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Enhancing the Maintenance Practice to Improve Guests' Satisfaction in the Hotels Industry

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ABSTRACT

Lack of maintenance could result in complaints from guests which could affect overall satisfaction and reputation of the hotel. Unfortunately, this issue remains where the majority of the complaints are from the tangible factor with guests complaining about hotel amenities. Therefore, this paper aims to propose effective maintenance practices for hotels to improve the satisfaction level of guests. Eight (8) factors that affect maintenance practice were identified through an extensive literature review. The study gathered survey data via thirty-three (33) questionnaires that were distributed to hotels ranging from three (3) to five (5) star hotels in Klang Valley and Ipoh and involved three (3) face-to-face interviews. Correlation analysis was performed to assess the relationship between maintenance factors and the satisfaction level of guests. The results revealed that three (3) factors were significantly correlated with the overall guests' satisfaction. The perception of interviewees regarding the factors affecting maintenance practice further validates the survey findings. This paper implies the importance of maintenance operations to improve guests' satisfaction as well as identifying factors that lead to positive bias toward effective hotel maintenance management.

INTRODUCTION

Guests' satisfaction plays an important role in determining the thriving business of a hotel operation. As the reputation and brand image are built by the guests, it is essential to ensure the satisfaction of guests is at its highest level. Positive results of satisfied guests could instill loyalty among the guests as they tend to repurchase from the same company and even through word-of-mouth publicity. Conversely, poor maintenance in hotels could affect the customers' satisfaction as shown in Binprathan's (2019) study, where

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the majority of the complaints are from tangible factors with guests complaining about hotel amenities having broken equipment and out-of-service pool. There are also complaints about the failure of air conditioning and no alternatives from staff to out-of-service amenities. Besides, Khozaei et al. (2016) highlight that dirty rooms such as carpet and furniture also affect customers' satisfaction. Other related problems include noisy air conditioning, not adjustable air temperature for customers and no proper pool water temperature. Lack of maintenance could also be caused by top management problems such as different opinions of stakeholders in carrying out maintenance works. Due to different priorities set between the owners and hotel operators, there are conflicting decisions on determining whether maintenance work should be taken (Pitt et al., 2016). As an example, complaints about high-level noise from air conditioners that affect guests' satisfaction and maintenance work might be prioritised by the hotel operator, but not the hotel owner. This difference could lead to inefficiency of maintenance practices in hotels.

Generally, maintenance works in a hotel could be categorised into the maintenance of amenities and provision of services (e.g., cleaning services, security, and waste management). The former involves building services maintenance works namely lighting, plumbing, drainage, air conditioning and fire protection systems (Lai & Yik, 2012). To keep up with the demands for maintenance in hotels, an engineering department is established to solve the issues when there is a breakdown or to monitor the performance of the asset. Maintenance is necessary for the current hospitality industry to ensure the safety and security of hotel guests and to increase the life cycle of building assets. Moreover, maintenance activities could reduce costs and improve energy efficiency that relates to green energy principles.

Hotels typically operate twenty-four (24) hours, and, commonly, the building services of the hotel would encounter technical problems such as the breakdown of an air-conditioning system, leaking pipes, and plumbing or broken lighting fixtures. After a problem is identified, it is the responsibility of the maintenance engineer and technician to conduct repair work. For a better approach, the amenities of hotels should be monitored or inspected regularly to reduce the chances of breakdown.

Therefore, this study aims to investigate the current practice for the maintenance of hotels and how it affects the satisfaction of guests overall. Through that, it could gauge the performance of maintenance and identify the relationship between maintenance and the guests' satisfaction. In addition, the problems in the maintenance management of the lodging industry need to be analysed as well. Then, an approach to establish an effective maintenance program could be done to improve the condition of maintenance.

