Impact of Green Certification on Customer Satisfaction, Mediated by Perceived Hotel Quality

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Abstract: This study investigates the impact of green certification on customer satisfaction, with a focus on the mediating role of perceived hotel quality. A quantitative research approach and correlational design were employed, surveying 256 respondents from hotels within the Tamale Metropolis. The findings reveal that green certification has a significant positive influence on both service quality and customer satisfaction, confirming that environmentally sustainable practices improve overall guest experiences. Moreover, the study highlights that service quality mediates the relationship between green certification and customer satisfaction, suggesting that hotels with green certification benefit from enhanced perceived quality, which in turn leads to higher guest satisfaction. Several challenges were identified that hinder the sustainability of green certification in hotels, including high implementation costs, lack of staff training, inconsistent government policies, and limited customer awareness and demand. These barriers suggest the need for strategic interventions, such as financial support, improved staff training programs, and enhanced customer engagement with sustainability efforts. The study concludes that while green certification plays a vital role in boosting service quality and customer satisfaction, addressing these challenges is critical for the long-term success and sustainability of green-certified hotels.

1. INTRODUCTION

The hospitality industry is undergoing a significant transformation as sustainability becomes a critical factor for both competitive advantage and regulatory compliance (Salem et al., 2022) this which Ghana is not exception. Despite the growing trend towards green certification, which denotes adherence to environmentally friendly practices, there is limited

understanding of its direct and indirect effects on customer satisfaction. This gap in knowledge is particularly significant given the industry's reliance on customer satisfaction for repeat business and positive word-of-mouth (Abbas, 2020).

As environmental awareness increases, consumers are becoming more discerning about the sustainability practices of the businesses they patronize. In the hospitality industry, this trend is evident in the growing demand for green-certified hotels. However, while green certification can serve as a significant marketing tool, its actual impact on customer satisfaction remains unclear (Koch et al., 2020; Lin et al., 2023)There is a need to understand whether green certification itself influences satisfaction or if other factors, such as perceived hotel quality, play a mediating role. Green certification programs such as LEED and Green Globe provide a framework for hotels to implement sustainable practices. These certifications can differentiate hotels in a competitive market, potentially attracting eco-conscious travelers. However, the effectiveness of these certifications in enhancing customer satisfaction is not well-documented. Previous studies have yielded mixed results, with some suggesting a positive impact on customer perceptions and others indicating negligible effects (Chung, 2020; J. E. Park and Kang, 2022). This inconsistency highlights the need for further investigation.

Perceived hotel quality is a critical factor influencing customer satisfaction. It encompasses guests' evaluations of the overall excellence of a hotel's services and facilities (Mai et al., 2019). When a hotel is green-certified, it may improve perceived quality due to the added value of sustainability. This perception can enhance customer satisfaction, but the extent of this influence needs to be systematically examined (Thai and Nguyen, 2022). Understanding the mediating role of perceived hotel quality is essential to fully grasp how green certification affects customer satisfaction. The Expectancy-Disconfirmation Theory posits that customer satisfaction is determined by the gap between expected and perceived performance (Su and Swanson, 2019). Green certification may set higher expectations for sustainability-conscious guests, potentially leading to greater satisfaction if these expectations are met. The Theory of Planned Behavior further suggests that customers' attitudes towards green practices influence their satisfaction and behavioral intentions (Tan et al., 2020). These theoretical frameworks provide a basis for investigating the mediating effects of perceived hotel quality on the relationship between green certification and customer satisfaction.

Empirical studies on the impact of green certification on customer satisfaction have produced mixed results (Jellason et al., 2021; Remeseiro and Bolon-Canedo, 2019). Some research indicates that green certification positively influences customer satisfaction due to enhanced environmental responsibility and perceived quality (Checa and Bustillo, 2020). Conversely, other studies suggest that the effect may be minimal if customers do not perceive tangible benefits from the green practices (Tran et al., 2020). This disparity underscores the need for more comprehensive and nuanced research. In light of this this study sought to investigate the Impact of Green Certification on Customer Satisfaction on hotels within Tamale in the northern region. The specific objectives are to evaluate the impact of green certification and perceived hotel quality on customer satisfaction in the hospitality industry, assess the role of perceived hotel quality as a mediator in the relationship between green certification and customer satisfaction lastly to identify the challenges faced by hoteliers in implementing and maintaining green certification.

