisumu, Nakuru and Eldoret in Kenya. 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, Nakuru and Eldoret, and two 5-Star hotels in Nairobi. The target population was derived from hotels in these four towns using purposive sampling to get two managers from each of the Nairobi 5 star hotels and one manager each from the 3 star hotels in the other towns, considering Nairobi have more workers than hotels in Nakuru, Kisumu and Eldoret due to the nature of business and competition. The total eligible participants in the study was 100, as shown in Table 3.1, made up of the maintenance personnel and staff in the food production and service areas and public area such as the swimming pool, gardens and car park.

The research design in this study was survey. The design assisted in achieving a quantitative and qualitative description of the study (Oso Future implementation of maintenance will become more flexible and “service productivity oriented” than today. 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.

Target Population**Table 1: Sample Frame**

RESPONDENTS	NAIROBI	KISUMU	NAKURU	ELDORET
Management:				
Head of Maintenance	2	1	1	1
Chef	2	1	1	1
Houskeeper	2	1	1	1
F & B Manager	2	1	1	1
Supervisors:				
Maintenanc	2	1	1	1
Room/Housekeeping	2	1	1	1
Restaurant and Bar	2	1	1	1
Sous Chef	2	1	1	1
Swimming Pool	2	1	1	1
Workforce:				
Maintenanc	6	2	2	2
Room Stewards	6	2	2	2
Restaurant and Bar	6	2	2	2
Cooks	6	2	2	2
Swimming Pool	4	1	1	1
SUBTOTAL	46	18	18	1
TOTAL				100

Findings and Discussions***Maintenance Systems Practiced in the Hotels***

The results show that 3 (10%) had a designated department responsible for maintenance, while most 27 (90%) of the hotels did not have such a department. 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 progress, maintenance services were obtained from external expertise through occasional contracts or outsourcing system.

Capacity and Capability of the Hotels to Implement Preventive Maintenance

Capability was measured against the ability, knowledge and skills to meet customer expectations, specifications and wants. 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. For those hotels that carried out training, the criteria used for selecting those who should attend training varied from hotel to hotel including: human resource planning; type of training; and performance appraisals. 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.

Employees in the hotel industry had varied perception on the capacity and capability of the hotels to implement 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 that it realizes savings in cost of production and services thus ensuring profit maximization. Table 2 shows that majority of the employees 28 (93.3%) agreed that the validity of preventive maintenance programme is the 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 2 (6.7%) disagreed that initial cost of preventive maintenance could be high and/or prohibitive.

Table 2: Employees' Perception on Capacity and Capability of the Hotel in 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 equipment and machines in general is increased	16	53.3	14	46.7						
Through saving in costs 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

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 2 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.

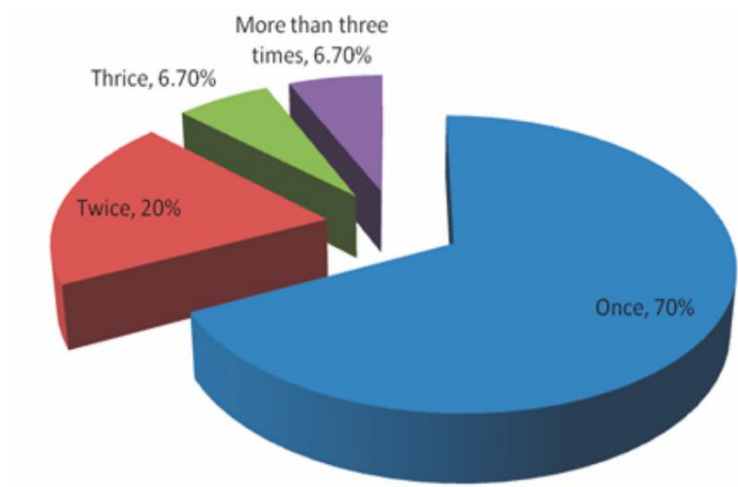


Fig. 2: Periodicity of Guest Satisfaction/Dissatisfaction Reaction

On standard procedures for maintenance operations in the hotel, the study showed that 96.7% (n=29) of the hotels did not have standard procedures for all maintenance operations, while 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. As indicated in Table 2, 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.

About 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.

