

Knowledge sharing, perceived risk and environmental information on energy saving behaviors of hotel guests

Rohyan Sosiadi^a, Bambang Heru^b and Maun Jamaludin^{c*}

^aDepartment of Hospitality, NHI Bandung Tourism Polytechnic, Indonesia

^bPostgraduate Faculty, Pasundan University, Bandung, Indonesia

^cDepartment of Business Administration, Pasundan University, Bandung, Indonesia

CHRONICLE

Article history:

Received: April 10, 2023

Received in revised format: May 18, 2023

Accepted: July 19, 2023

Available online: July 19, 2023

Keywords:

Knowledge sharing

Perceived Risk

Environmental information

Energy Efficiency

Hospitality Industry

ABSTRACT

Energy efficiency is one of the critical aspects, because the hotel sector has significant energy consumption and has an impact on environmental information. Energy efficiency helps reduce operational costs. By reducing excessive energy consumption, hotels can set a good example of responsible and sustainable business practices. It is important to understand the factors that affect energy efficiency. Some of the relevant factors are knowledge sharing, risk perception, and environmental information. This study aims to analyze the effect of knowledge sharing, risk perception, and environmental information factors on energy efficiency in the hospitality industry. The research method used in this study is a quantitative method with a survey approach. The number of samples used in this study were 176 hotel managers in Indonesia. Questionnaires were distributed to respondents using a Likert scale of 1 to 7. Data were analyzed using the Partial Least Square (PLS) method using SmartPLS software. The research results conclude that knowledge sharing, perceived risk, and environmental information have a significant influence on energy efficiency in the hospitality industry. Well-informed consumers tend to be more aware of the impact of their decisions and actions on environmental information, so they are more likely to choose hotels that adopt sustainable and energy efficient practices. In addition, the perception of risk also affects energy efficiency in the hospitality industry. Consumers who perceive risks associated with low sustainability or negative environmental information impacts are less likely to choose the hotel. Environmental information factors also play an important role in energy efficiency. Hotels that have an environment that supports and facilitates sustainable practices have the potential to achieve higher energy efficiency.

1. Introduction

The hotel industry continues to grow rapidly along with the growth of tourism. However, with this growth also comes the challenge of managing energy consumption efficiently, reducing environmental information impact, and increasing sustainability. Energy efficiency is a critical aspect, because this sector has significant energy consumption and has an impact on environmental information (Belussi et al., 2019). Energy efficiency helps reduce operational costs. Adopting energy-efficient practices, such as the efficient use of electrical appliances, optimal air conditioning management, and energy-efficient lighting can reduce spending on energy bill payments. This can increase profits and strengthen business continuity. Energy efficiency practices implemented by hotels can provide a competitive advantage (Singjai et al., 2018; Answerreh et al., 2022). Consumers are increasingly concerned about sustainability and tend to choose hotels that are committed to sustainable practices, including

* Corresponding author.

E-mail address: maun.jamaludin@unpas.ac.id (M. Jamaludin)

efficient energy use. By increasing energy efficiency, hotels can attract more environmentally conscious customers and enhance their brand image (Martínez et al., 2019; Kuo et al., 2022). Improving energy efficiency is also part of corporate social responsibility. Hotels as business entities have an important role in making a positive contribution to society and the surrounding environment. By reducing excessive energy consumption, hotels can set a good example of responsible and sustainable business practices (Úbeda-García et al., 2021). Furthermore, increasing energy efficiency in the hotel sector provides significant benefits, including reduced greenhouse gas emissions, reduced operational costs, increased competitiveness, sustainability of energy resources, and corporate social responsibility. This is an important step in supporting global efforts to achieve sustainability and reduce negative impacts on environmental information (Umrani et al., 2020).

It is important to understand the factors that affect energy efficiency. Some of the relevant factors are knowledge sharing, risk perception, and environmental information. Knowledge sharing of energy and environmental information issues, perceptions of risks related to sustainability, as well as implemented environmental information practices can all influence the efficient use of energy (Liobikienė & Juknys, 2016). In addition to knowledge sharing, risk perception can also influence energy efficiency in the hospitality industry. Consumers who perceive risks associated with low sustainability or negative environmental information impacts tend to be less interested in choosing the hotel (Singjai et al., 2018). On the other hand, consumers who have low risk perceptions or feel that hotels manage risk well will be more likely to support and choose hotels that implement sustainable practices. Furthermore, environmental information also plays an important role in energy efficiency. Hotels that have an environment that supports and facilitates sustainable practices, such as the use of renewable energy technologies, efficient water management, and good waste management, will have the potential to achieve higher energy efficiency (Teng et al., 2018). The hotel industry is a significant contributor to greenhouse gas emissions. By increasing energy efficiency, hotels can reduce energy consumption and the resulting emissions. This contributes to global efforts to mitigate climate change and its negative impacts. Therefore, this study aims to analyze the effect of knowledge sharing, risk perception, and environmental information factors on energy efficiency in the hospitality industry. The research results are expected to provide insights and recommendations for hotel industry stakeholders to develop effective strategies to increase energy efficiency and reduce environmental information impact.