Hypothesis
H1: Green certification positively influences customer satisfaction in hotels in Tamale.
- H2: Perceived hotel quality mediates the relationship between green certification and customer satisfaction.

2. RELATED WORKS

Impact of Green Certification and Perceived Hotel Quality on Customer Satisfaction
Many studies have linked green certification to hotel quality and customer satisfaction, emphasizing the importance of sustainable hospitality practices. Green certification, which shows a hotel's environmental responsibility, increases customer satisfaction, according to several studies. Green certifications improve hotel guests' perceptions of environmental and ethical responsibility (Abdou et al., 2020; Moise, 2021; Saadoon Abdulaali, 2020). Quality hotels mediate this relationship. Green certification boosts hotel quality and satisfaction (Albayrak et al., 2021; Beheshtinia and Azad, 2019). Hotel reviews improve with green certifications due to improved cleanliness, comfort, and service (Jellason et al., 2021). This implies that green certification enhances service and guest experience beyond environmental impact.

In the hospitality industry, changing customer expectations and perceptions require continuous green practice improvement. Hotels that meet or exceed guests' changing sustainability and quality expectations have more positive disconfirmation, increasing satisfaction and repeat business (Afthanorhan et al., 2019; Bostley, 2019). Green initiatives must be communicated clearly to manage guest expectations and reduce negative disconfirmation (Sun et al., 2022). Continuous research shows that green certification improves hotel quality and customer satisfaction. Research indicates that green-certified hotels have higher satisfaction ratings and positive reviews, emphasizing the importance of sustainability in guest experiences (Gunawan, 2022; Martínez et al., 2019 Strategically implementing green practices may boost hotel customer satisfaction and loyalty.

Role of Perceived Hotel Quality on the Relationship between Green Certification and Customer Satisfaction
Green certification boosts customer satisfaction by demonstrating a hotel's sustainability. According to D'Souza et al. (2021), perceived hotel quality mediates this relationship and is crucial to guest satisfaction. Hotel quality depends on guests' reviews of services and facilities. This includes cleanliness, comfort, service, and atmosphere. Green certifications demonstrate a commitment to ethics and higher operating standards, which boosts hotel quality perceptions (Park et al., 2020; Trang, 2019). Improved quality perception boosts customer satisfaction. Green certification boosts hotel quality for many reasons. Green certifications increase hotel guests' trust by indicating high service and environmental standards (Hameed et al., 2022; Abdulaali, 2020). Second, green practises improve guest experience by improving the physical environment and service processes (Al-Gasawneh et al., 2022; Severt, 2022). Green practices that match guests' values and environmental concerns improve hotels. Guests who prioritize sustainability view green-certified hotels as environmentally responsible and offering superior service and comfort (Eid et al., 2021; Šerić

and Gil-Saura, 2019). This match between guests' values and hotel practices increases satisfaction and loyalty.

In addition, empirical studies show that perceived hotel quality affects customer satisfaction. Adapting and improving green practises helps hotels meet and exceed guests' changing expectations, improving quality and satisfaction (Ge et al., 2021; Gerdt, 2019). This relationship is strengthened by green initiative communication and operational transparency, which manage guest expectations and reduce negative disconfirmation (Agarwal et al., 2022; Jiang and Gao, 2019 The guest experience benefits of green certification are mediated by hotel quality. High-quality services and facilities in green-certified hotels boost guest satisfaction and referrals (Acampora et al., 2022; Duric and Topler, 2021). This mediator emphasizes high standards in all hotel operations to maximize green certification benefits. Hotel quality gives green certification an edge. Green hotels are seen as innovative and forward-thinking, which increases guest satisfaction and loyalty (Gupta et al., 2019). Leading in sustainability can attract eco-conscious travelers and set hotels apart.

