

A Multi-Criteria Approach to Decision-Making for Assessing Sustainable Practices in International Hospitality Management

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Abstract

The purpose of the study is to investigate potential contributing elements and assess the sustainability of hospitality operations using the MCDM model. The study will also look at the connections between economic growth, competitive advantages, and guest happiness in hotels. The study used mixed methods research (MMR) as its research approach. We'll look at both quantitative and qualitative data to see how the MCDM technique is employed in the hotel industry. To gather qualitative information about the goals of the research, a scoping review of the literature will be conducted. Google Forms-based online questionnaire questionnaires will be utilized to collect quantitative data for the study's goals. Three major topics have been identified: hotels, tourism, and MCDM. The findings indicate that one of the most crucial elements in the hospitality industry is staff awareness. It has been shown that employee management is crucial for the hotel industry. The study's conclusions show that the most important aspect of hotel operations is worker awareness. One of the most important aspects of improving company operations is teaching hotel employees about responsible and environmentally friendly practices. Thus, a fruitful CSR program not only promotes learning and development but also enhances staff management.

Keywords: Sustainability of hospitality, MCDM model, Staff awareness and Environmentally friendly practices.

1. INTRODUCTION

In order to be sustainable, the hotel sector must incorporate eco-friendly techniques into all facets of its operations (Legrand, Chen & Laeis, 2022). Waste minimization, water and energy conservation, and other actions related to responsible tourism are common. Customer satisfaction and workforce management rank as the two most crucial components of sustainable practices in global hospitality operations, according to literature on the subject. In order to achieve sustainability, green hiring and training are done, and hotel managers' capacity is increased through knowledge transfer of experiences in environmental management to boost the effectiveness of green operations.

A collective effort by industry leaders to promote sustainability in the hospitality sector aims to reduce carbon emissions, promote responsible consumption and foster social inclusion. This is possibly achieved by Multi-Criteria Decision-Making Approach (MCDM). A MCDM technique is decision support system that provide systematic approaches to solve hospitality problems by minimizing the risk of failure (Vatankhah, *et al.*, 2023). This is because of the continuous operations of hotels. A breakdown in function of any areas of different departments disrupts the flow of operations. It can significantly cause a ripple effect that inhibits the organization's ability to optimize its business. The education of hotel employees on green and smart practices and their increasing interest in awareness of sustainability plays critical role in improving business operations. The sector requires advanced communication skills among employees. The qualities pertaining to knowledge and skills eventually leads to survival and development.

The study aims to evaluate the sustainability of hospitality operations using MCDM model. The study aims to explore the possible factors that leads to the sustainability of hospitality operations. the study will also examine the relationship between guest satisfaction and competitive advantages and economic growth in hotels. Since, the sector contributes to the natural environment and also enhance employees' satisfaction and loyalty, the study aims to analyze the employee management as a contributing factor in the hotel business. The study will use the mixed methods research methodology to analyze the aims of the study. Both quantitative and qualitative data will be used for the evaluation of the factors identified above.

Research Objectives:

The objectives of the study is as follows:

1. To understand the impact of sustainability in terms of globalization.
2. To assess sustainability in hospitality operations.
3. To identify what multi criterion be used for decision making approach.

2. Literature Review

Green tourism has recently become the trend of the smokeless industry in many countries (Wang & Nguyen, 2022). The emission of GHG, generation of plastic wastes and overuse of energy are some of the activities of tourism cause many negative outcomes related to climate change (Wang & Nguyen, 2022). Most of the activities in hotel operation are related to these bad outputs. The issue in sustainable tourism is insufficiently explored in the context of developing countries. Thus it is necessary to have guides and orientation towards sustainable development (Wang & Nguyen, 2022).

Multi-criteria decision-making - MCDM

One of the primary decision-making challenges, MCDM seeks to identify the optimal option by taking into account multiple criteria during the selection process (Taherdoost & Madanchian, 2023). It offers methodical ways to address issues related to hospitality. It seeks to reduce the possibility of failing. The method can be used in a variety of industries, including engineering design and banking. The hotel and tourism sectors have made extensive use of MCDM techniques (Liao et al., 2022). The majority of real-life decision-making situations, according to Jahan, Edwards, and Bahraminasab (2016), require the simultaneous consideration of multiple competing criteria and objectives.

Among the many fields where MCDM apply, materials selection is certainly one of the most crucial (Jahan, Edwards & Bahraminasab, 2016). Traditionally, trial-and-error methods were used. Due to lack of optimum design solution the MCDM methods were adopted. It helped to avoid the use of inappropriate materials and make sure costs are kept to a minimum. Since, MCDM addresses the need for a numerate structure, the technique provides a foundation for selecting, sorting, and prioritizing materials and help in the overall assessment (Taherdoost & Madanchian, 2023). Thus the use of MCDM is particularly important when the application is complex or advanced.

Mardani *et al.*, (2015) conducted an experiment using MCDM techniques and approaches. The study was continued by Mardani *et al.*, (2016) with similar findings. Jamwal *et al.*, (2020) continued the research conclusions by Mardani *et al.*, (2015) by presenting a systematic review of MCDM applications in sustainable manufacturing. The study highlighted how the manufacturing industries can benefit from MCDM techniques in decision making. The review article developed insights into various multi-criteria decision-making techniques progress made by considering the sustainable manufacturing applications over MCDM methods. Similar study was conducted by Wang & Nguyen (2022) where MCDM methods were used to evaluate the sustainability of hotels. The main purpose of the papers were to present a systematic review of the techniques and applications in tourism and hospitality. Another research by Míguez et al. (2023) used the MCDM model to study the key elements and factors that need to be considered to achieve success in the environmental policies of hotels. Similar findings was observed in the study by Vatankhah, *et al.*, (2023) where it was revealed an ongoing interest in applying MCDM techniques in hospitality sector. The approach has the potential for improving all areas of decision-making across all sector. Stakeholders in hospitality and tourism industries are involved in many decision-making scenarios (Liao et al., 2022).

