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ASSESSMENT OF GREEN INNOVATIONS: ARTIFICIAL INTELLIGENCE BASED ANALYSIS IN THE HOTEL INDUSTRY

Abstract. *In the modern restaurant and hotel industry, there is a strong emphasis on the need to integrate artificial intelligence (AI) technologies to achieve sustainability goals. AI enables the optimization of resources in hotels and makes "green practices" attractive and accessible to customers, while also fostering an environmentally and brand-conscious mindset. This article presents the Green Innovation Intelligence Index (GIII), GIII) concept, which aims to assess the level of implementation and consumer acceptance of GII-based environmental technologies.*

The study was conducted by adapting the American Innovation Index (AiI) model to the context of "green hospitality." AI is considered a tool that automates processes such as energy saving, resource management, and customer behavior analysis, thereby increasing the appeal of environmental initiatives. The GIII index allows for the assessment of the interaction between innovative technologies in the hotel industry and consumer acceptance.

Keywords: *green hotel, artificial intelligence, sustainable development, innovative technologies, Green Innovation Intelligence Index (GIII), customer reception, eco-brand, tourism*

Introduction

The hotel industry is an integral and fundamental part of the tourism industry, currently a rapidly growing sector of the global economy and an effective source of foreign exchange earnings.

The hospitality industry is regarded as a sector that combines the restaurant and hotel trades. However, a significant portion of it is accounted for by the hotel industry, which is considered the main material and technical base of the tourism sector. Many studies highlight the relevance and importance of the hotel industry as a structural element of the tourism sector. Furthermore, P. Svérak and Z. Jurigová, focusing on the industry's competitiveness issues, point out the following problem: "Focusing on the specific accommodation sector, high standards of demand, and new trends in supply

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and growing competition, the accommodation tools for the structural elements of the hotel industry's tourism orientation have been modernized" [2].

The modern hotel industry is facing the need to integrate artificial intelligence (AI) technologies in the field of sustainable development. The use of AI not only optimizes resources but also makes "green practices" in hotels attractive to customers. They foster a conscious approach to the environment and the brand. To evaluate and promote such innovations, the concept of the Intellectual Green Innovation Index (GIII) is proposed. Unlike existing approaches that primarily assess environmental initiatives through separate sustainability indicators, the proposed Intellectual Green Innovation Index (GIII) integrates environmental performance indicators with artificial intelligence-driven decision-support mechanisms. The theoretical novelty of this study lies in the development of a conceptual framework that combines green innovation practices, AI-enabled analytics, and hotel competitiveness within a unified assessment model.

Recent research findings indicate that the primary strategies employed by green hotels to enhance their ecological impact include conserving water, recycling, conserving energy, and minimizing solid waste. Numerous studies regard the greening of the hospitality sector as a strategic development approach that mitigates negative environmental effects and impacts the management of harmful waste. Defining what a "green hotel" is can be challenging, as it is difficult to determine precisely what makes a hotel environmentally friendly due to the variety of influencing factors. One hotel may have widely recognized linen reuse programs, as well as effective waste management systems, while other hotels may have light-emitting diode (LED) lights and motion sensors, energy-saving programs are also implemented, such as installing energy-saving fixtures like LED lights and motion sensors in hotel rooms and lobbies, as well as natural daylight. Therefore, it is crucial for hospitality industry managers to understand how guests perceive a "green hotel".

Artificial intelligence technologies provide new opportunities for this purpose through sentiment analysis of online reviews, machine learning-based customer preference prediction, automated monitoring of water and energy consumption, and dynamic optimization of hotel sustainability practices. These mechanisms enable hotel managers to make data-driven decisions while simultaneously improving environmental performance, operational efficiency, and customer satisfaction.

One of the long-term issues is that of economic and ecological sustainable development: the rapid growth of the economy requires large quantities of natural resources and has a negative impact on the environment. The introduction of ecological technologies in the hotel industry allows domestic hotels to increase their competitiveness and image in the domestic and international markets for tourism services.

Foreign authors G.S. Kushuaha, N.K. Sharma focuses on the issues of water and energy conservation, reduction of solid waste, recycling and reuse of consumables, and the use of eco-labels to protect the environment in environmentally responsible hotels [3].