Barriers to Implementation of Preventive Maintenance

The results showed 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 Figure 3. Those hotels with master or annual planner for equipment, 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 for equipment maintenance conduct inspections and service review on monthly basis.

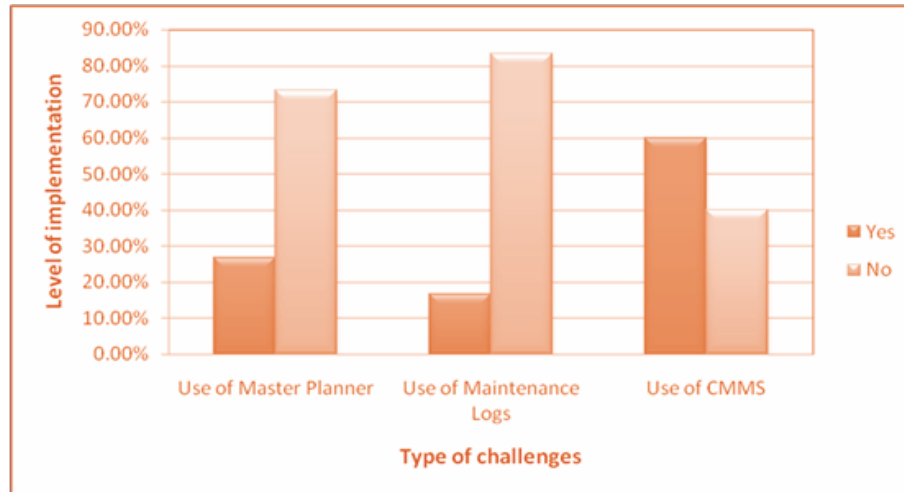


Fig. 3: Barriers to Implementation of Preventive Maintenance.

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.

The perception on the importance of preventive maintenance in the hotels varied amongst the employees. As indicated in Table 4.2, 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.

Table 3: 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

Most management staff pointed out that it had become difficult to sustain competition when still using obsolete equipment and having less conducive working environment for the workers. This led to the current trend of renovations of hotel facilities, expansions, replacement of old machinery with modern and efficient models, and adoption of maintenance programmes. It was noted that in the past, maintenance was carried out only when equipment shows signs of breakdown or malfunctioning as compared to the modern approach of planned and controlled inspections and corrective action before stoppages. Preventive maintenance was said to be relied upon for effective and optimum, productivity and services particularly in the kitchen, central ventilation systems and swimming pool equipment.

Public areas were also mentioned to be beneficiary of preventive maintenance while the good and appealing conditions of the gardens and car parks added some aspects of acceptable

standards to guests and a competitive edge in the marketplace. Whether preventive maintenance provided a competitive advantage to a hotel entity was dependent on the capacity of the hotel to adopt and implement successfully a maintenance system relevant to the machines and hardware installed. This ability to have an in-house maintenance team reflected the financial capital base and level of investment into the hotel facility with most owner-managed units outsourcing maintenance jobs.

Both the management and the workforce concurred that there was a significant link between optimum implementation preventive maintenance and quality production and services that led to a satisfied customer. Preventive maintenance programme was said to be reliable in preventing breakdown of equipment and tools and thus ensured continuous production and services in the hotels.

Conclusions

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. The 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 proper implementation of a maintenance system had not been fully embraced by many hotels in Kenya for sustainable quality production and services.

The capacity and capability of a hotel to implement a maintenance system varied from hotel to hotel with the owner-operated and single unit hotels finding it difficult to adopt a maintenance programme as compared to the well-established hotels operating as joint-ventures with subsidiaries. Small hotels lacked the capacity to invest in an effective and efficient maintenance department owing to the cost of investment. Large hotels enjoyed scale advantage in operations and were therefore able to implement a preventive maintenance programme with ease. Similarly, the capability to implement preventive maintenance revolved around financial ability to recruit qualified maintenance personnel and provision of continuous training and development to enhance skills and confidence.

Preventive maintenance, as a planned maintenance, when implemented appropriately and optimally, 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.

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 edge of the hotel over its competitors as a corporate strategy and brand is a derivative of appropriate implementation of a maintenance system, specifically the preventive maintenance programme.

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