However, it is especially beneficial for applications in high technology market sectors, where product differentiation and competitive advantage are often achieved by just very small gains in material performance (Liao et al., 2022). The method is useful in achieving the ability to simultaneously consider material, process, and shape for complex materials selection problems. It is essential therefore to expand the scope of MCDM methods to improve materials selection. The need to handle uncertainty and make compromises are recurring practical design issues and the effective manipulation of data ranges is critical to more effective use of MCDM in materials selection and design (Liao et al., 2022). With the current emphasis on materials design and modeling, it is desirable in future versions of computer simulation software to include multi-criteria analysis capability (Liao et al., 2022).

Sustainability

The ability of natural ecosystems to support life and offer resources for present and future generations is known as sustainability in the hospitality sector (Molina-Collado, et al., 2022). According to a study by Wang & Nguyen (2022), sustainable tourism has grown in importance recently on a global scale. The hotel sector faces numerous challenges, including competitors, stringent regulations, and growing expenses. The aforementioned concerns have served as a catalyst for hotel operators to prioritize revenue management and sustainability initiatives. Travelers are becoming more conscious of this problem and are putting pressure on hotels to address it. To mitigate the effects of global warming, numerous hotels have implemented eco-friendly policies and implemented business intelligence services (Molina-Collado, et al., 2022). Both sustainable tourism and the concept of green hotels has received a great deal of interest from hotel managers Wang & Nguyen (2022). This is because of its role in environmental protection, biodiversity and community culture preservation and climate change adaption Wang & Nguyen (2022).

Business management is implementing sustainable development. It gives the businesses who implement it a competitive edge. Therefore, it is crucial that the information and technique be clear and simple to understand (Míguez et al., 2023). According to Lim (2016), one of the primary sources of the environmental catastrophe worldwide is the hotel industry. The implementation of sustainability in hotels is crucial. In the hospitality sector, sustainability lowers carbon footprint, saves expenses, protects the environment, and enhances brand perception. Opportunities in the hospitality sector include pollution and waste management techniques that negatively affect the environment. The hotel industry's massive carbon emissions have contributed significantly to climate change. They use a lot of water and energy as well. But, they must focus on long-term growth that reduces the effects of pollution and waste.

The risk of natural disasters is rising as the number of environmental issues grows every year (Millar & Park, 2013). The carbon emissions also have an impact on the quality of the air, water, and food. The travel and hospitality industry should be at the forefront of going green while encouraging guests to do the same in order to prevent severe environmental impacts and ensure that people will still have a reason to travel. As per a study by Malheiro, *et al.*, (2020), consumers think about how a firm's products and services would affect the environment. This is clearly the driving force behind sustainability in the hospitality industry (Lim, 2016). However, Roy *et al.*, (2019) argues that facilitation of suitable accommodation for different travelers is the prime concern of travel agencies.

There are many approaches used in hotel industry to evaluate the sustainability of hotels. These approaches are hotel buildings with green design, usage of biodegradable material during operation and many more. Wang & Nguyen (2022) compared the real actions and promotions of these approaches and proposed green hotels.

The research by Míguez et al. (2023) helped to enhance the understanding of the concept of sustainability its display within the hotel industry website (Míguez et al., 2023). Míguez et al. (2023) asserted while interpreting the results of their study that the same study should be conducted at an international level. Their future research could carry out an analysis by groups of indicators. These indicators are governance, environmental and social. The researchers must observe in each of them where the sector can improve by identifying best practices in companies.

One of the most important challenges of sustainable development is the responsible management by companies of their economic, environmental, and social impacts (Míguez et al., 2023). There is a certain disparity between the amount of information provided on CSR and the way it is presented (Míguez et al., 2023). This disparity makes it difficult for the user to identify and access it. The user is forced to navigate through several sections of the website to get a complete idea of the CSR related issues of the hotel company in question (Míguez et al., 2023).

The establishment and fulfilment of certain environmental objectives allows for the continuous improvement of the sustainability of hotel chains (Míguez et al., 2023). The dissemination of environmental concerns in the hotel sector seems evident. It is difficult to discern whether it is limited to a pure question of image and improvement of competitiveness or to deep environmental convictions adjacent to all business decisions (Míguez et al., 2023).

The sustainable development goals are the aspect of sustainability in which hotel groups have the greatest impact (Míguez et al., 2023). This is because they are implemented in all the chains analyzed. Thus it acts as a very positive aspect as they are one of the main sustainability standards worldwide (Míguez et al., 2023). According to Jamwal *et al.*, (2020) at present sustainable development, assessment of sustainable manufacturing practices, and prioritization of barriers, drivers, and indicators have become complex due to the involvement of existing benchmarks like social, economic, technical, and environmental.

Hospitality

Travel agencies must keep themselves competitive and sustain a good pace of growth to continue raising profits by attracting and retaining as many tourists as possible through meeting their various prospective needs (Roy et al., 2019). Thus a hotel sector shows a great commitment to sustainability. There are still certain aspects that need to be improved and on which companies should place special emphasis (Míguez et al., 2023). They must include as much information as possible on their sustainability policies, making it visible and easily interpretable, and making these sections more accessible on their corporate websites (Míguez et al., 2023).