K. Sinsai, L. Winata, Scholars such as Taige-F. Kummer have expanded the scope of previous research by focusing on the hotel industry in developing countries to determine whether there is a relationship between the level of environmental performance and competitive advantage in this sector, proposed the ecological effectiveness of a strategy in innovation and quality management (Figure-1 – Conceptual model of the positive impact of environmental indicators on the competitive advantages of the hotel industry) [4].

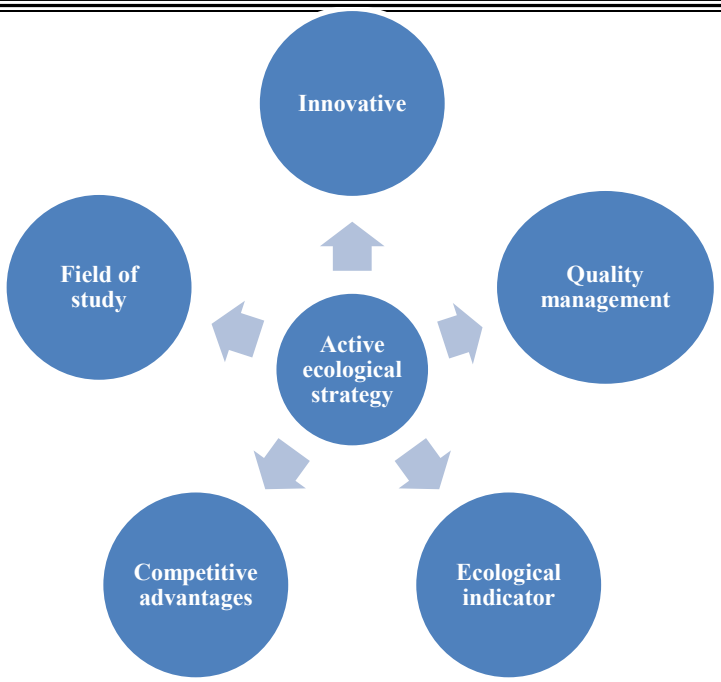

Figure 1 – Conceptual model of the positive impact of environmental indicators on the competitive advantages of the hotel industry.

It is worth noting that the hotel industry, more than other sectors, is often concerned with making decisions and engaging in strategic thinking that help attract a large number of customers. The purpose of the aforementioned study is to disseminate the natural resource-based theory to hotel enterprises in developing countries by identifying the organizational capabilities that complement the adoption of the BCS, which in turn leads to competitive advantages for the enterprises serving the hotel market. The researchers suggest adopting an innovative approach, a learning orientation, and effective quality management in the process of formulating an active environmental strategy in the hotel industry.

Furthermore, the issues of sustainable development in the hotel industry are an integral part of the hospitality industry's overall environmental responsibility. In the context of Kazakhstan, the implementation of AI-supported green innovations in hotels remains at an early stage of development. Therefore, the adaptation of the proposed GIII model to the Kazakhstan hotel industry is particularly relevant, as it can assist hotels in assessing environmental performance, improving operational efficiency, and strengthening their competitiveness in both domestic and international tourism markets.

Materials and methods

This study explores a mixed-methods research design to develop and validate the Green Innovation intelligence index (GIII) as a tool for assessing artificial intelligence-driven green innovations in the hotel industry. The research integrates qualitative conceptual modeling with quantitative analytical techniques to evaluate both the implementation level of AI-based green technologies for hotel customers.

Qualitative methods such as abstraction, content analysis and comparative analysis were used to identify key green innovation indicators and AI applications in hotels. In addition, quantitative statistical methods were employed to evaluate the significance and interrelationships of the selected indicators. Descriptive statistics, normalization procedures, weighted scoring techniques, and correlation analysis were applied to assess the contribution of individual indicators to the overall GIII score. The weighting coefficients of the index dimensions were determined based on expert evaluation, while the internal consistency of the model was assessed using reliability measures. The statistical analysis enabled the identification of the most influential AI-driven green innovation factors affecting environmental performance and customer value creation in the hotel sector. Index validation, reliability and validity of the GIII were assessed using consistency measures and expert evaluation.

The GIII framework was developed by adopting the American Innovation Index (AII) to context of green hospitality and sustainable tourism. The index incorporates artificial intelligence as a key enabling factor that enhances environmental performance and innovation attractiveness. The GIII Index was developed by adopting the American Innovation Index (AII) model to green hospitality context. The original innovation dimensions were restructured to reflect environmental sustainability, artificial integration and customer engagement.