2. Literature Review

2.1. *The Effect of Knowledge Sharing on Perceived Risk and Environmental information*

Knowledge sharing refers to the level of understanding and information possessed by individuals or consumer groups about aspects related to the experience of staying at a hotel (Ting et al., 2019). Knowledge sharing relates to various matters, such as knowledge of room types and available facilities, food and beverage choices, additional services such as spas or fitness centers, cancellation or refund policies, and sustainability or environmental information policies implemented by hotels. Consumers can obtain this knowledge through various sources, such as personal experience, travel agents or information provided by the hotel itself through brochures, websites or marketing materials (Rahimi & Kozak, 2017). Good knowledge sharing in the hospitality industry enables individuals or groups of consumers to make informed decisions when selecting hotels and selecting facilities that suit consumer needs and preferences. In addition, knowledge sharing can also affect consumer perceptions of quality, value, and satisfaction with the experience of staying at a hotel (Rothenfluh et al., 2016; Answerreh et al., 2022). This can influence their perception of risk through an understanding of risk reduction steps that can be taken. Consumers who have good knowledge may be better able to identify solutions or practices that can reduce the risks associated with certain products or services (Kandampully et al., 2018). This can make them feel more secure and comfortable in using the product or service. A good understanding of knowledge sharing is important for hotels to design appropriate marketing strategies, communicate value and uniqueness, and provide experiences that meet or exceed consumer expectations (Rothenfluh et al., 2016). By having good knowledge of consumer preferences, needs and trends, hotels can improve service quality, increase customer loyalty and gain a competitive advantage. Furthermore, the first hypothesis can be concluded as follows:

Hypothesis 1: *Knowledge sharing influences perceived risk.*

Knowledge sharing can have an influence on their attitudes and behavior towards environmental information. When consumers have good knowledge about environmental information issues, they tend to be more aware of the impact of their decisions and actions on environmental information (Paço & Lavrador, 2017). This makes consumers tend to choose hotels that use environmentally friendly technology and choose products or services that promote sustainable practices. Efforts to pay attention to environmental information aspects are important for maintaining environmental information sustainability, reducing negative impacts on ecosystems, reducing excessive use of natural resources, and meeting the demands of consumers who are increasingly aware of environmental information issues (Han & Yoon, 2015; Rahimi & Kozak, 2017). Increasing knowledge sharing about sustainable and environmentally friendly practices can be an important step in encouraging consumers to make better choices from an environmental information point of view and support more sustainable practices in the hospitality industry. Furthermore, the second hypothesis is as follows:

Hypothesis 2: *Knowledge sharing can affect environmental information.*

Consumers can also adopt energy efficient practices and use electrical appliances wisely. This can identify opportunities to save energy and reduce energy wastage. With knowledge of sustainable practices and energy efficiency, you may be more inclined to choose hotels that have a reputation for being environmentally friendly and committed to energy savings (Verma & Chandra, 2016). Knowledge sharing about energy efficiency has a direct impact on energy use and operational efficiency (Jawabreh et al., 2022). Having good knowledge of how to reduce energy consumption helps create greater demand for energy efficiency practices. The third hypothesis is concluded as follows:

Hypothesis 3: *Knowledge sharing can influence energy efficiency.*

2.2. The Effect of Perceived Risk on Knowledge Sharing and Energy Efficiency

High perceptions of risk associated with inefficient use of energy can trigger consumer concerns about the negative impact on environmental information or their own health. Consumers may be aware of risks such as increased carbon emissions, environmental information degradation, or limited energy resources that may affect future convenience and sustainability (Liobikienė & Juknys, 2016). This can motivate consumers to adopt more energy efficient practices. High risk perception also encourages consumers to take proactive actions in reducing their energy consumption and avoiding the associated risks. Knowledge sharing about energy efficiency can influence energy efficiency by providing consumers with better information and understanding about energy-efficient practices (López-Bernabé et al., 2021). Furthermore, the fourth and fifth hypotheses are concluded:

Hypothesis 4: *Perceived risk can affect energy efficiency.*

Hypothesis 5: *Perceived risk mediates the relationship between knowledge sharing and energy efficiency.*

2.3. The Effect of Environmental information

Regulatory pressure is one of environmental information influences that can affect energy efficiency. Awareness of environmental information issues also plays an important role in promoting energy efficiency (Asadi et al., 2020). The more people who care about environmental information and its impact, the greater the demand for sustainable practices, including energy efficiency. Responsiveness to these demands can increase their energy efficiency to meet customer expectations and build a more positive image in terms of sustainability (Jawabreh et al., 2022). This creates incentives to increase energy efficiency in order to meet the expectations and preferences of environmentally conscious consumers (Ouyang et al., 2019; Mak & Chang, 2019). In addition, adopting energy efficient practices can also reduce operational costs, gain competitive advantage, and improve brand image. The sixth and seventh hypotheses in this study are concluded as follows:

Hypothesis 6: *Environmental information influences energy efficiency.*

Hypothesis 7: *Environmental information mediates the relationship between knowledge sharing and energy efficiency.*

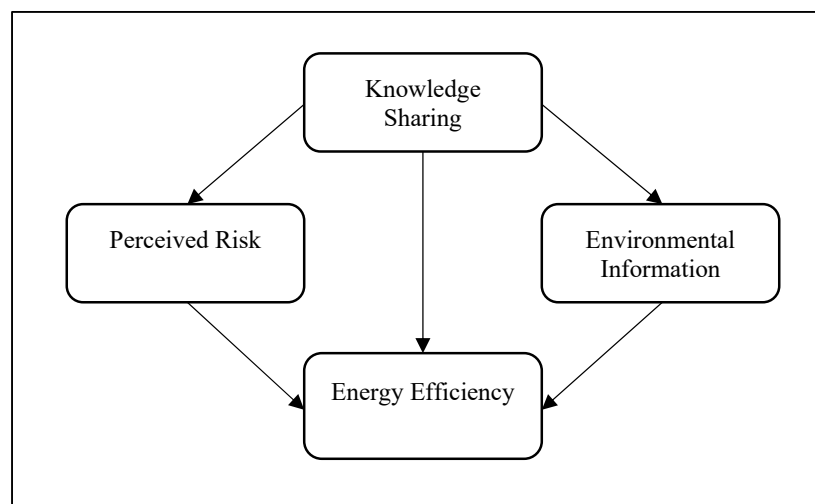


Fig. 1. Theoretical Framework

3. Research Method

The research method used in this study is a quantitative method with a survey approach. The research sample was taken from the population of hotel managers in Indonesia using random sampling technique. Questionnaires were distributed to respondents using a Likert scale of 1 to 7 (Strongly disagree - Strongly agree). The total number of questionnaires distributed to respondents was 220 questionnaires. However, the number of questionnaires returned was 187 questionnaires. There were

11 incomplete questionnaires so that the final number of questionnaires that could be used in this study were 176 questionnaires. The variables used in this study include knowledge sharing, perceived risk and environmental information as independent variables and energy efficiency as the dependent variable. Data were analyzed using the Partial Least Square (PLS) method using SmartPLS software. The analysis was carried out in several stages, including the reliability and validity test of the research instrument, the regression test to test the direct relationship between variables, and the mediation test to test the indirect relationship between variables.

4. Results

The first analysis carried out in this study was testing the indicators used to measure latent variables. The purpose of this test is to determine whether the selected indicators are suitable and adequate in measuring latent variables. This can be seen from the standard loading factor values obtained. The standard value of factor loading indicates the extent to which an indicator contributes to latent variables. The standard value of the accepted factor loading is > 0.6. The standard value of the indicator factor loading exceeds this value, which means that the indicator is good and relevant in measuring latent variables. In addition, in this analysis it is also necessary to pay attention to other factors such as the reliability of indicators and the validity of the variables as a whole. Reliability can be tested using the Cronbach Alpha coefficient or with Composite Reliability, which measures the extent to which these indicators are consistent and reliable. The indicator is consistent and reliable if the Cronbach Alpha value is greater than 0.6 or the Composite Reliability value is more than 0.7. Furthermore, variable validity can be analyzed through convergent and discriminant validity tests, which look at the extent to which these indicators are related to latent variables. This can be seen from the Average Variance Extracted (AVE) value obtained. With an AVE value of more than 0.5, the latent variable used in the study is valid.