Green building and infrastructure, environmental and monitoring control, green operation and transportation, employee green training, green policies and regulations and local green culture protection are some of the criterion identified by Wang & Nguyen (2022). The authors identified that green policy and regulation are some of the most significant criterion. The results of the research by Míguez *et al.*, (2023) extended the findings of Wang & Nguyen (2022) by stating that multi-criteria evaluation is strongly influenced by the weighting of criteria.

Apart from green hotels, corporate social responsibility of hospitability industry is considered to be very important. Online information provided by corporate websites has a great impact on the hotel industry performance (Míguez et al., 2023). The hotel chains dedicate at least one section on their website to CSR. The CSR offer abundant information which is accompanied by data and illustrations. In addition to it, most of CSR offer users the possibility of downloading documents with relevant information on CSR (Míguez et al., 2023). It is very likely that customers' and investors' decisions change after consulting the portals of online computers (Míguez et al., 2023).

A transparent CSR reporting should become a standard practice for companies. The environmental commitment of hotel companies is usually demonstrated to stakeholders by obtaining

environmental quality certifications and eco-labels issued by specialized entities in compliance with certain requirements. However, the question of how to use the sustainable indicators that are usually scattered on the web or in company reports is a problem that requires further research. It would be of great interest to improve the visibility of the information on CSR provided by the website. The involvement of hotel companies is very uneven in terms of their size and type of business and in terms their CSR (Míguez et al., 2023).

The study by Yadegaridehkordi *et al.*, (2020) aimed to identify and rank the sustainability indicators for assessing green building manufacturing in Malaysia. This was done by considering Green Building Index (GBI). Results from the study by Yadegaridehkordi *et al.*, (2020) showed that energy efficiency and indoor environmental quality are the most important. Water efficiency and innovation were the least important criteria in assessing green building manufacturing in Malaysia. Karamaşa (2021) studied that when competition conditions gets stiffer, more sustainable structure is required to make any hotel operational. Apart from sustainable structure, the need to meet the expectations of customers is also very important. To achieve this, the agencies must prepare well-organized data for hotels and destinations from a quality control perspective (Roy et al., 2019).

Karamaşa (2021) continues to assert the fact that one of the ways to ensure that the customer expectations and needs are met at the desired level is through service quality factors which are considered to increase customer satisfaction. The SWARA method was used by Karamaşa (2021) to study the service quality criteria of hotels. Roy *et al.*, (2019) mentioned in their study that the hotels are ranked and evaluated according to performance across several criteria from the tourists' viewpoint. The relative importance of each criterion is mainly subjective and depends on the assessor's judgement. Hotels' rankings vary across different websites and that results in inconsistencies.

In sustainable manufacturing decision making, approaches to evaluate sustainable manufacturing practices have used both quantitative and qualitative data (Jamwal *et al.*, 2020). Building manufacturing has caused serious environmental impacts, despite its role in the national economic growth (Yadegaridehkordi et al., 2020). Yadegaridehkordi *et al.*, (2020) asserted that in developing strategic plans for economic growth, many governments consider the application of green manufacturing building and technologies as key factors towards a greener economy and lower carbon emission.

3. Research Methodology

The research methodology for the study was mixed methods research (MMR). An MMR design is a procedure for compiling, assessing, and integrating quantitative and qualitative research and approaches in a single study in order to understand a research problem (Leech, et al., 2010). Both qualitative and quantitative data are used to examine how the MCDM technique is applied in the hotel business. The MMR will enable a more thorough understanding of the research challenge (Migiro & Magangi, 2011). The plan shows practicality and gives the probe some rationale. It is useful and presents a variety of viewpoints. Based on both subjective and objective methods, as well as biased and unbiased research analysis, the MMR offers the optimum solution to the research problem. The aim of the MMR approach is to incorporate a qualitative component into an otherwise quantitative study and build from one phase of a study to another (Almeida, 2018). It allows to explore qualitatively then develop an instrument and follow-up a quantitative study

qualitatively to obtain more detailed information. A scoping literature review will be done to obtain the qualitative data on the research objectives.

Scoping Literature Review

Qualitative research methods are valuable in providing rich descriptions of complex phenomena (Sofaer, 1999). The study will be based on the Scoping Literature Review (SLR) method. As per the study by Gerring (2017), the best qualitative research is systematic and rigorous. It seeks to reduce bias and error and to identify evidence that disconfirms initial or emergent hypotheses (Moriarty, 2011). Hence, in our study the SLR method will review journals and articles published between 2014-2024. These articles will be sourced from Web of Science, Elsevier, Google Scholar and other databases. First of all the review will be done by shortlisting the articles and journals based on the keywords used in our SLR. Second step of SLR will identify the research question and clarify the criterion used in the research papers shortlisted. Finally the SLR method will review the findings and conclusion of the research studies shortlisted. The findings will justify the research objectives of our study. The keywords used in the study will be decision-making approach, sustainable practices, sustainability, global hospitality operation and globalization.

Online Questionnaire - Quantitative approach

Online Questionnaire surveys are a popular data collection method for research . In our study we will use online survey method – Google Forms. Google form is an online questionnaire tool for data collection (Nguyen, *et al.*, 2018). As discussed in the research by Chaiyo & Nokham (2017), with the growing access to the internet facility globally qualitative data collection through online focus groups is emerging. As per the study by Regmi, *et al.*, (2016), data collection through an online survey appears to have the potential to collect large amounts of data efficiently. Thus, we will conduct an online survey through Google forms. Since quantitative approach is a type of educational research in which the research decides what to study we asked specific and narrow questions. Through the google forms we collected quantifiable data from participants. The questionnaire was divided into two sections. The first section inquired about personal information and the second section inquired about the MCDM in hospitality sector.