The proposed framework considers several AI application mechanisms, including predictive analytics for energy and water consumption management, machine learning algorithms for demand forecasting, sentiment analysis of online customer reviews, and intelligent decision-support systems for sustainable hotel operations. These AI-enabled functions were integrated into the index structure as measurable dimensions of green innovation performance.

To ensure the practical applicability of the model, the GIII framework was adapted to the characteristics of the Kazakhstan hotel industry, taking into account the current level of digitalization, sustainability practices, and technological readiness of hotel enterprises. This adaptation improves the relevance of the index for evaluating green innovation performance in emerging hospitality markets.

Results and Discussion

The Green Innovation Intelligence Index (GIII) is an innovative tool that assesses the level of AI-based environmental technology implementation in a hotel and its customer reception. The purpose of this index is:

- to measure the effectiveness and innovative appeal of green technologies;
- analyze the impact of AI on sustainable brand perception and environmental authenticity;
- formulate sustainable development strategies and marketing positioning.

The research foundation of the article is based on service innovations and sustainable development concepts in the hotel industry, and is also aimed at adapting the American Innovation Index (AII) model to the context of "green hospitality." In this approach, AI technologies are viewed as a tool that enhances ecological initiatives and increases their appeal. AI automates processes such as energy saving, resource management, and customer behavior analysis. To properly adapt the AI model to the specifics of sustainable tourism, key components were identified that demonstrate the interaction between innovative technologies and consumer acceptance (Table-1 – Components of GIII for hotel sector) [9].

Table 1 – Components of GIII for hotel sector

Component	AII (Innitial model)	AI-based adaptation for the hotel sector (GIII)
Value Proposition	It measures how much the company's product or service differs from competitors' and what benefits it brings to the customer.	In the hotel industry, the key element of the value proposition is green technologies implemented with the help of AI.
Value Delivery	It measures how high-quality, fast, and convenient the service delivery is.	Evaluating the ability of AI technologies to offer customers a high level of comfort, accessibility, personalized experience, and environmentally efficient service by automating, simplifying, and adapting the service delivery process.
Customer Treatment	Evaluates service culture, customer relations, ethics, and level of care.	Evaluating the level of service that impacts the customer by using artificial intelligence technologies in a hotel.
Interaction Space	Evaluates how effective the communication channels between the client and the company are.	Through digital platforms and mobile applications, customers are provided with information about green initiatives and opportunities to participate in environmental activities.

To increase the analytical value of the proposed model, the GIII index can be calculated using a weighted aggregation approach:

$$GIII = \Sigma (wi \times Xi)$$

where Xi represents the standardized score of each dimension (Value Proposition, Value Delivery, Customer Treatment, and Interaction Space), and wi denotes the corresponding weighting coefficient determined through expert evaluation. The use of weighted coefficients allows for a more objective assessment of the relative contribution of each dimension to the overall green innovation performance of a hotel.

These elements interact within the holistic Green Innovation Intelligence Index (GIII) model. In it, AI-based service innovations shape perceptions of the brand's innovativeness and environmental appeal.

The mechanism of the elements' interaction can be described as follows (Figure-2 – The mechanism of the elements' interaction):