LITERATURE REVIEW

Maintenance of hotel buildings is crucial, despite the maintenance works are dynamic, sophisticated, and costly (Longart, 2020). The attached building systems in the hotel buildings require continuous maintenance as they operate all the time. It is compulsory to apply appropriate maintenance strategies that enhance the competitiveness of the hotel buildings towards the building systems and structures accordingly to ensure their availability and reliability at optimal cost (Wali, 2023). For instance, maintenance tasks are still critical and inevitable during the Coronavirus Disease 2019 (COVID-19) pandemic (though the hotels operate at a minimal rate), especially those facilities that involve safety considerations like firefighting systems (Lai & Wong, 2020).

Anyway, the selection of maintenance strategies is very much depending on a variety of situations, conditions, or factors faced by the maintenance management team (Au-Yong et al., 2022). Different maintenance strategies are available and they might be suitable to be adopted in effect of varied situations or factors. For example, they include reactive maintenance, emergency maintenance, scheduled maintenance, condition-based maintenance, total productive maintenance, reliability-centered

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maintenance, etc. (Longart, 2020). Therefore, the factors affecting the maintenance decision need to be studied.

Factors Affecting Maintenance

The business of lodging establishments mostly revolves around meeting the demands of the customer and ensuring their satisfaction level is considered a top priority as they determine the prospect of profitability in hotel industries. If the perceived performance of the hotel performance exceeds the customer's expectations, then the customer will be in terms of satisfaction and vice versa if it is the opposite. In an empirical study by Ejikeme et al. (2016), when respondents were asked about the reasons that made them stay in a hotel, the majority of hotel guests (33.3%) emphasised the factor of exceeding customer expectations as their reason. This further elevates the importance of better upkeep of maintenance performance to ensure that guest satisfaction is well managed. In Malaysia, the competition among hoteliers and Airbnb hosts is on the rise with more incoming tourists (Lai & Zainal, 2019). Thus, hotels will need to keep up the game and continue to offer better attributes of hotel facilities and improve the maintenance work to meet the expectations of the customers. Besides that, Chan et al. (2003) stated that health and safety stand an inevitable subject to be considered for the maintenance planning and strategy as it is mandatory to comply with the laws and regulations set by the government. In order to ensure that the relevant regulations are complied with, the facilities such as lifts, escalators, and the fire safety system must be inspected and maintained regularly by competent persons or maintenance personnel to safeguard the safety of building occupants.

The maintenance department must ensure that there are sufficient funds and services to keep the buildings in decent condition, to cope with disasters and to promote investment in capital and operations. The budgetary expenses are substantial and need to be thoroughly planned to meet the requirements of building operation and maintenance. Studies proved that few concerns have occurred because management resources are inadequate as they could not fund maintenance projects and have induced cost overruns (Mong et al., 2018). Au-Yong et al. (2016) and Ihsan & Alshibani (2018) also emphasised the importance of spare parts quality and skilled technicians in determining the effectiveness of planned maintenance.

Chan et al. (2003) revealed that there is a linear trend between the relationship between maintenance cost and energy consumption where the operation of maintenance work will reflect on the reduction of energy consumption. Kapiki (2010) identified that energy management can reduce the cost of hotel owners by up to 65%. According to Zhang et al. (2012), the principle of green maintenance aligns with sustainability and can be interpreted as ensuring maintenance has reduced negative environmental impacts while practising a health and safety culture in the workforce. The goals of sustainable maintenance include minimising the usage of materials to restore, retain, extend, and improve the function of the equipment. Maintenance in the context of sustainability could be explained in the product life cycle that encompass the chain values of the whole system (Jasiulewicz-Kaczmarek & Drożyner, 2013).

Defects caused by failure of architectural design particularly structural design have a substantial impact on the maintenance effort required throughout the life cycle of a building. For instance, inadequate planning for the construction joint for the contraction and expansion activity will result in cracks due to thermal expansion. This eventually causes fractures of pipe joint failure and leaks in sanitary and plumbing installations (Ofori et al., 2015). Consequently, the increase in budget maintenance arises as maintenance operation gets more difficult. With the recent pandemic outbreak, it has affected the way the hotel operation works. The World Health Organization (WHO, 2020) has implemented some measures to mitigate the transmission and prevention of the virus. For instance, the Heating, Ventilation, and Air Conditioning (HVAC) system should be regularly monitored, maintained, and cleaned, particularly the filters to ensure no bypass or obstacles that obstruct airflow. More cleaning protocols are incorporated such as disinfection of high-touch surfaces and the requirement of employees to wear personal protective equipment for adhering to basic regulations provided by the health organisation.