3. METHODOLOGY

The research approach employed for this study was quantitative, allowing for the systematic collection and analysis of numerical data to address the research objectives. Quantitative methods were deemed appropriate for examining the impact of green certification and perceived hotel quality on customer satisfaction, as they enabled the measurement of relationships and statistical testing of hypotheses (Hardivizon and Mufidah, 2021)). By utilizing structured surveys and standardized instruments, the study gathered data on various variables, including customer perceptions of green certification, hotel quality, and satisfaction levels. Descriptive research was utilized to provide a detailed account of the current state of green certification, perceived hotel quality, and customer satisfaction in hotels in Tamale.

The population of the study comprised hotel guests and hoteliers in Tamale. For the first two research objectives, the population included guests who had stayed at green-certified hotels in Tamale, as well as hotel management and staff involved in the implementation and maintenance of green certification. This population was crucial for evaluating the impact of green certification and perceived hotel quality on customer satisfaction, as it encompassed both the consumers of hotel services and the providers who implemented sustainability practices. For the third research objective, which focused on identifying challenges faced by hoteliers, the population included hotel managers and staff responsible for green certification processes. Targeting this population allowed the study to gather insights into the specific difficulties and barriers encountered in implementing and maintaining green certifications. This comprehensive approach ensured that the research findings reflected the perspectives and experiences of all relevant stakeholders in the hospitality industry in Tamale. The population of the study consist 676 individuals.

Table 1: Population

Categories	No. of Staff
Hoteliers	464
Guest	212

Total	676

A stratified random sampling method was employed to ensure that the sample accurately represented the diverse roles and hierarchical levels within the public institutions. This approach involved dividing the population into distinct subgroups (strata) based on their roles (hoteliers and guest) and then randomly selecting participants from each stratum. This method helped to minimize sampling bias and ensure that the findings were generalizable to the broader population of public institutions within the Tamale Metro area. The source of data for this study was primarily gathered through a structured questionnaire distributed to hotel staff and management in various hotels within the Tamale Metropolis. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarize the data. Inferential statistical techniques, such as correlation analysis and multiple regression analysis, were used to examine the relationships the variables. Structural Equation Modelling (SEM) was utilized to test the relationships between the variables. SEM allowed for the simultaneous examination of multiple relationships and provided a comprehensive understanding of the direct and indirect effects within the model.

4. RESULTS AND DISCUSSIONS

Validity and Reliability

Table 1.1: Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	AVE
Customer Satisfaction	0.898	0.899	0.936	0.831
Green Certification	0.873	0.876	0.908	0.664
Service Quality	0.833	0.837	0.888	0.666

Field Survey, (2024)

Table 1.1 shows that Customer Satisfaction, Green Certification, and Service Quality are robust studied constructs. The three constructs' Cronbach's alpha values are above 0.8, indicating strong internal consistency. Customer satisfaction has the highest alpha, 0.898. Each construct's composite reliability (rho_a and rho_c) values are above 0.7, with Customer Satisfaction's 0.936 rho_c supporting the measures' reliability. The average variance extracted (AVE) values for all constructs exceed 0.5, indicating that they explain a significant portion of item variance. The AVE of Customer Satisfaction items is 0.831, indicating high construct representation. These statistics prove the study's constructs' reliability and validity, ensuring accurate and consistent analysis.

Table 1.2: Fornell-Larcker criterion

	Customer Satisfaction	Green Certification	Service Quality
Customer Satisfaction	0.911		

Green Certification	0.477	0.815	
Service Quality	0.408	0.554	0.816

Field Survey, (2024)

Table 1.3: Model Fit

	Saturated model	**Estimated model**
SRMR	0.062	0.062
d_ULS	0.298	0.298
d_G	0.149	0.149
Chi-square	319.591	319.591
NFI	0.864	0.864

Field Survey, (2024)