4. Results

The results of the qualitative and quantitative data using SLR and Google forms is discussed below. The SLR method was implemented on 31 articles selected from the abovementioned databases. Out of 31 articles only 10 were shortlisted based on the outcome from the literature review. The SLR was then presented in MS Excel (Appendix C). From the following Fig. 1 below, it is evident that MCDM, hotels, tourism were the key themes from the presented SLR. The sub-themes identified in the study are fuzzy AHP, fuzzy Delphi method, quality management, TOPSIS, Hospitality, VIKOR, DANP and DEMATEL.

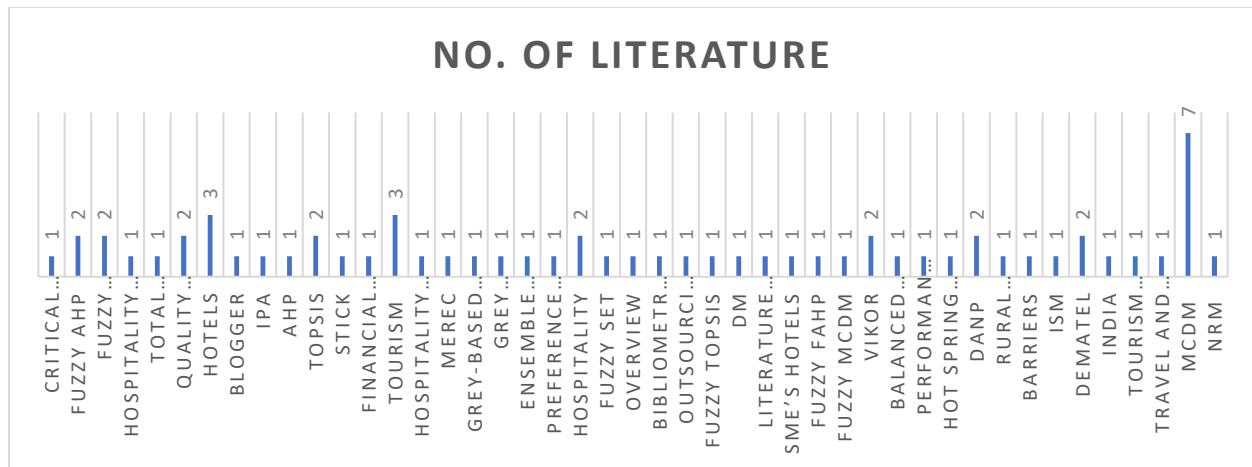


Fig. 1: Illustrating the literature Analysis.

The quantitative method involved a questionnaire survey using Google Forms. A total number of 31 participants were involved. The result of the second part of research methodology is based on the primary data collected through Google Forms. The data is obtained through a set of questionnaire (Appendix A). The results of the primary data is discussed below Table 1.

Table 1: Personal Information

Age	Gender	Monthly Income (\$)(Annual)	Education Level
20-30	Female	3000-4000	Diploma
20-30	Female	3000-4000	Graduate
31-40	Male	3000-4000	Graduate
51 & above	Female	4000 & above	Post Graduate
41-50	Male	3000-4000	Graduate
20-30	Male	2000-3000	Diploma
20-30	Female	2000-3000	Graduate
20-30	Male	2000-3000	Diploma
20-30	Male	2000-3000	Diploma
41-50	Male	4000 & above	Post Graduate
31-40	Female	3000-4000	Graduate

41-50	Female	3000-4000	Post Graduate
31-40	Male	2000-3000	Diploma
20-30	Male	2000-3000	Diploma
20-30	Female	2000-3000	Diploma
20-30	Male	2000-3000	Diploma
20-30	Male	3000-4000	Graduate
20-30	Male	2000-3000	Diploma
20-30	Prefer not to say	2000-3000	Diploma
31-40	Female	2000-3000	Graduate
31-40	Male	4000 & above	Graduate
31-40	Male	4000 & above	Graduate
31-40	Male	3000-4000	Diploma
31-40	Male	3000-4000	Diploma
31-40	Female	3000-4000	Diploma
31-40	Male	2000-3000	Diploma
31-40	Male	4000 & above	Post Graduate
20-30	Male	4000 & above	Post Graduate
31-40	Male	3000-4000	Graduate
31-40	Male	3000-4000	Graduate
31-40	Female	4000 & above	Post Graduate

The demographic information of the primary research shows that the most participants belonged to the age group of 31-40 years of age (Fig. 2). Most of the participants were male (Fig. 3). This shows that demography is stable in hospitality industry and has potential to expand sustainably globally.