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Based on past research regarding the factors influencing maintenance, some common factors are often discussed, which are listed in Table 1. The listed eight (8) factors will be considered as the independent variables that will affect the dependent variable (customer satisfaction) in this research.

Table 1. Factors influencing maintenance

No.	Factors	Description	References
1.	Guest expectation	This aspect is discussed in Ihsan & Alshibani (2018) where the four (4) star hotels need to compete with five (5) star hotels to attract customers by maintaining the assets of the hotel to keep the guests satisfied.	Aryee (2011) Chan et al. (2003) Chan (2008) Ihsan & Alshibani (2018)
2.	Health and safety	In a study by Aryee (2011), this factor is considered to be the most important which is reflected by all the respondents. It is to comply with the legal requirements of the government regarding the health and safety of the building.	Aryee (2011) Chan et al. (2003) Chan (2008)
3.	Financial constraints	With the lack of budget for maintenance, it will be difficult to carry out the necessary maintenance work. Besides, failure to predict maintenance expenditure and inflation of maintenance cost could be the factors.	Chan et al. (2003) Chan (2008) Ihsan & Alshibani (2018) Jandali & Sweis (2019) Ofori et al. (2015)
4.	Maintenance resources	This includes the amount of labour, materials, equipment, and training for the staff. The lack of skills and competency of staff could directly affect the outcome of maintenance to deal with complex pieces of machinery and special tools.	Chan et al. (2003) Chan (2008) Jandali & Sweis (2019) Ofori et al. (2015)
5.	Energy consumption	Energy consumption is highlighted in various research papers where effort is taken by the maintenance team to create long-term savings in operational costs.	Aryee (2011) Chan et al. (2003) Chan (2008)
6.	Environmental impact	The current trend of sustainable energy use and the impact of green energy resources is one way to influence the maintenance of buildings.	Aryee (2011) Chan et al. (2003) Chan (2008)
7.	Faulty design	Any errors or issues in coming up with the proper design during the preliminary phase will affect the performance of the building at a later stage. Faulty design and construction could result in more maintenance work in the future which leads to an increase in cost.	Jandali & Sweis (2019) Ofori et al. (2015)
8.	COVID-19 pandemic	Amendments and changes must be made for stricter regulations regarding the operation and maintenance of technical services in hotels. This is to reduce the risk of transmission of the viral disease.	WHO (2020)

Source: Authors, 2023

Guest Satisfaction

Guest satisfaction can be closely related to the perceived service quality. It is a measure of the relationship between the customers' expectations and the evaluation of the services delivered by the provider. The satisfaction level of guests can be measured with either cognitive or emotional aspects. Emotional aspects comprised of namely anger, disappointment, or satisfaction while the cognitive aspect is the perceived service quality. The study by Mbuthia et al. (2013) concludes that the emotional satisfaction of hotel guests relies on the service quality of providers. Apart from that, it uses the twenty-six (26) attributes in the Lodging Quality Index (LQI) to conduct the study which is derived from the Service Quality (SERVQUAL) model. The results show a significant correlation between the service quality dimensions and perceived service quality.

In the article of Ejikeme et al. (2016), the respondents replied that the role of customer satisfaction in the sustainability of hotels is mainly attributed to the rise of hotel profitability and followed by an increase in customer loyalty, a form of advertising to the hotel institution and growth of patronage by guests. This

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shows the importance of guests' satisfaction and thus it is crucial to ensure that the customer expectation is met. In conducting the research, the dependent variable will be based on the evaluation of the overall satisfaction level of the guests for the maintenance of hotel assets. Thus, the aspect of emotional satisfaction is chosen to review the maintenance performance and its relationship with the hotel maintenance factors.