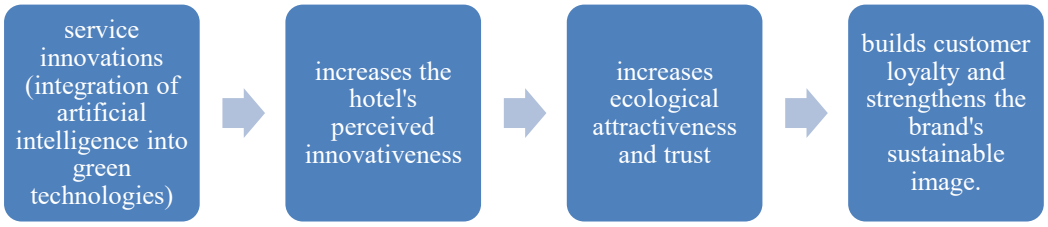

Figure 2 – The mechanism of the elements' interaction

In the hotel sector, AI is actively used for data analysis, resource management, and process automation. In practice, this is realized through the integration of "smart building" systems. They regulate lighting, temperature, ventilation, and water consumption in real time. For example, AI-controlled motion sensors automatically turn off the lights and the air conditioner when someone leaves a room, thereby reducing energy consumption and environmental impact [6]. The practical implementation of AI in green hotels is based on several technological mechanisms. Machine learning algorithms can forecast energy demand and optimize resource allocation, while predictive analytics supports proactive environmental management. Natural Language Processing (NLP) tools enable sentiment analysis of online guest reviews, allowing hotels to evaluate customer perceptions of environmental initiatives. In addition, AI-powered recommendation systems can encourage environmentally responsible guest behavior through personalized sustainability messages and incentives (Figure-3 – GIII conceptual model).

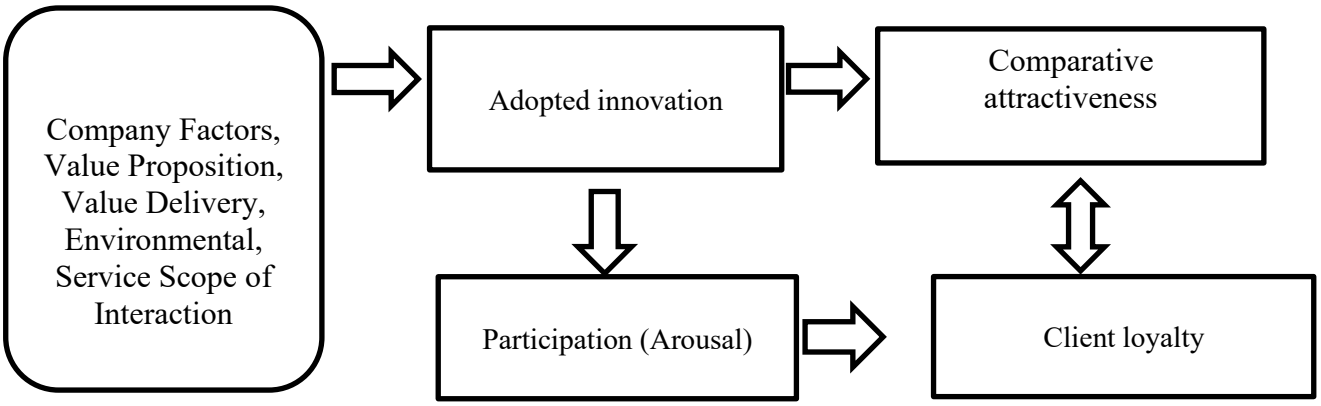

Figure 3–GIII conceptual model

Issue: Currently, hotels lack a comprehensive approach or index that uses artificial intelligence (AI) technologies to make green practices appealing to guests. Hotels have green practices such as energy conservation, waste reduction, and environmental certifications. However, their impact on guest perception is not systematically assessed. Guests perceive green practices in different ways; sometimes they don't notice them or don't consider them important. As a result, a hotel's environmental strategy may not be effectively utilized. The ways to make green practices appealing through the use of AI technologies have not yet been fully explored.

The GIII Index fills this gap:

- Assessing the effectiveness of green practices in hotels through AI;
- Measuring guest environmental perception, engagement, and satisfaction;
- Collecting concrete data to inform strategic decisions.

This paper proposes innovative approaches to make green practices attractive to customers in the hotel sector through the use of AI technologies. It also includes the following scientific innovations:

- Adapting the American Innovation Index (AiI) model to the green hospitality sector. That is, the original index model was aligned with green practices and AI integration in the hotel industry;

- Developing a methodology for evaluating the effectiveness of green practices using artificial intelligence technologies. Measuring the actual impact of environmental measures, such as energy savings, water and climate management, and waste reduction, through quantitative and qualitative indicators;

- Implement a systematic approach to measuring customer environmental perception, engagement, and satisfaction;[5]

The GIII Index considers the hotel as a green ecosystem. This ecosystem consists of several interconnected components:

- Guests are environmentally responsible consumers.

- The hotel implements sustainable development principles through green technologies and integrated services.

- Digital platforms – mobile apps, online booking, AI analytics, and eco-messages for customers enable effective communication of green practices to clients.

- Technology suppliers provide energy-efficient devices, eco-certified products, and AI solutions.

- Government agencies – by establishing environmental standards, certifying, and monitoring sustainable development policies, they encourage the adoption of green practices in the hotel sector.