Age

31 responses

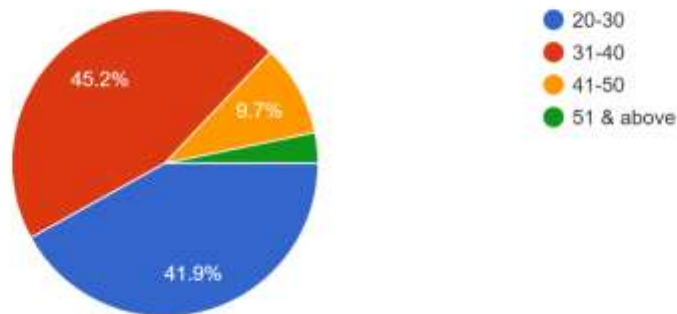


Fig. 2: Age group of participants

Gender

31 responses

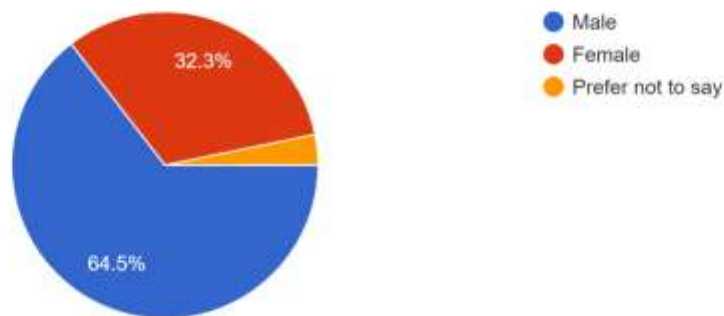


Fig (3): Gender of participants

Table 2: Awareness amongst employees

A	YOUR	THE	ARE	DO	YOU	IS THERE	ON	AN
G	COMPA	SUSTAIN	THERE	ASSESS	HOW	ANYTHIN	INDIVIDUAL	DO
E	NY HAS	ABLE	ANY	WELL	YOUR	G YOUR	LEVEL	
	SUSTAIN	POLICY	DEFINE	ENVIRONME		HOTEL	YOU	
	ABLE	DOCUM	D	NTALLY	FRIENDLY	DOES TO	PROVIDE	
	POLICY	ENT	GUIDELI	INITIATIVES		HELP	YOUR	
	DOCUM	SHOWS	NES OR	ARE		THE	COLLEAGUE	
	ENT.	HOW TO	PROCED	WORKING?		ENVIRON	S WITH THE	
		USE	URES			MENT OR	OPTION TO	
		CONSER	THAT			THE	PARTICIPAT	

		VE WATER AND ENERGY .	SUPPOR T INCLUSI ON AMONG STAFF MEMBE RS?		COMMUN ITIES AROUND IT?	E ENVIRONME NTALLY FRIENDLY ACTIVITIES?
31-40	Yes	Yes	Yes	Yes	No	Yes
31-40	Yes	Yes	No	Yes	Yes	Yes
31-40	Yes	Yes	No	No	Yes	Yes
31-40	Yes	Yes	Yes	Yes	Yes	Yes
31-40	Yes	Yes	Yes	Yes	No	Yes
31-40	Yes	Yes	Yes	Yes	Yes	Yes
31-40	Yes	Yes	Yes	Yes	Yes	Yes
31-40	Yes	Yes	Yes	Yes	Yes	Yes
31-40	Yes	Yes	Yes	No	No	No
31-40	Yes	Yes	Yes	Yes	Yes	Yes

Table 3: Unaware employees

Age	Your company has sustainable policy document.	The sustainable policy document shows how to use conserve water and energy.	Are there any defined guidelines or procedures that support inclusion among staff members?	Do you assess how well your environmentally friendly initiatives are working?	Is there anything your hotel does to help the environment or the communities around it?	On an individual level do you provide your colleagues with the option to participate in environmentally friendly activities?
31-40	No	May be	No	Yes	No	Yes
31-40	No	No	Yes	Yes	No	Yes
31-40	No	No	No	No	No	No
31-40	No	No	Maybe	May be	May be	Maybe

The Table 2 and Table 3 shows that out 14 employees aged between 31-40 years of age, only 4 were not aware of the sustainable policy document in their company. Those employees who were aware of the sustainable policy document had clear understanding of the policy guidelines and procedures.

Table 4: Lack of awareness in employees.

Age	Your company has sustainable policy document .	The sustainable policy document shows how to use conserve water and energy.	Are there any defined guideline s or procedur es that support inclusion among staff members ?	Do you assess how well your environmental ly friendly initiatives are working?	Is there anything your hotel does to help the environme nt or the communiti es around it?	On an individual level do you provide your colleagues with the option to participate in environmental ly friendly activities?
20-30	Yes	No	Yes	No	No	No
20-30	Yes	May be	Maybe	May be	Yes	Yes
20-30	Yes	Yes	Yes	Yes	Yes	Yes

20-30	Yes	Yes	Yes	No	Yes	Yes
20-30	Yes	Yes	Yes	Yes	Yes	Yes
20-30	Yes	Yes	Yes	Yes	No	Yes
20-30	Yes	Yes	Yes	Yes	Yes	Yes
20-30	Yes	Yes	Yes	Yes	Yes	Yes
20-30	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: Lack of awareness in young employees

Age	Your company has sustainable policy document .	The sustainable policy document shows how to use conserve water and energy.	Are there any defined guidelines or procedures that support inclusion among staff members ?	Do you assess how well your environmentally friendly initiatives are working?	Is there anything your hotel does to help the environment or the communities around it?	On an individual level do you provide your colleagues with the option to participate in environmentally friendly activities?
20-30	No	Yes	No	No	No	No
20-30	No	Yes	Yes	Yes	May be	Yes
20-30	No	No	Yes	Yes	Yes	Yes
20-30	No	No	Yes	Yes	No	Yes

The Table 4 and Table 5 shows that out 13 employees aged between 21-30 years of age, 4 were not aware of the sustainable policy document in their company and also they had no idea about the policy guidelines and procedures.

5. Discussion

The results of the study by Sin, Jusoh & Mardani (2020) indicated that employee management is one of the most important practices in hotel industry apart from customer relationship management and leadership. Similarly, Wang & Nguyen (2022) asserted that human resources management in the tourism industry is a significant role in hospitality industry. Thus green recruitment and training should be conducted to achieve sustainability in hospitality operations. The results of the study above showed that employees were less of the sustainability programs and policies in their

respective departments. A hybrid approach of MCDM model was used to evaluate the green performance of hotels in a study by Wang & Nguyen (2022). It was observed that the capacity of managers can be further enhanced through knowledge transfer of environmental management experiences to increase the efficiency of green practices.

