

Artificial Intelligence Driven and Sustainability of Hospitality Businesses in Owerri, Imo State, Nigeria

Mary Ezinne Kekeocha (PhD)^{1*}, Samuel Anodi Ejiogu¹, Ngozi Comfort Okeke¹, Nwagbala Chinelo Stella (PhD)¹, Victoria Ogochukwu Obi-Nwosu²

¹Department of Business Administration

²Banking and Finance Nnamdi Azikiwe University, Awka, Anambra State, Nigeria

DOI: <https://doi.org/10.36347/sjebm.2025.v12i01.003>

| Received: 28.11.2024 | Accepted: 04.01.2025 | Published: 08.01.2025

*Corresponding author: Mary Ezinne Kekeocha

Department of Business Administration

Abstract

Original Research Article

The study explored the relationship between Artificial Intelligence and the sustainability of hospitality businesses in Owerri, Imo State, Nigeria. The study specifically sought to examine the relationship between AI and the environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria, and to ascertain the relationship between AI and the social sustainability of hospitality businesses in Owerri, Imo State, Nigeria. The study adopted descriptive survey research design and data were collected from 203 respondents with the aid of a structured questionnaire and hypotheses were tested using Pearson Product Moment Correlation Coefficient with the aid of Statistical Package for Social Sciences (SPSS, version 27). Findings revealed that there is a significant positive relationship between AI and the environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria, with $r = 0.882$, $n = 203$ and a p -value of 0.001 ($p < 0.05$). Also, there is a positive significant relationship between AI and the social sustainability of hospitality businesses in Owerri, Imo State, Nigeria, with $r = 0.801$, $n = 203$, and a p -value of 0.000 ($p < 0.05$). The study concluded that there is a statistically significant positive relationship between Artificial Intelligence and the sustainability of hospitality businesses in Owerri, Imo State, Nigeria. The study recommended that hospitality businesses in Owerri should adopt AI technologies to enhance environmental sustainability. Also, hospitality businesses in Owerri should leverage AI-driven customer service chatbots and employee engagement platforms to enhance social sustainability.

Keywords: Artificial Intelligence Driven, Sustainability, Hospitality Businesses.

Copyright © 2025 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution **4.0 International License (CC BY-NC 4.0)** which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

In recent times, the hospitality sector and hotels in particular have attracted significant attention from scholars, government, and stakeholders due to their increasing worldwide significance spectrum (Chinelo, Chika & Ifeanyi, 2021). The hospitality industry is a cornerstone of global economic development, serving as a significant contributor to job creation, tourism, and overall economic growth. In Nigeria, and particularly in regions like Owerri, and Imo State, the hospitality sector has emerged as a critical driver of local economies, attracting both domestic and international tourists. As cited by Nwagbala, Udemadu, and Okafor (2021) the hospitality Business as a service provider plays an enormous role in the development of an economy. However, as the industry grows, it faces increasing pressure to adopt sustainable practices that align with

global environmental and social standards (Ruel and Njoku, 2021). Sustainable development is maintaining a careful balance between protecting ecosystems and natural resources, which are crucial to our existence and the survival of future generations, and the human need to improve one's quality of life, sustain and ensure the continuity of a business, and feel great (Ozoh and Stephen, 2018; Chinelo and Ejike, 2022) The general consequences for sustainable development is that the economy is fast deteriorating as noted by (Chinelo & Ejike, 2022). Sustainability in the hospitality industry encompasses not only the environmental impact of operations but also the economic viability and social responsibility of businesses (Jones, 2016). In recent years, the integration of Artificial Intelligence (AI) has been heralded as a transformative force capable of enhancing the sustainability of hospitality businesses through improved efficiency, customer experience, and

Citation: Mary Ezinne Kekeocha, Samuel Anodi Ejiogu, Ngozi Comfort Okeke, Nwagbala Chinelo Stella, Victoria Ogochukwu Obi-Nwosu. Artificial Intelligence Driven and Sustainability of Hospitality Businesses in Owerri, Imo State, Nigeria. Sch J Econ Bus Manag, 2025 Jan 12(1): 23-32.