Model construct discriminant validity Fornell-Larcker criterion results are in Table 1.2. To prove discriminant validity, each construct's diagonally shown square root of the Average Variance Extracted (AVE) must exceed its correlations with other constructs. Square roots of Customer Satisfaction (0.911), Green Certification (0.815), and Service Quality (0.816) AVEs form the diagonal values. This exceeds off-diagonal correlations like 0.477 between Customer Satisfaction and Green Certification and 0.554 between Green Certification and Service Quality. Discriminant validity is confirmed because each construct is more related to its indicators than others. Table 1.3 evaluates model fit using multiple fit indices. The saturated and estimated models fit well with 0.062 SRMRs, below 0.08. In the PLS-SEM model assessment, d_ULS and d_G are stable (0.298 and 0.149, respectively). The Chi-square value of 319.591 and Normed Fit Index (NFI) of 0.864, close to 0.9, indicate that both models fit well. Fit indices indicate that the model is well-specified and represents data.
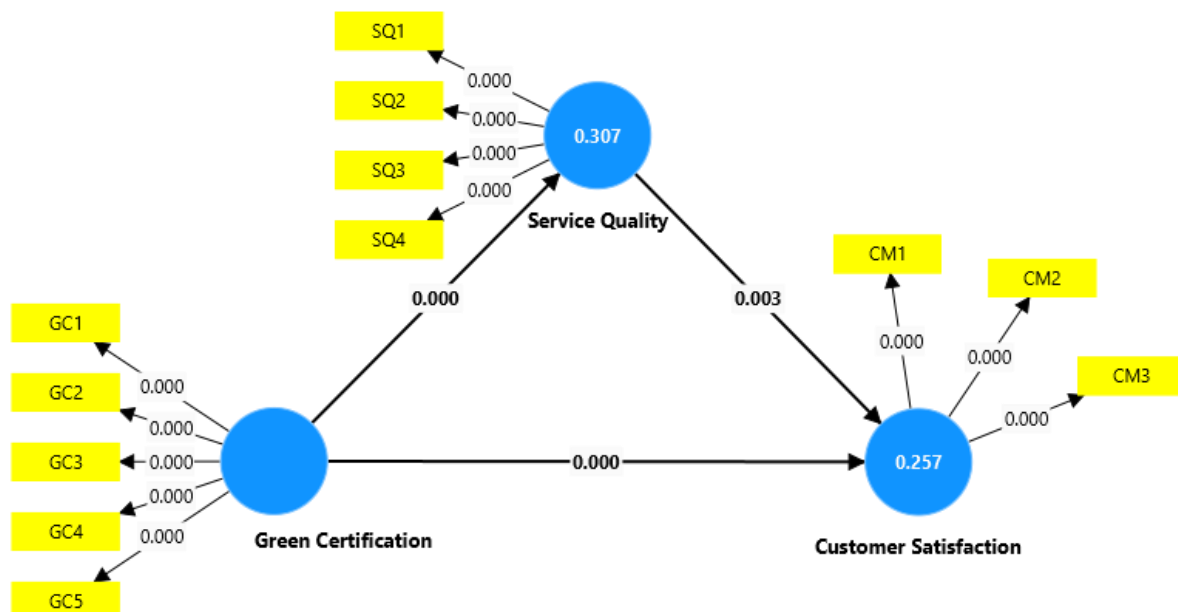

Figure 1. 1: Tested Model

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Table 1. 5: Path Coefficients

	β	(M)	ST. D	T statistics	P values
Green Certification -> Customer Satisfaction	0.362	0.360	0.066	5.497	0.000
Green Certification -> Service Quality	0.554	0.559	0.057	9.640	0.000
Service Quality -> Customer Satisfaction	0.208	0.210	0.071	2.933	0.003

Field Survey, (2024)

The findings presented in Table 1.5 reveal a significant and nuanced relationship between green certification, service quality, and customer satisfaction. Specifically, green certification has a strong positive impact on both service quality ($\beta = 0.554$, $p < 0.001$) and customer satisfaction ($\beta = 0.362$, $p < 0.001$). This supports existing literature indicating that green certification not only enhances perceived hotel quality but also directly boosts customer satisfaction through improved environmental practices and service standards (Abdou et al., 2020; Beheshtinia and Azad, 2019). Additionally, service quality significantly affects customer satisfaction ($\beta = 0.208$, $p = 0.003$), reinforcing the notion that perceived quality mediates the relationship between green certification and overall guest satisfaction (Jellason et al., 2021; Albayrak et al., 2021). These findings underscore the importance of green certification in elevating service quality, which in turn enhances customer satisfaction, aligning with the broader literature that emphasizes the value of sustainability in enriching guest experiences and driving competitive advantage in the hospitality industry (Checa and Bustillo, 2020; Abdulaali et al., 2020).