- Investment structures – by investing in the green-tech sector, they contribute to increasing the efficiency of the hotel's green technology implementation.

The theoretical contribution of this study lies in extending the American Innovation Index (AII) framework by incorporating artificial intelligence as a mediating factor between green innovation practices and customer perception. Unlike previous studies that primarily focused on environmental performance indicators, the proposed GIII model integrates technological intelligence, sustainability outcomes, and customer engagement into a unified conceptual framework.

The interaction among ecosystem components is coordinated through AI technologies, ensuring that the hotel's green practices are presented attractively to customers.

The current hotel industry ecosystem is undergoing profound changes driven by technological innovations and sustainable development trends. Artificial intelligence has become a key element of this transformation. It serves not only as a technological tool but also as a catalyst for creating a new service ecosystem focused on environmental sustainability, personalization, and ensuring guest comfort [7].

However, the significance of such technologies is not limited to technical efficiency alone. Artificial intelligence helps shape guests' environmental awareness. Through AI systems, guests can receive notifications about the hotel's current eco-initiatives and participate in “green challenges” (for example, not changing towels daily or choosing meals with a low carbon footprint). and track their own contribution to reducing energy consumption.

According to Rogers' theory of diffusion of innovations (E. Rogers), the stages of implementing an AI-based system in a “green” hotel can be described as shown in (Table-2 -

E.Rogers theory) [4]. Table 2 illustrates the key phases of innovation adoption, from awareness and persuasion to implementation and confirmation of results.

Table 2 – E. Rogers theory

Period	Content	Examples
Be informed	Understanding AI capabilities for sustainable hotel management	Analysis of Marriott, Accor, and other hotel practices
Convince	Fostering a positive attitude toward technology	AI pilot project for energy optimization
Make a decision	Deciding to implement AI	Investment in a digital management platform
Implement	Practical application	Staff training and system configuration
Confirm	Evaluating results and expanding the practice	Positive guest reviews and resource savings

The Green Hospitality Innovation Index (GIII) provides a strategic tool for making green practices attractive to customers and for introducing service innovations in the hotel sector. The primary potential of using the index is reflected in the following areas (Table-3 - GIII implementation).

Table 3 – GIII implementation

Factors	Implementation of index
Digitization (AI, IoT, automation)	Allows for the real-time measurement of eco-impact and ensures efficient resource management.
Competition among hotels	Helps position the hotel in the field of ecological innovation through the use of artificial intelligence and green practices.
Growing demand for eco-friendly hotels	The GIII indicator accurately assesses eco-value and measures customer environmental perception.
ESG requirements	The GIII index serves as an integral part of the sustainability and reporting system.
Green-tech investments	It allows for the analysis of the effectiveness of contributions and informs strategic decisions.

The Kazakhstan hotel industry provides a relevant context for testing the applicability of the GIII model. Although large hotels in Almaty and Astana have already introduced elements of digital transformation and environmental certification programs, the adoption of AI-supported sustainability solutions remains limited. Consequently, the proposed index can serve as a practical tool for

measuring the effectiveness of green innovations and supporting strategic decision-making in Kazakhstan's hospitality sector.

These elements form a dynamic system that not only introduces innovations but also evolves through customer feedback.

For example, The Ritz-Carlton Almaty has implemented energy monitoring technologies and received the Green Key international certification confirming its compliance with environmental standards. At Novotel Living Almaty, temperature, an automated climate control system that analyzes data on temperature, CO_2 levels, and guest occupancy has been implemented. These solutions demonstrate that the use of AI is capable of not only optimizing the hotel's operations but also enhancing its environmental reputation [10]. These examples demonstrate the growing readiness of Kazakhstan's hotel sector to adopt AI-enabled sustainability practices. However, significant differences remain between international hotel chains and local independent hotels in terms of technological infrastructure, investment capacity, and digital competencies. Therefore, the implementation of the GIII framework should consider local market characteristics and the varying levels of technological maturity across hotel categories.

However, the implementation of innovations is accompanied by a number of limiting factors. First, there is the high cost. Small and medium-sized hotels lack the budget to implement such technologies. Second, there is the risk of data privacy breaches.

AI systems collect and analyze large volumes of information about guests' behavior, which requires reliable protection. Third, excessive automation may reduce the level of interaction with people.