resource management. Artificial intelligence, which can be defined as the imitation of human intellect in machines using thought and learning programs, has become increasingly popular in a variety of industries, including hospitality (Limna, 2023). However, there is a growing and malicious competition among operators in the business that pits one hotel against the other in their effort to attract and maintain customers as stated in (Nwagbala, Udemadu & Okafor, 2021). The need to increase customer satisfaction, cut expenses, and improve operational efficiency has fueled the adoption of AI technology in the hotel sector. Personalized marketing, dynamic pricing tactics, chatbots for customer care, and predictive maintenance systems are just a few of the AI uses in the hospitality industry (Bisoi, Roy, and Samal, 2020). The key to its competitive advantage is the ability of an organization to make knowledgeable business decisions superior to its competitors and based on information gathered from the environment (West, 2016; Dibua, Chiekezie, Chinelo, and Maureen, 2023). These technologies let firms make data-driven decisions that improve sustainability in addition to streamlining operations. Talukder and DAS, (2024) posit that these technologies not only streamline operations but also enable businesses to make data-driven decisions that enhance sustainability. For instance, AI-driven energy management systems can optimize resource usage, leading to significant reductions in energy consumption and operational costs (Pillai and Sivathanu, 2020).

While AI is gaining popularity worldwide, its application in the hospitality sector is still in its infancy in places like Owerri, Imo State, Nigeria. Technological infrastructure, cultural attitudes, and the regulatory environment all have an impact on how quickly and effectively AI is integrated into Nigerian hospitality businesses (Nwachukwu, 2023). Given the region's expanding tourism industry and growing environmental consciousness, AI has a significant potential to drive sustainability in this context. However, empirical research is needed to determine the precise effects of AI on the sustainability of hospitality businesses in this region, taking into account the particular opportunities and challenges that arise. The concept of sustainability in the hospitality industry extends beyond environmental stewardship to include economic sustainability and social responsibility. Environmental sustainability focuses on reducing the ecological footprint of hospitality businesses through energy efficiency, waste management, and sustainable sourcing (Nneji, 2024). Economic sustainability involves ensuring the long-term financial viability of businesses by optimizing operations, reducing costs, and enhancing revenue streams (Gana, 2024). Social sustainability, on the other hand, emphasizes the importance of social equity, community engagement, and the well-being of employees and customers (Abiagam and Usoro, 2012). AI has the potential to enhance all three dimensions of sustainability by enabling businesses to operate more

efficiently, make informed decisions, and engage with stakeholders in meaningful ways.

AI-driven technologies have a lot of potential to improve Owerri's hotel sector, particularly when it comes to sustainability. Tourism in the area has been steadily rising due to the presence of state of art hotels in the town, cultural attractions, and business prospects (Nwokorie, Igbojekwe and Ukabuilu, 2024). However as the sector has expanded, environmental stresses have also grown, resulting in increasing energy use, waste production, and resource depletion (Akinreti, 2024). Artificial Intelligence (AI) has the potential to significantly improve hospitality operations by decreasing waste, increasing overall efficiency, and maximizing resource utilization. Ezeanokwasa, Nwagbala, and Nwachukwu (2023) stated that the degree of acceptance of change initiatives may depend on the strategy used by management in executing the change, as the majority of unsuccessful change initiatives can be caused by management's inability to manage change within the organization.

Furthermore, cost savings are just one of the financial advantages of AI in the hospitality industry. By improving client experiences through tailored services and recommendations, AI can also boost revenue growth. AI may assist companies in customizing their services to match the unique requirements and tastes of their visitors by evaluating consumer data, which will increase client happiness and loyalty (Ajao and Ndu, 2024). In a competitive market like Owerri, where global trends increasingly influence customer preferences, the ability to offer personalized and high-quality experiences can be a significant differentiator. Furthermore, AI can help businesses in Owerri navigate the complexities of dynamic pricing, enabling them to optimize pricing strategies based on real-time demand and market conditions (Adekoya, 2024).

The social dimension of sustainability is also critical in the context of AI adoption in the hospitality industry. AI technologies can improve working conditions by automating repetitive tasks, allowing employees to focus on more value-added activities and enhancing their job satisfaction (Avula and Sithole, 2024). Additionally, AI can facilitate better communication and engagement with local communities, helping hospitality businesses contribute to social equity and community development (Ezinwa, Agbo and Ozojukwu, 2024). In regions like Owerri, where the hospitality industry is closely tied to the local culture and community, the ability to integrate AI in a socially responsible manner is essential for long-term sustainability. No doubt, the integration of AI into the hospitality industry in Owerri, Imo State, Nigeria, presents a significant opportunity to enhance sustainability across environmental, economic, and social dimensions. However, the successful adoption of AI in this context requires a nuanced understanding of

the local challenges and opportunities, as well as a commitment to aligning AI-driven innovations with broader sustainability goals. This study aims to explore the impact of AI on the sustainability of hospitality businesses in Owerri, with a focus on identifying the key drivers and barriers to AI adoption and assessing the potential benefits of AI-driven sustainability initiatives.