Effective Maintenance Management

The study by Ghazi (2016) interpreted that hotel managers believe that having a good maintenance management team and plan plays the most significant role in improving the efficiency of maintenance. This includes allocating an annual budget to finance the maintenance works along with the commitment of top management to conduct the maintenance program. It is also crucial to set up a maintenance policy that details the guidelines and standards to be complied with. In terms of the maintenance management team, maintenance managers perceive that a multifunctional maintenance team and skilled labour are some of the factors that could enhance maintenance productivity.

To propose recommendations for improving the maintenance performance of the hotels, Zawawi et al. (2010) developed a solution diagram (see Figure 1) that solves the major problems identified in the study of building maintenance management in Malaysia. There are five (5) main steps which are outlined in the diagram. The first step is to hire a competent officer who is responsible for all the maintenance elements of the building. Then, the next step is to manage and update the maintenance asset records and categorise them accordingly. This is to help enhance the flow of work and will make it easier to refer when required. The third step is to provide a schedule for maintaining assets or a maintenance management decision diagram. Information about the frequency and maintenance of the asset could be gathered. The fourth step involves planning maintenance activities for the asset followed by the last step which is to review the outcome of the overall maintenance to assess the feasibility of the practice.

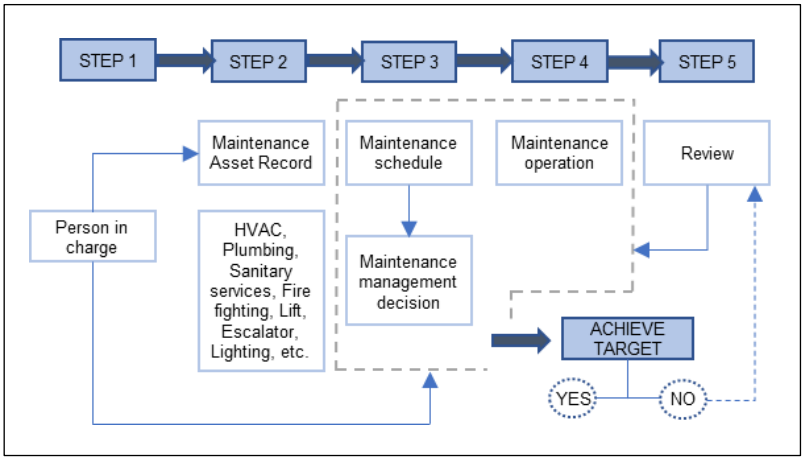

Fig. 1. Solution diagram for building maintenance

Source: Zawawi et al., 2010

METHODOLOGY

Generally, the research design comprised of the data collection and analysis to obtain the desired results and meet the objectives. The research would be a correlational design to study the relationship of either two or more variables (Creswell, 2012). Analytical research aimed to understand phenomena by discovering and measuring casual relations among the maintenance factor and overall satisfaction of guests. This

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research adopted a mixed method approach which integrated both quantitative and qualitative data to produce a much more solid and concrete conclusion in answering one's research questions. This approach also confirmed the validity of the data as well as complemented and provided more elaboration on the results using different methods (Schoonenboom & Johnson, 2017).

Referring to the analysis of literature regarding the subject under study, the factors that influence maintenance practice in hotels were identified. The data were collected by distributing questionnaires to maintenance personnel, including maintenance managers, maintenance staff, technicians, and engineers to gather their perception of the priority level of maintenance factors and the overall rating of guests' satisfaction level towards the maintenance aspect. There were four (4) parts of the questionnaire: respondents' particular, perception towards maintenance factors, satisfaction level of guests and suggestions to improve maintenance performance. A five (5) point Likert scale was implemented to evaluate the degree of priority and guests' satisfaction level.