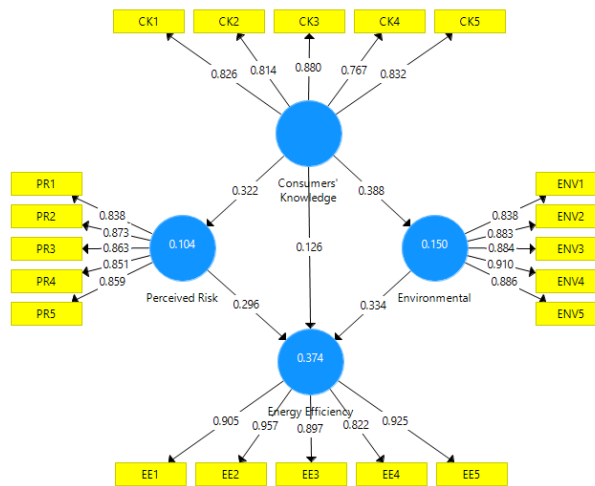


Fig. 2. Analysis Model Structure

Table 1
Std Loading Factor

Indicator	Knowledge sharing	Perceived Risk	Environmental	Energy Efficiency
CK1	0.826			
CK2	0.814			
CK3	0.880			
CK4	0.767			
CK5	0.832			
PR1		0.838		
PR2		0.873		
PR3		0.863		
PR4		0.851		
PR5		0.859		
ENV1			0.838	
ENV2			0.883	
ENV3			0.884	
ENV4			0.910	
ENV5			0.886	
EE1				0.905
EE2				0.957
EE3				0.897
EE4				0.822
EE5				0.925

The results of the analysis test in Table 1 above show that the indicators of the knowledge sharing variable obtain standard loading factor values of 0.767, 0.814, 0.826, 0.832, 0.880. Perceived risk variable indicators are 0.838, 0.851, 0.859, 0.863, 0.873. Standard values for loading environmental information variable indicator factors are 0.838, 0.883, 0.884, 0.886, 0.910. And environmental information variable indicators are 0.822, 0.897, 0.905, 0.925, 0.957. The standard value of the loading factor of the indicators of the four latent variables has a value above 0.6. This shows that the indicators used in this study are suitable and adequate in measuring latent variables.

Table 2
Construct Reliability and Validity

Variable	Cronbach's Alpha	rho A	Composite Reliability	Average Variance Extracted (AVE)
Knowledge sharing	0.883	0.911	0.914	0.681
Perceived Risk	0.910	0.916	0.932	0.734
Environmental	0.927	0.930	0.945	0.775
Energy Efficiency	0.942	0.944	0.956	0.814

The results of the construct reliability and validity test on the knowledge sharing variable obtained Cronbach's Alpha values of 0.883, Composite Reliability of 0.914 and AVE of 0.681. The perceived risk variable obtained a Cronbach's Alpha value of 0.910, Composite Reliability of 0.932 and an AVE value of 0.734. Furthermore, environmental information variables obtained Cronbach's Alpha, Composite Reliability and AVE values of 0.927, 0.945, 0.775 respectively and the energy efficiency variables respectively 0.942, 0.956, 0.814. From the results of the reliability and validity tests on the four variables, it shows that Cronbach's Alpha score is above 0.6, the Composite Reliability is above 0.7 and the AVE is above 0.5. Furthermore, it can be concluded that all of these indicators are consistent and reliable. Furthermore, hypothesis testing was carried out to test whether the independent variables in this study influenced the dependent variable. The hypothesis test carried out in this study was to test the relationship of knowledge sharing to perceived risk, environmental information and energy efficiency as well as the relationship between perceived risk and environmental information to energy efficiency. In addition, testing is also carried out using mediating factors that bridge the relationship between the independent variables and the dependent variable. In this case, perceived risk and environmental information variables are used as variables mediating the relationship between knowledge sharing and energy efficiency.