By managing innovations wisely, these constraints can become opportunities for growth. For example, training employees to work with AI, implementing transparent privacy policies, and adapting technologies to local capabilities make the implementation process more sustainable.

Thus, AI-based innovations not only contribute to the hotel's environmental sustainability but also create a synergistic effect through the interaction of technology, customers, and employees. The ecosystem of a “green” hotel with integrated AI is a self-developing system. Here, every innovation leads to adoption, and adoption, in turn, drives the development of new solutions.

While the introduction of the GIII index into the hotel industry has significant potential, there are a number of objective and subjective barriers that limit its practical implementation. These barriers can be divided into the following main groups (Table-4 - Type of obtacles).

Table 4 −Type of obtacles

Type of obtacles	Content	GIII impact of implementation
Technological barriers	Inadequate infrastructure, immature IoT/AI systems, difficulty with data integration	Data is not collected completely, reducing the accuracy of the GIII index
Lack of staff qualifications	Employees' inability to work with digital tools and green technologies	System usability declines and the number of errors increase
Organizational resistance	Management resistance to change, reluctance to implement new processes	GIII implementation slows down or is not fully realized
High financial costs	High investment required for IoT, sensors, and AI platforms	Hotels may cancel or postpone the project

The main obstacles encountered when introducing the GIII index indicate that the hotel industry is not fully prepared for digital and environmental transformation. First and foremost, the inadequate technological infrastructure prevents the full utilization of artificial intelligence and IoT systems. This, in turn, makes it difficult to monitor environmental metrics in real time.

High financial costs are also a significant barrier. Green technologies require substantial investment in the initial phase. Furthermore, insufficient digital literacy and environmental competence among staff negatively impact the quality of GIII implementation. The effectiveness of green practices is reduced if employees do not use new technologies correctly. The diversity of data collection and integration methods also limits the systematic operation of the GIII index. [5;7]

Systematically addressing these obstacles will contribute to the widespread implementation of the GIII index and the sustainable development of the hotel industry. The successful implementation of the index requires the concurrent implementation of technological modernization, staff training, standardization, government incentives, and measures to enhance ecological awareness.

The characteristic of environmental violations in the hotel industry is that they cause damage to objects of environmental and economic value. The economic damage can be quite significant, resulting from the death of natural resources-forests (commercial forest products), fish (fish products), and land (decreased agricultural crop yields, livestock losses, etc.).

From a statistical perspective, the application of the GIII index enables the quantification of environmental innovation performance through standardized indicators and composite scoring procedures. The use of weighted dimensions facilitates comparative analysis among hotels and provides a measurable basis for evaluating the effectiveness of AI-driven sustainability initiatives.

Based on the analysis of the research findings, majority scientific recommendations were developed for the effective implementation of the GIII index in the hotel industry. Firstly, hotels should establish an integrated digital environmental monitoring system based on AI and IoT technologies. Such a system would enable real-time monitoring of energy consumption, water usage, CO_2 emissions, and waste management indicators. As a result, the accuracy of the GIII index would increase, providing a more objective assessment of environmental performance.

Secondly, it is recommended to integrate the GIII index with international ESG standards and environmental certification systems. This integration would enhance the competitiveness of hotels in the global tourism market and strengthen their investment attractiveness.

Thirdly, the research findings demonstrated that guests' positive perception of environmental initiatives directly depends on their awareness through digital platforms. Therefore, the implementation of AI-based mobile applications and personalized eco-notifications is recommended. This approach would increase customer environmental engagement and strengthen brand trust.

In addition, the development of employees' digital and environmental competencies is essential. For this reason, continuous training programs on AI and green-tech technologies should be organized. This would help reduce technical and organizational barriers during the implementation of the GIII index.

From a practical perspective, the GIII index enables hotels to evaluate the effectiveness of their environmental strategies, improve marketing positioning, and measure customer environmental perception. The study results indicate that "green hotels" effectively using AI technologies not only increase customer trust but also reduce operational costs. Therefore, the GIII index can be considered a strategic management tool for ensuring the sustainable development of the hotel industry.

Conclusion

Globally, green technology is being widely implemented in the hotel industry. This process, which has become a necessity of our time, is not just a fad but a phenomenon that is beneficial from an economic standpoint.