Role of Perceived Hotel Quality on the Relationship between Green Certification and Customer Satisfaction

Table 1. 6: Indirect Effects

	β	(M)	ST. D	T statistics	P values
Green Certification -> Service Quality -> Customer Satisfaction	0.115	0.119	0.045	2.574	0.010

Field Survey, (2024)

Table 1.6 shows a significant indirect effect of green certification on customer satisfaction, mediated by service quality ($\beta = 0.115$, $p = 0.010$). The literature shows that perceived hotel quality mediates the relationship between green certification and customer satisfaction (D'Souza et al., 2021). Green certifications are seen as a sign of high operational standards and sustainability, which boosts customer satisfaction (Park et al., 2020; Hameed et al., 2022). The mediation effect shows how green certification improves service quality by aligning with guests' values and boosting hotel trust (Eid et al., 2021). Green certification improves service quality, which increases customer satisfaction, supporting the idea that

perceived quality is a key intermediary in leveraging green initiatives (Ge et al., 2021; Acampora et al., 2022). This suggests that high service standards are necessary to maximize green certification benefits and increase guest satisfaction and loyalty (Gupta et al., 2019).

Challenges Faced by Hoteliers in Implementing and Maintaining Green Certification

Table 1. 7: Challenges of Green Certification

Challenges Faced by Hotels in Maintaining Green Certification	Frequency	Percentage (%)
Cost of Implementation	186	72.7
Lack of Staff Training	144	56.3
Inconsistent Government Policies	115	44.9
Customer Awareness and Demand	98	38.3

Table 1.7 shows that financial, educational, regulatory, and market factors are the biggest green certification challenges for hotels. 72.7% cited implementation cost as their biggest concern. Hotels may struggle to afford green practices (Abdulaali et al., 2020; Hameed, 2022). Due to high technology and infrastructure costs, hotels may not pursue or maintain green certification. Lack of staff training concerned 56.3% of respondents. This supports the literature's emphasis on staff training to implement and maintain green practices (D'Souza et al., 2021; Park, 2020). Increased customer awareness and demand for sustainable practices can help hotels get and keep green certifications by strengthening market incentives.

5. CONCLUSIONS

The study confirms that green certification has a notable positive effect on both service quality and customer satisfaction. By implementing green practices, hotels can enhance their service standards and, consequently, improve guest satisfaction. This aligns with existing research that highlights the benefits of green certification in boosting perceived quality and creating a more favorable guest experience. The results reveal that service quality serves as a crucial mediator between green certification and customer satisfaction. The significant indirect effect of green certification on satisfaction through service quality underscores the importance of maintaining high service standards. Hotels that invest in both green practices and service quality are better positioned to maximize customer satisfaction, illustrating that perceived quality amplifies the benefits of green certification. The study identifies several significant challenges that hotels face in sustaining green certification. High implementation costs, lack of staff training, inconsistent government policies, and limited customer awareness and demand are key barriers. Addressing these challenges is essential for the successful maintenance of green certification. Strategies should focus on providing financial support, enhancing staff education, ensuring regulatory consistency, and increasing customer engagement with sustainability to overcome these. The study suggests that hotels can improve green certification effectiveness by seeking financial support, exploring cost-effective green technologies, and implementing comprehensive staff training programs. These measures can help mitigate high costs and achieve sustainability goals. Regular

workshops and certifications can also help maintain high standards and equip staff to effectively implement green initiatives.