Regarding the sample size, a minimum of thirty (30) different hotels were evaluated for the questionnaire survey. For the validity of results, the minimum sample size was generally greater than twenty five (25) or thirty (30) to be considered sufficient in the central limit theorem for normal distribution (Hogg & Tanis, 2005). Thus, the questionnaire questions were collected from thirty-three (33) hotels ranging from three (3) to five (5) star hotels located in Klang Valley and Ipoh.

The quantitative data were analysed using Statistical Package for Social Sciences (SPSS). A ranking analysis was run to determine the rating of each factor that affects maintenance practices in hotels. Then, the data were also analysed using a correlation test to assess the association between the maintenance factors and guests' satisfaction. Furthermore, semi-structured interviews were conducted with three (3) respondents. The interviews involved discussion about the background of respondents, the maintenance approach of hotels, factors affecting maintenance, and suggestions to improve the maintenance aspect of the hotels were performed with experienced personnel who had a great understanding of the maintenance field. It mainly intended to further elaborate and verify the survey findings. The recommendations provided by the respondents were subject to verification in future research.

FINDINGS AND DISCUSSION

Ranking Analysis of Maintenance Factors

The ranking of the eight (8) maintenance factors with average scores and standard deviation is shown in Table 2. The degree of priority level is rated accordingly, which is determined through (an average score of 1 = not important to 5 = very important) and standard deviation. Based on the findings, the health and safety aspect is ranked the most important factor that could affect maintenance operation with an average score of 4.42 and standard deviation of 0.614 followed by energy consumption of an average of 4.33, and COVID-19 pandemic and guest expectations each with an average score of 4.27.

This is proven in a study by Chan (2008) that health and safety factor is fundamental as it is mandatory to comply with rules and regulations set by the authorities. It is also essential to reduce the exposure of risks and hazards imposed on the building occupants, particularly the hotel guests, who are considered of utmost importance to a successful business. Many factors could affect the satisfaction level of guests such as reliability of the system and assurance or confidence of service provided.

According to the respondents, the COVID-19 pandemic is significant in influencing current maintenance practices due to increased costs and new changes to management and operation. The pandemic requires more funding provisions allocated for Personal Protective Equipment (PPE) and chemical disinfectants. As for energy consumption, the obtained results revealed that hotel stakeholders prioritise

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energy efficiency which would lead to long-term cost savings in operation expenses. One of the interviewees stated that:

"…reduced energy consumption could have a potential reduction of greenhouse gas emissions (CO_2) due to less demand for electricity generation. As such, diesel which is the source of energy generation can be cut down with effective maintenance."

Regarding guest expectations, it is crucial to exceed the expectations of customers to keep them satisfied. Customer perception of quality is also determined by other factors related to food, services, facilities and indoor environment (Chan et al., 2003). As the main objective of hospitality facilities is to provide the best service to customers, it is imperative for the maintenance team to always monitor guests' feedback or complaints related to the failure of the HVAC system, broken toilet pipes, unavailable hot water, non-functional electrical appliances and so on. Providing sound and reliable facilities can increase the chances of guests giving good ratings which will help boost the revenue of the hotel.

Table 2. Ranking of factors affecting hotel maintenance

Consideration factors	Rank	Average (n=33)	Std. deviation
Health and Safety	1	4.42	.614
Energy consumption	2	4.33	.479
COVID-19 pandemic	3	4.27	.452
Guest expectation	3	4.27	.517
Maintenance resources	5	4.12	.485
Financial constraints	6	4.03	.585
Environmental impact	7	3.88	.696
Faulty design	8	3.42	.708

Source: Authors, 2023

Overall Satisfaction of Hotel Guests

The satisfaction level, the highest number of complaints received and the time to respond to complaints are evaluated. The respondents are required to rate the satisfaction level according to the scale from 1 (not satisfied) to 5 (very satisfied). From Figure 2, a majority of the respondents 52% rated 'satisfied', followed by 27% of them who rated 'neutral', and lastly 21% that has 'very satisfied' ratings. The average score of overall guests' satisfaction is 3.94 and the std. deviation of 0.704 which is regarded in the range of satisfied guests.