Various ecological measures are being implemented not only by prominent international hotels but also by simple hotels. Reducing electricity consumption, sorting waste, and landscaping efforts inevitably have a positive impact on the environment. Supporting such ecological initiatives also has a positive effect on a hotel's image. In the age of advanced digital technology, hotels on their social media pages address “environmental issues” that affect the environment protection, hotels regularly post information about “environmental issues” on their social media pages.

This is because environmental concerns are increasingly worrying the public, and for arriving guests, this information is important, directly and indirectly influencing their decisions.

Unfortunately, to date, the issues of environmental responsibility in the practical operations of hospitality industry enterprises remain unexplored. Since consumers of hotel services are willing to pay for effective environmental management, in our opinion, hoteliers are primarily focused on financial (energy consumption management and waste recycling) requirements, and introduce proposals to the legislative base, as only in this way can employees and consumers be involved in solving environmental responsibility issues.

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ЖАСЫЛ ИННОВАЦИЯЛАРДЫ БАҒАЛАУ: ҚОНАҚ ҮЙЛЕР САЛАСЫНДАҒЫ ЖАСАНДЫ ИНТЕЛЛЕКТКЕ НЕГІЗДЕЛГЕН ТАЛДАУ

Аңдатпа. *Қазіргі мейрамхана және қонақүй индустриясында тұрақты даму мақсаттарына қол жеткізу үшін жасанды интеллект (ЖИ) технологияларын интеграциялау қажеттілігіне ерекше назар аударылуда. ЖИ қонақүйлерде ресурстарды оңтайландыруға, «жасыл практикаларды» тұтынушылар үшін тартымды әрі қолжетімді етуге, сондай-ақ экологиялық және брендке саналы көзқарасты қалыптастыруға мүмкіндік береді. Бұл мақалада ЖИ негізіндегі экологиялық технологияларды енгізу деңгейін және олардың тұтынушылар тарапынан қабылдануын бағалауға бағытталған Жасыл инновациялар интеллектуалды индексі (Green Innovation Intelligence Index, GIII) концепциясы ұсынылады.*

Зерттеу American Innovation Index (AII) моделін «жасыл қонақжайлылық» контекстіне бейімдеу негізінде жүргізілді. Жасанды интеллект энергия үнемдеу, ресурстарды басқару және тұтынушылардың мінез-құлқын талдау сияқты үдерістерді автоматтандыратын, сонымен қатар экологиялық бастамалардың тартымдылығын арттыратын құрал ретінде қарастырылады. GIII индексі қонақүй индустриясындағы инновациялық технологиялар мен тұтынушылардың қабылдауы арасындағы өзара байланыстарды бағалауға мүмкіндік береді.

Кілт сөздер: *жасыл қонақүй, жасанды интеллект, тұрақты даму, инновациялық технологиялар, Green Innovation Intelligence Index (GIII), тұтынушы қабылдауы, эко-бренд, туризм*

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ОЦЕНКА ЗЕЛЕНЫХ ИННОВАЦИЙ: АНАЛИЗ В ГОСТИНИЧНОМ СЕКТОРЕ НА ОСНОВЕ ИСКУССТВЕННОГО ИНТЕЛЛЕКТА

Аннотация*. В современной ресторанно-гостиничной индустрии особое внимание уделяется необходимости интеграции технологий искусственного интеллекта (ИИ) для достижения целей устойчивого развития. ИИ позволяет оптимизировать использование ресурсов в гостиницах, делать «зелёные практики» более привлекательными и доступными для потребителей, а также формировать осознанное отношение к экологии и бренду. В данной статье предлагается концепция Индекса интеллектуальных зелёных инноваций (Green Innovation Intelligence Index, GIII)**, направленного на оценку уровня внедрения экологических технологий на основе ИИ и их восприятия со стороны потребителей.*

Исследование основано на адаптации модели American Innovation Index (AII) к контексту «зелёного гостеприимства». Искусственный интеллект рассматривается как инструмент автоматизации таких процессов, как энергосбережение, управление ресурсами и анализ потребительского поведения, что способствует повышению привлекательности экологических инициатив. Индекс GIII *позволяет оценить взаимосвязь между инновационными технологиями в гостиничной индустрии и уровнем их принятия потребителями.*

Ключевые слова: *зелёный отель, искусственный интеллект, устойчивое развитие, инновационные технологии, Green Innovation Intelligence Index (GIII), восприятие потребителей, эко-бренд, туризм*