Table 3
Hypothesis Testing

Hypothesis	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	P Values
Knowledge sharing → Perceived Risk	0.322	0.328	0.064	0.000
Knowledge sharing → Environmental	0.388	0.398	0.068	0.000
Knowledge sharing → Energy Efficiency	0.126	0.129	0.055	0.024
Perceived Risk → Energy Efficiency	0.296	0.303	0.077	0.000
Environmental information → Energy Efficiency	0.334	0.333	0.079	0.000
Knowledge sharing → Perceived Risk → Energy Efficiency	0.095	0.099	0.033	0.004
Knowledge sharing → Environmental information → Energy Efficiency	0.129	0.132	0.038	0.001

The hypothesis can be accepted with a P value of less than 0.05. Testing the first hypothesis, the influence of knowledge sharing on perceived risk obtains a P value of less than 0.05 (0.000), which means that this hypothesis is significant and acceptable. The second hypothesis can also be accepted by obtaining a P value of less than 0.05 (0.000), this indicates that knowledge sharing has a significant effect on environmental information. Furthermore, the third hypothesis which states that knowledge sharing influences energy efficiency obtains a P value of 0.024. Furthermore, knowledge sharing also has a significant influence on energy efficiency. Furthermore, the fourth and fifth hypotheses which state that perceived risk and environmental information have an influence on energy efficiency both obtain a P value of 0.000. The value obtained is less than 0.05, which means that the fourth and fifth hypotheses can be accepted. In the sixth hypothesis, where the perceived risk variable is used as a variable that mediates the relationship between knowledge sharing and energy efficiency, a P value of 0.004 (<0.05) is obtained. That is, perceived risk can be used as a suitable mediating variable in bridging the influence of knowledge sharing with energy efficiency. And in the seventh hypothesis, environmental information mediates the relationship between knowledge sharing and energy efficiency, obtaining a P value of 0.001. Therefore, the seventh hypothesis can be accepted, and environmental information can be used as a good mediating variable that links knowledge sharing variables with energy efficiency. Furthermore, to be able to find out how well the model used for research testing can be tested using model testing. The results of the model test can be seen in Table 4.

Table 4
Fit Models

	SRMR	Chi-Square	NFI	d ULS	d G
Saturated Model	0.062	412.720	0.863	0.816	0.410
Estimated Model	0.127	461.830	0.847	3.407	0.509

The SRMR and NFI values are getting closer to 1, so the model used is good. The model test in this study obtained an SRMR value of 0.062 and an NFI value of 0.862. The value obtained is more than 0.05 and is close to 1,000. Furthermore, it can be

concluded that the model used in this study is good enough.

5. Conclusion

Based on the research results, it can be concluded that knowledge sharing, perceived risk, and environmental information have a significant influence on energy efficiency in the hospitality industry. Knowledge sharing about energy and environmental information issues plays an important role in shaping consumer attitudes and behavior related to energy efficiency. Well-informed consumers tend to be more aware of the impact of their decisions and actions on environmental information, so they are more likely to choose hotels that adopt sustainable and energy efficient practices. In addition, the perception of risk also affects energy efficiency in the hospitality industry. Consumers who perceive risks associated with low sustainability or negative environmental information impacts are less likely to choose the hotel. Conversely, consumers who have low risk perceptions or feel that hotels manage risk well will be more likely to support and choose hotels that implement sustainable practices. Environmental information factors also play an important role in energy efficiency. The hospitality industry that has an environment that supports and facilitates sustainable practices has the potential to achieve higher energy efficiency. Practices such as the use of renewable energy, efficient water management and good waste management are key factors in increasing energy efficiency in the hospitality industry.

The results of this study have several important implications for the hospitality industry in Indonesia. The hospitality industry needs to manage and mitigate risks related to sustainability and environmental information impact. By implementing effective sustainable practices and committing to sustainability, hotels can reduce consumers' perceived risk associated with their negative impact on environmental information. It is also necessary to create an environment that supports and facilitates sustainable practices. Investments in renewable energy technologies, efficient water management, good waste management, and the use of environmentally friendly building materials can improve overall energy efficiency. In addition, policies and regulations are also needed that encourage sustainable practices in the hospitality industry. Incentives and training programs can help hotels to adopt sustainable practices and improve their energy efficiency. By taking these steps, the hotel industry in Indonesia can contribute to global efforts to reduce greenhouse gas emissions and negative impacts on environmental information. In addition, improving energy efficiency can also reduce hotel operating costs and increase the long-term sustainability of the industry.