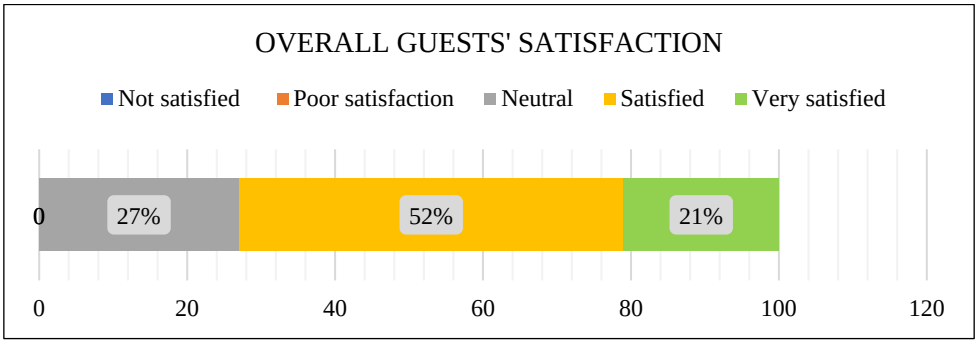

Fig. 2. Respondents' perception of overall guests' satisfaction

Source: Authors, 2023

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Correlation Analysis

The independent variables of maintenance factors were analysed using Spearman's rank correlation to evaluate the degree of association between overall guests' satisfaction towards the maintenance of hotel facilities. Spearman correlation is commonly used in ordinal data as relationships are analysed after the original data are arranged into ranks. It also is applied in cases where the two (2) variables have a non-linear and monotonic relationship (Gray & Kinnear, 2012). The correlation is said to be statistically significant when *p* is lower than 0.05 or 0.01 (Graziano & Raulin, 2014).

Table 3. Correlation between maintenance factors and guests' satisfaction

Maintenance factors	Overall guests' satisfaction	
	Correlation coefficient, *r*	Significance value, *p*
Health and Safety	**.510****	.002
Guest expectation	**.375***	.032
COVID-19 pandemic	**.344***	.050
Energy consumption	.251	.158
Financial constraints	.161	.372
Maintenance resources	.031	.863
Environmental impact	.030	.870
Faulty design	-.029	.872

**. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

Source: Authors, 2023

Generally, higher priority toward the maintenance factors will increase the guests' satisfaction level. Thus, a positive correlation between the maintenance factors and satisfaction is expected in the analysis result. From the findings tabulated in Table 3, there are three (3) factors of maintenance which significantly correlated to the guests' satisfaction:

(i) Health and Safety

(ii) Guest expectation

(iii) COVID-19 pandemic

There is a strong positive correlation coefficient of 0.510 ($p < 0.01$) that is statistically significant between health and safety and guests' satisfaction. The finding is in line with the statement of Aryee (2011), where the majority claimed that the most important objective for maintenance execution is to meet the health and safety aspects and hence lead to an increase in reliability for the guest. The hoteliers who emphasised health and safety tend to be responsible for taking care of the well-being of the hotel guests. The maintenance team needs to ensure that the lift and fire protection system is maintained regularly to comply with the regulations and hence avoid being penalised by authoritative forces. In this way, the findings have also revealed that hotels that prioritise health and safety are also associated with great concern for dealing with the COVID-19 outbreak. Hotel management is willing to make every effort to improve maintenance management to provide a healthy and safe accommodation environment for the hotel guests.

Apart from that, the guest expectation variable has a significant correlation with overall guests' satisfaction which is indicated by a coefficient of 0.375 and $p < 0.05$. Exceeding guest expectations would be crucial to ensure that they are satisfied with the service provided. Immediate response to failure and downtimes will certainly reduce the number of complaints from hotel guests as it will improve guests' satisfaction (Au-Yong et al., 2014). The good condition of facilities will reflect the high performance of the maintenance team and ease the guests' activities. Facilities should be maintained regularly to mitigate the

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breakdown rate which will cause inconvenience to the users when it is non-functional. One of the interviewees further emphasised the importance of guest expectations that:

"…keeping the guests' satisfied is our top priority as too many complaints may affect the reputation of the hotel."