According to Sin, Jusoh & Mardani (2020), best practices selection in total quality management (TQM) is an intricate MCDM problem. Based on the usage of MCDM models in the complex decision making problems, Sin, Jusoh & Mardani (2020) asserted that decision makers (DM) must decide on the most appropriate TQM practices for their hotels. Sin & Sin (2019) identified employee empowerment, employee fulfillment and employee involvement as human perspective that hotels adapt in their TQM methods to boost employees' well-being and their learning and process management. Wang & Nguyen (2022) continued to suggest good references for DMs in evaluating and increasing green practice in various sectors. Some of the good references are leadership, employee and process management, customer relationship and product and service design (Sin, Jusoh & Mardani, 2020). These references can also be used as TQM practices for MCDM models.

According to the results discussed above, employee awareness was ranked first. The hotel industry is always in constant contact with people. The sector requires advanced communication skills among employees. The qualities pertaining to knowledge and skills eventually leads to survival and development (Sin, Jusoh & Mardani, 2020). Apart from learning and development a good CSR initiative leads to good employee management. According to a study by Nilashi, *et al.*, (2019), several hotels practices CSR initiatives to enhance employees' wellbeing. Research by Akel & Noyan (2024) also emphasized that green management and eco-centered practices in hotels minimizes environmental impacts during service production. Thus it leads to safe employee conditions. A breakdown in function of any areas of different departments disrupts the flow of operations. It can significantly cause a ripple effect that inhibits the organization's ability to optimize its business. The education of hotel employees on green and smart practices and their increasing interest in awareness of sustainability plays critical role in improving business operations (Akel & Noyan, 2024). Effective communication between hotel guests and management is also crucial for guest satisfaction and competitive advantages and economic growth. By practicing CSR initiatives, hotels will contribute to the natural environment and also enhance employees' satisfaction and loyalty. Thus, CSR initiative is useful for high-level decision-making processes. A positive relationship between information technology and hotel performance is linked with employee productivity and that increases income and profit (Akel & Noyan, 2024).

Thus, it is evident from the above discussion that employee management is extremely important in the hotel business. There are multiple benefits of employee management such as provision of harmonious atmosphere, increasing work effectiveness, helping employees and the company itself to compete in the fast changing environment, reducing damages and wastage, forming accurate work specification, and instilling passion of work between employees and the management team within the process (Sin, Jusoh & Mardani, 2020). It is considered that employee management is an essential management tool due to these multiple benefits. Due to these benefits, Wang & Nguyen (2022) also recommended the usage of the criterion of MCDM in TQM in various other fields.

6. Conclusion

The aforementioned analysis makes it clear that one of the most crucial procedures in the hotel business is personnel management. In order to attain sustainability in hospitality operations, green hiring and training practices should be implemented. It has been noted that knowledge transfer from environmental management experiences can further improve managers' abilities to increase the effectiveness of green initiatives. Our study's findings demonstrated that staff awareness is the most crucial component of hotel operations. This is because, as a result of hotels' ongoing operations, it promotes effective personnel management and CSR initiative implementation. The operation flow is disrupted when any department's areas stop working properly. It may have a major knock-on effect that makes it more difficult for the company to maximize its profits. An essential component of enhancing corporate operations is educating hotel staff members about eco-friendly and prudent procedures, as well as piquing their growing interest in sustainability. Employees in this field must possess advanced communication abilities. Knowledge and skill-related attributes eventually lead to progress and survival. Therefore, in addition to fostering learning and growth, a successful CSR program improves staff management.

Effective communication between hotel guests and management is essential for ensuring guest happiness, competitive advantages, and economic growth in the hotel industry, as demonstrated by another research finding. As a result, hotels will improve worker loyalty and satisfaction while also benefiting the environment. Employee productivity is positively correlated with information technology use in hotels, which raises revenue and profit. The explanation above makes it clear that employee management is crucial for the hotel industry.

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Appendices

Appendix A

Age *

- ☐ 20-30
- ☐ 31-40
- ☐ 41-50
- ☐ 51 & above

Gender *

- ☐ Male
- ☐ Female
- ☐ Prefer not to say

Monthly Income (\$) (Annual)

- ☐ 2000-3000
- ☐ 3000-4000
- ☐ 4000 & above

Education Level

- ☐ Diploma
- ☐ Graduate
- ☐ Post Graduate

Your company has sustainable policy document.

- ☐ Yes
- ☐ No
- ☐ May be

The sustainable policy document shows how to use conserve water and energy.

- ☐ Yes
- ☐ No
- ☐ May be

Your company uses fountain or bulk water storage.

- ☐ Yes
- ☐ No
- ☐ Maybe

Does your sustainability policy team need to be reviewed by a group or a single person?

- ☐ Single person
- ☐ Team

Are there any defined guidelines or procedures that support inclusion among staff members?

- ☐ Yes
- ☐ No
- ☐ Maybe

Do you assess how well your environmentally friendly initiatives are working?

- ☐ Yes
- ☐ No
- ☐ May be

Is there anything your hotel does to help the environment or the communities around it?