6. REFERENCES

1. Abbas, J. (2020). Impact of total quality management on corporate sustainability through the mediating effect of knowledge management. Journal of Cleaner Production, 244. https://doi.org/10.1016/j.jclepro.2019.118806
2. Checa, D., & Bustillo, A. (2020). A review of immersive virtual reality serious games to enhance learning and training. In Multimedia Tools and Applications (Vol. 79, Issues 9–10, pp. 5501–5527). Springer. https://doi.org/10.1007/s11042-019-08348-9
3. Chung, K. C. (2020). Green marketing orientation: achieving sustainable development in green hotel management. Journal of Hospitality Marketing and Management, 29(6), 722–738. https://doi.org/10.1080/19368623.2020.1693471
4. Jellason, N. P., Conway, J. S., Baines, R. N., & Ogbaga, C. C. (2021). A review of farming challenges and resilience management in the Sudano-Sahelian drylands of Nigeria in an era of climate change. Journal of Arid Environments, 186. https://doi.org/10.1016/j.jaridenv.2020.104398
5. Koch, J., Gerdt, S. O., & Schewe, G. (2020). Determinants of sustainable behavior of firms and the consequences for customer satisfaction in hospitality. International Journal of Hospitality Management, 89. https://doi.org/10.1016/j.ijhm.2020.102515
6. Lin, J., Zhou, Z., Zheng, F., Jiang, X., & Nguyen, N. (2023). How do hotel star ratings affect the relationship between environmental CSR and green word-of-mouth? Corporate Social Responsibility and Environmental Management, 30(5), 2651–2663. https://doi.org/10.1002/csr.2508
7. Mai, K. N., Nguyen, P. N. D., & Nguyen, P. T. M. (2019). International tourists' loyalty to Ho Chi Minh City destination-a mediation analysis of perceived service quality and perceived value. In Sustainability (Switzerland) (Vol. 11, Issue 19). mdpi.com. https://doi.org/10.3390/su11195447
8. Park, J. E., & Kang, E. (2022). The Mediating Role of Eco-Friendly Artwork for Urban Hotels to Attract Environmental Educated Consumers. In Sustainability (Switzerland) (Vol. 14, Issue 7). mdpi.com. https://doi.org/10.3390/su14073784
9. Remeseiro, B., & Bolon-Canedo, V. (2019). A review of feature selection methods in medical applications. Computers in Biology and Medicine, 112. https://doi.org/10.1016/j.compbiomed.2019.103375
10. Salem, I. E., Elbaz, A. M., Al-Alawi, A., Alkathiri, N. A., & Rashwan, K. A. (2022). Investigating the Role of Green Hotel Sustainable Strategies to Improve Customer Cognitive and Affective Image: Evidence from PLS-SEM and fsQCA. In Sustainability (Switzerland) (Vol. 14, Issue 6). mdpi.com. https://doi.org/10.3390/su14063545
11. Su, L., & Swanson, S. R. (2019). Perceived corporate social responsibility's impact on the well-being and supportive green behaviors of hotel employees: The mediating role of the employee-corporate relationship. Tourism Management, 72, 437–450. https://doi.org/10.1016/j.tourman.2019.01.009
12. Tan, L. L., Abd Aziz, N., & Ngah, A. H. (2020). Mediating effect of reasons on the

relationship between altruism and green hotel patronage intention. Journal of Marketing Analytics, 8(1), 18–30. https://doi.org/10.1057/s41270-020-00067-7

13. Thai, K. P., & Nguyen, Q. H. (2022). How Green Hotel Practices Stimulates Customer Citizenship Behavior? Examining the Role of Green Hotel Mage and Customer Satisfaction in Vietnam. In Geojournal of Tourism and Geosites (Vol. 40, Issue 1, pp. 278–282). gtg.webhost.uoradea.ro. https://doi.org/10.30892/gtg.40133-829

14. Tran, T. C., Ban, N. C., & Bhattacharyya, J. (2020). A review of successes, challenges, and lessons from Indigenous protected and conserved areas. Biological Conservation, 241. https://doi.org/10.1016/j.biocon.2019.108271