Next, a significant correlation exists between the concern about the COVID-19 pandemic and guests' satisfaction ($r = 0.344$, $p < 0.05$). In the current situation, the pandemic outbreak is one of the concerns for business operations and it is affecting the guest perception of the hotel. Having a sound maintenance plan and strategy is the way to assure customer confidence and inclination to return. It will leave a good impression on the guests if stringent effort is undertaken to prevent the spread of COVID-19. One (1) interviewee quoted that:

"…more effort is taken to ensure Standard Operating Procedures (SOPs) are followed which involves disinfection and sanitisation works. PPE and other disinfecting equipment such as thermal fogging and sanitising chemicals also incur additional cost and labour requirement which can affect decision making for maintenance of technical equipment."

Hence, the maintenance aspect focusing on soft facilities such as housekeeping is particularly important to maintain a high level of hygiene. For hard facilities, more frequent maintenance is done to the HVAC to ensure good airflow and recirculation of air which will in turn reduce the risk of transmission.

CONCLUSION

Findings from the literature review and analysis of qualitative and quantitative data have proved that maintenance is indeed a vital aspect that could affect the satisfaction of guests. The research delves into more detail to identify the factors that can impact maintenance performance. Then, a cross-study is carried out to link the factors with the satisfaction of hotel guests. Analysis of the literature review has helped identify eight (8) relevant factors, namely guest expectation, health and safety, financial constraints, maintenance resources, energy consumption, environmental impact, faulty design, and the COVID-19 pandemic. These factors were rated according to their priority level from the perception of maintenance team management. The results of the literature review are compared with findings collected from the mixed-method approach.

Descriptive and correlation analysis of data reveals that some factors have more influence and are considered more important than others. Both analyses reveal that health and safety is regarded as the most important aspect to influence maintenance as well as satisfaction of guests. The ranking of factors according to the mean and evaluation of guests' satisfaction are obtained via results from SPSS. Lastly, the findings presented in this research are intended to oversee the criteria that will impact the maintenance practice in hotels which would be focused on improving the satisfaction of guests. This will be useful for maintenance managers when drafting a maintenance plan that produces efficient maintenance performance.

RECOMMENDATIONS

The study has revealed that consideration for selected maintenance factors certainly has an impact on the guests' satisfaction. The managers need to prioritise these factors when making decisions in drafting maintenance plans or policies in the future. Some suggestions were discussed by the maintenance managers and engineers to gain insights into their perception to improve the effectiveness of maintenance management in hotels. Some of the strategies include:

(i) Drafting scheduled maintenance plan

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Effective maintenance is carried out when there are proper strategies and guidelines to follow. Staff will be able to respond to work orders faster and progress repair works by order of importance. Planning of maintenance should be undertaken annually to review the performance of maintenance and ensure that the operation of assets is kept to standard and aligned with legislative requirements.

(ii) Providing training to staff

As hiring skilled maintenance personnel is difficult, experienced maintenance staff can teach other members the skills to improve their maintenance competency level. This can help staff to achieve multi-skilling by exchanging knowledge and undertaking a wider range of tasks. This would reduce the need to hire more labourers and eventually cut down costs.

(iii) Effective spare parts management

It is recommended that the essential spare parts are identified and available before scheduling maintenance works. Having the inventory stock recorded accurately, will ease up the progress of work if there is any emergency breakdown. One of the interviewees also claimed that when there is a lack of budget or difficulty in obtaining spare parts, the maintenance staff would use their innovative skills to utilise the resources or find alternative parts that could work to save money.

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AUTHORS' CONTRIBUTIONS

All authors involved in carried out the research, wrote and revised the article, conceptualised the central research idea and provided the theoretical framework, review and approved the article submission.

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