- ☐ Yes
- ☐ No
- ☐ May be

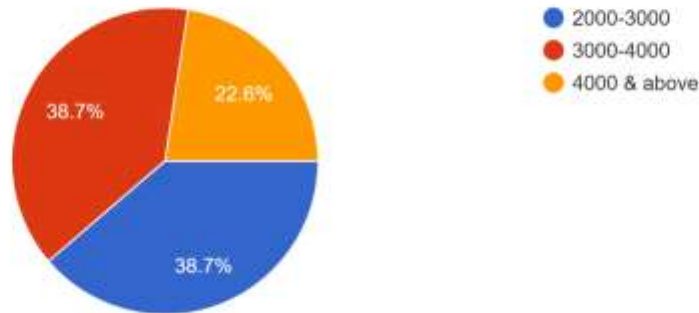
On an individual level do you provide your colleagues with the option to participate in environmentally friendly activities?

- ☐ Yes
- ☐ No
- ☐ Maybe

Appendix B

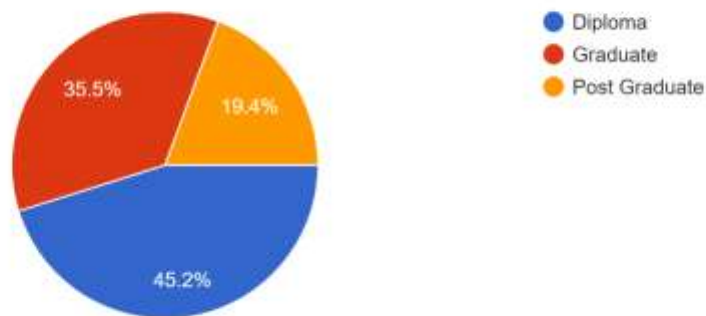
Monthly Income (\$) (Annual)

31 responses



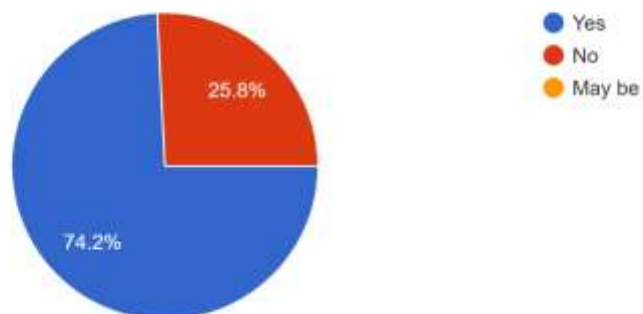
Education Level

31 responses



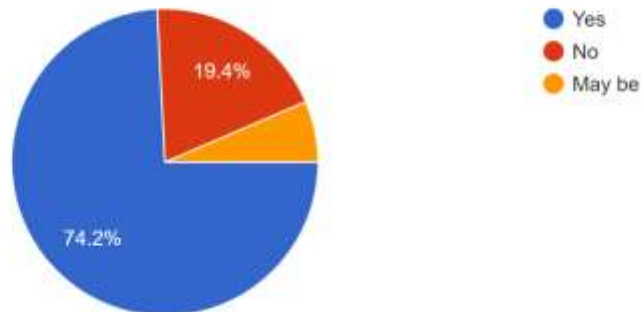
Your company has sustainable policy document.

31 responses



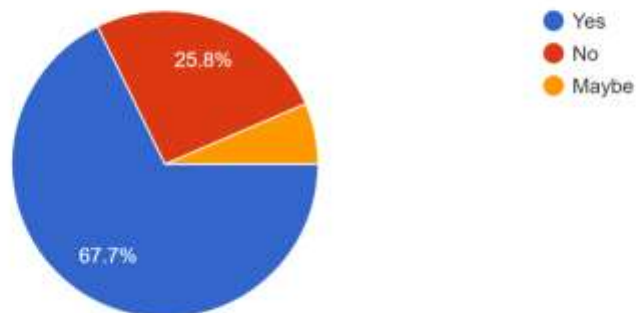
The sustainable policy document shows how to use conserve water and energy.

31 responses



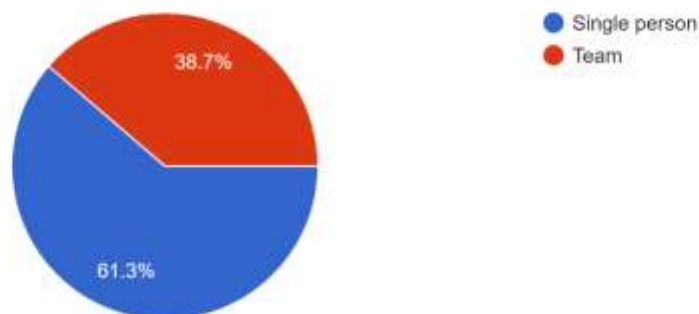
Your company uses fountain or bulk water storage.

31 responses



Does your sustainability policy team need to be reviewed by a group or a single person?

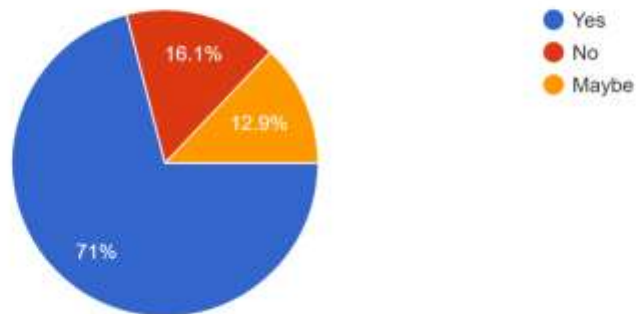
31 responses



A Multi-Criteria Approach to Decision-Making for Assessing Sustainable Practices in International Hospitality Management

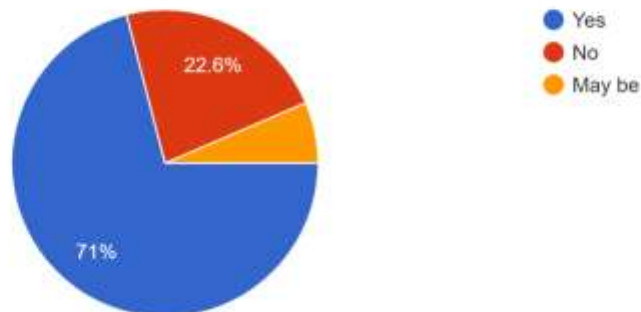
Are there any defined guidelines or procedures that support inclusion among staff members?