References

- Asadi, S., Pourhashemi, S. O., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E.,... & Razali, N. S. (2020). Investigating influence of green innovation on sustainability performance: A case on Malaysian hotel industry. *Journal of cleaner production*, 258, 120860.
- Belussi, L., Barozzi, B., Bellazzi, A., Danza, L., Devitofrancesco, A., Fanciulli, C.,... & Scrosati, C. (2019). A review of performance of zero energy buildings and energy efficiency solutions. *Journal of building engineering*, 25, 100772.
- Han, H., & Yoon, H. J. (2015). Hotel customers' environmentally responsible behavioral intention: Impact of key constructs on decision in green consumerism. *International Journal of Hospitality Management*, 45, 22-33.
- Jawabreh, O. A., Fahmawee, E. A. D. A., Al-Rawashdeh, O. M., Alrowwad, A., & Alrjoub, A. M. S. (2022). Green energy products and the relationship of the customer's consideration for environmental information and perceived risk involved with the mediating position of customer purchasing intentions: the point of view of foreign tourist in Jordan. *International Journal of Energy Economics and Policy*, 12(4), 334-341.
- Kandampully, J., Zhang, T. C., & Jaakkola, E. (2018). Customer experience management in hospitality: A literature synthesis, new understanding and research agenda. *International Journal of Contemporary Hospitality Management*, 30(1), 21-56.
- Kuo, F. I., Fang, W. T., & LePage, B. A. (2022). Proactive environmental information strategies in the hotel industry: Eco-innovation, green competitive advantage, and green core competence. *Journal of Sustainable Tourism*, 30(6), 1240-1261.
- Liobikienė, G., & Juknys, R. (2016). The role of values, environmental information risk perception, awareness of consequences, and willingness to assume responsibility for environmentally-friendly behaviour: The Lithuanian case. *Journal of Cleaner Production*, 112, 3413-3422.
- López-Bernabé, E., Foudi, S., Linares, P., & Galarraga, I. (2021). Factors affecting energy-efficiency investment in the hotel industry: survey results from Spain. *Energy Efficiency*, 14(4), 41.
- Mak, A. H., & Chang, R. C. (2019). The driving and restraining forces for environmental information strategy adoption in the hotel industry: A force field analysis approach. *Tourism Management*, 73, 48-60.
- Martínez, P., Herrero, Á., & Gómez-López, R. (2019). Corporate images and customer behavioral intentions in an environmentally certified context: Promoting environmental information sustainability in the hospitality industry. *Corporate Social Responsibility and Environmental Information Management*, 26(6), 1382-1391.
- Ouyang, Z., Wei, W., & Chi, C. G. (2019). Environment management in the hotel industry: does institutional environment matter?. *International Journal of Hospitality Management*, 77, 353-364.
- Paço, A., & Lavrador, T. (2017). Environmental information knowledge and attitudes and behaviours towards energy consumption. *Journal of environmental information management*, 197, 384-392.
- Rahimi, R., & Kozak, M. (2017). Impact of customer relationship management on customer satisfaction: The case of a budget hotel chain. *Journal of travel & tourism marketing*, 34(1), 40-51.

- Rothenfluh, F., Germeri, E., & Schulz, P. J. (2016). Consumer decision-making based on review websites: are there differences between choosing a hotel and choosing a physician?. *Journal of Medical Internet Research*, 18(6), e129.
- Singjai, K., Winata, L., & Kummer, T. F. (2018). Green initiatives and their competitive advantage for the hotel industry in developing countries. *International Journal of Hospitality Management*, 75, 131-143.
- Teng, C., Lu, C., & Huang, T. (2018). Drivers of consumers' behavioral intention toward green hotels. *International Journal of Contemporary Hospitality Management*, 30(2), 1134-1151.
- Ting, C. T., Hsieh, C. M., Chang, H. P., & Chen, H. S. (2019). Environmental information consciousness and green customer behavior: The moderating roles of incentive mechanisms. *Sustainability*, 11(3), 819.
- Úbeda-García, M., Claver-Cortés, E., Marco-Lajara, B., & Zaragoza-Sáez, P. (2021). Corporate social responsibility and firm performance in the hotel industry. The mediating role of green human resource management and environmental information outcomes. *Journal of Business Research*, 123, 57-69.
- Umrani, W. A., Channa, N. A., Yousaf, A., Ahmed, U., Pahi, M. H., & Ramayah, T. (2020). Greening the workforce to achieve environmental information performance in hotel industry: A serial mediation model. *Journal of Hospitality and Tourism Management*, 44, 50-60.
- Verma, V. K., & Chandra, B. (2016). Hotel guest's perception and choice dynamics for green hotel attribute: A mix method approach. *Indian Journal of Science and Technology*, 9(5), 1-9.



© 2023 by the authors; licensee Growing Science, Canada. This is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC-BY) license (<http://creativecommons.org/licenses/by/4.0/>).