Statement of the Problem

Owerri, Imo State, Nigeria's hospitality sector has grown significantly in recent years due to a rise in commercial activity, tourism, and the region's general economic prosperity. But this expansion has also brought with it a number of sustainability-related difficulties. Owerri's hospitality industry is under growing pressure to lessen its impact on the environment, improve operational effectiveness, and continue to be profitable while upholding social responsibility. Limited technology infrastructure, erratic market conditions, and regulatory constraints exacerbate these difficulties. Artificial Intelligence (AI) has emerged as a potential solution to many of these challenges, offering tools and techniques that can drive sustainability in the hospitality industry. AI technologies promise to optimize resource use, improve customer experience, and enhance decision-making processes. However, the adoption and integration of AI in the hospitality sector in Owerri are still in their early stages. There is a significant gap in empirical research exploring the impact of AI on the sustainability of hospitality businesses in this region. Moreover, the specific drivers, barriers, and outcomes associated with AI adoption in the context of Owerri's unique socio-economic environment remain underexplored.

This study aimed to address this gap by investigating how AI can be leveraged to enhance the sustainability of hospitality businesses in Owerri, Imo State. It seeks to identify the factors that influence the adoption of AI technologies in this context, examine the potential benefits and drawbacks of AI-driven sustainability initiatives, and provide actionable insights for stakeholders in the hospitality industry. The findings of this research are expected to contribute to the understanding of the role of AI in promoting sustainable business practices in emerging markets like Nigeria, where the hospitality industry is both a vital economic sector and a significant contributor to environmental and social challenges.

Objectives of the Study

The primary objective of this study is to explore the relationship between Artificial Intelligence and sustainability of hospitality businesses in Owerri, Imo State, Nigeria. To achieve this broad objective, the study will focus on the following specific objectives:

1. To examine the relationship between AI and environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria.

2. To ascertain the relationship between AI and social sustainability of hospitality businesses in Owerri, Imo State, Nigeria.

Research Questions

The following research questions were designed to guide the investigation

1. What is the relationship between AI and environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria?
2. What is the relationship between AI and social sustainability of hospitality businesses in Owerri, Imo State, Nigeria?

Research Hypotheses

Based on the research questions and objectives, the following null hypotheses were proposed to guide the analysis

H₀₁: There is no significant relationship between AI and environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria

H₀₂: There is no significant relationship between AI and social sustainability of hospitality businesses in Owerri, Imo State, Nigeria.

Significance of the Study

This study is of benefit to:

Entrepreneurs:

The findings offer practical recommendations for policymakers and industry leaders in Owerri and Imo State, enabling them to develop and implement policies that support the adoption of AI technologies. This can lead to more effective strategies for promoting sustainable practices in the hospitality sector and addressing regional environmental and social challenges.

Encouraging Adoption of Innovative Technologies:

By showcasing successful examples of AI applications in hospitality, the study inspires other businesses in the region to adopt innovative technologies. This can lead to a more competitive and technologically advanced hospitality industry in Owerri, Imo State, Nigeria.

Advancing Academic Research for Researchers:

The study adds to the body of knowledge on AI and sustainability within the context of emerging markets. It provides a framework for future research on the intersection of technology and sustainability in hospitality, particularly in regions with similar socio-economic conditions.

Scope of the Study

The scope of this study focuses on examining the impact of Artificial Intelligence (AI) on the sustainability of hospitality businesses in Owerri, Imo State, Nigeria. The study encompasses several key dimensions and limitations to ensure a comprehensive

understanding of AI's role in promoting sustainability within this specific context. The scope includes:

Geographical Scope:

The study is geographically confined to hospitality businesses operating in Owerri, the capital city of Imo State, Nigeria. This localized focus allows for a detailed examination of 20 hotels and restaurants on AI adoption and its effects.

Sectoral Scope:

The research targets the hospitality sector, including various types of businesses such as hotels, restaurants, resorts, and other service-oriented establishments. The focus is on how AI technologies are being utilized and their impact on sustainability within these hospitality settings.

Limitations:

The study's findings will be specific to the context of Owerri and may not be directly generalizable to other regions or countries with different socio-economic conditions. Additionally, the research may be limited by the availability of data and the extent of AI adoption among local hospitality businesses.