31 responses



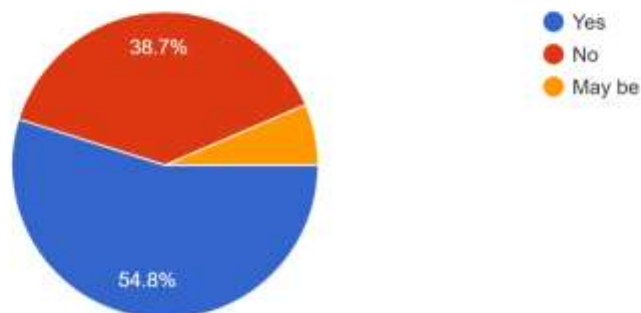
Do you assess how well your environmentally friendly initiatives are working?

31 responses



Is there anything your hotel does to help the environment or the communities around it?

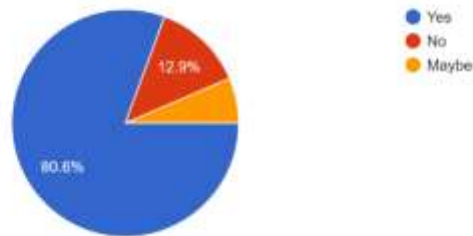
31 responses



Dr. Amer Hani Al-Qassem¹, Dr. EmadEddin AbuELEnain², Dr. Kakul Agha³,
Dr. Basma Waleed Kashmoola⁴, Dr. Nedal Fawzi Assad⁵, Dr. Hazim Ryad Momani⁶, Dr. Krishnabhaskar Mangalasserri⁷

On an individual level do you provide your colleagues with the option to participate in environmentally friendly activities?

31 responses



Appendix C

Age	Gender	Monthly Income (\$) (Annual)	Education Level	Your company has sustainable policy	The sustainable policy document	Your company uses fountain	Does your sustainability policy team	Are there any defined guidelines	Do you assess how well your	Is there anything your hotel does to	On an individual level do you
20-30	Female	3000-4000	Diploma	Yes	No	No	Team	Yes	No	No	No
20-30	Female	3000-4000	Graduate	No	Yes	Maybe	Team	No	No	No	No
31-40	Male	3000-4000	Graduate	No	May be	Yes	Single per	No	Yes	No	Yes
51 & above	Female	4000 & above	Post Graduate	Yes	Yes	No	Team	Maybe	No	No	Maybe
41-50	Male	3000-4000	Graduate	Yes	Yes	Yes	Single per	Maybe	Yes	No	Yes
20-30	Male	2000-3000	Diploma	Yes	May be	Maybe	Single per	Maybe	May be	Yes	Yes
20-30	Female	2000-3000	Graduate	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
20-30	Male	2000-3000	Diploma	Yes	Yes	Yes	Single per	Yes	No	Yes	Yes
20-30	Male	2000-3000	Diploma	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
41-50	Male	4000 & above	Post Graduate	Yes	Yes	No	Team	Yes	Yes	Yes	Yes
31-40	Female	3000-4000	Graduate	Yes	Yes	Yes	Team	Yes	Yes	No	Yes
41-50	Female	3000-4000	Post Graduate	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
31-40	Male	2000-3000	Diploma	Yes	Yes	Yes	Single per	No	Yes	Yes	Yes
20-30	Male	2000-3000	Diploma	Yes	Yes	Yes	Single per	Yes	Yes	No	Yes
20-30	Female	2000-3000	Diploma	No	Yes	Yes	Single per	Yes	Yes	May be	Yes
20-30	Male	2000-3000	Diploma	No	No	Yes	Single per	Yes	Yes	Yes	Yes
20-30	Male	3000-4000	Graduate	No	No	No	Single per	Yes	Yes	No	Yes
20-30	Male	2000-3000	Diploma	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
20-30	Prefer not to say	2000-3000	Diploma	Yes	Yes	Yes	Team	Yes	Yes	Yes	Yes
31-40	Female	2000-3000	Graduate	No	No	Yes	Team	Yes	Yes	No	Yes
31-40	Male	4000 & above	Graduate	Yes	Yes	Yes	Team	No	No	Yes	Yes
31-40	Male	4000 & above	Graduate	No	No	Yes	Team	No	No	No	No
31-40	Male	3000-4000	Diploma	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
31-40	Male	3000-4000	Diploma	Yes	Yes	No	Team	Yes	Yes	No	Yes
31-40	Female	3000-4000	Diploma	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
31-40	Male	2000-3000	Diploma	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
31-40	Male	4000 & above	Post Graduate	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes
20-30	Male	4000 & above	Post Graduate	Yes	Yes	No	Team	Yes	Yes	Yes	Yes
31-40	Male	3000-4000	Graduate	No	No	No	Team	Maybe	May be	May be	Maybe
31-40	Male	3000-4000	Graduate	Yes	Yes	No	Single per	Yes	No	No	No
31-40	Female	4000 & above	Post Graduate	Yes	Yes	Yes	Single per	Yes	Yes	Yes	Yes