REVIEW OF RELATED LITERATURE

Conceptual Review

Artificial Intelligence Driven

The hospitality industry in Owerri, Imo State, Nigeria, has seen significant transformations over the past few years, with Artificial Intelligence (AI) playing an increasingly central role in shaping its services. AI-driven technologies have improved customer service delivery, enabling hotels, restaurants, and event management businesses to offer more personalized and efficient services to their clientele. For instance, the integration of chatbots, machine learning algorithms, and facial recognition systems has revolutionized the way hospitality businesses interact with customers, automating many processes that were previously handled manually (Nnaji, 2024). This shift has made it possible for local hotels in Owerri to offer 24/7 customer support through AI-powered virtual assistants, improving response times and enhancing the overall guest experience. Similarly, data-driven decision-making tools supported by AI provide insights into customer preferences, allowing businesses to tailor their services to meet specific needs (Nwokorie, Igbojekwe and Ukabuilu, 2024). Additionally, AI's application in the hospitality sector extends to operational efficiency. Hotels and other establishments in Owerri are adopting AI to optimize their internal processes, from inventory management to room allocation and even staff scheduling. By implementing AI-powered software, these businesses can reduce human errors, streamline operations, and ultimately cut down operational costs (Gani, 2023). Furthermore, AI-based predictive analytics helps businesses anticipate customer demand, allowing them to adjust staffing levels and resource allocation

during peak seasons. Furthermore, the automation of routine tasks such as booking confirmations, check-in and check-out procedures, and even room service requests enhance operational efficiency and frees up staff to focus on more value-driven customer interactions.

Environmental Sustainability

The integration of Artificial Intelligence (AI) into the hospitality industry in Owerri, Imo State, Nigeria, is increasingly being recognized for its potential to enhance environmental sustainability. AI-driven solutions are enabling hotels and other hospitality businesses to minimize their environmental footprint by optimizing energy consumption and waste management. For instance, AI-powered systems can monitor and control energy use in real-time, adjusting lighting, heating, and cooling systems based on occupancy levels and weather conditions (Nwokediegwu, Ugwuanyi, Dada, Majemite and Obaigbena, 2024). This not only reduces energy consumption but also lowers operational costs. In addition, AI can predict peak usage times and adjust energy use accordingly, ensuring that resources are used more efficiently and reducing the overall carbon footprint of hospitality establishments in Owerri (Adanma and Ogunbiyi, 2024). By integrating AI into their operations, these businesses are not only meeting sustainability goals but also enhancing their reputation as environmentally conscious brands.

Moreover, AI plays a crucial role in waste management within the hospitality industry in Owerri. The application of AI in this area includes intelligent waste sorting systems that use machine learning algorithms to categorize waste accurately, ensuring that recyclable materials are separated from non-recyclable ones (Ebuka, Emmanuel and Idigo, 2023). This reduces the amount of waste sent to landfills, contributing to a more sustainable waste management process. Furthermore, AI can help predict waste generation patterns, enabling hospitality businesses to plan their waste disposal activities more effectively and reduce unnecessary waste. For example, AI-powered platforms can analyze data on food consumption and inventory levels, helping restaurants minimize food waste by optimizing purchasing and storage practices (Ibe, 2023). These innovations not only contribute to environmental sustainability but also result in cost savings for businesses.

Social Sustainability

Social sustainability in the hospitality industry in Owerri, Imo State, Nigeria, is becoming increasingly vital as businesses recognize the importance of contributing to the well-being of their communities while ensuring long-term economic viability. Social sustainability focuses on fostering equitable, inclusive, and supportive environments for both employees and the wider community. In Owerri, this includes initiatives such as fair employment practices, investment in local communities, and the promotion of cultural heritage

through hospitality services (Uduji and Okolo-Obasi, 2023). Hotels and restaurants are beginning to adopt fair labor practices, ensuring that employees are provided with adequate wages, safe working conditions, and opportunities for professional development. This not only enhances the quality of life for workers but also contributes to a more motivated and productive workforce, ultimately benefiting the business and the local economy (Adebayo and Butcher, 2023).

Another critical aspect of social sustainability in Owerri's hospitality industry is the emphasis on local sourcing and community engagement. Many businesses are now prioritizing the purchase of locally produced goods and services, which supports the local economy and reduces the environmental impact associated with long-distance transportation (Ozoani, 2023). By sourcing food, materials, and other supplies from local farmers and artisans, hospitality businesses not only contribute to the economic development of the community but also foster stronger ties with local suppliers. Additionally, engaging in community development projects, such as sponsoring local events or investing in infrastructure improvements, helps build a positive reputation for these businesses, making them more attractive to both local customers and tourists (Adebusuyi, 2023). These efforts to support the local economy and community well-being are essential for the long-term sustainability of the hospitality industry in Owerri.

Economic Performance

Economic performance in the hospitality industry in Owerri, Imo State, Nigeria, has become increasingly significant as the region seeks to bolster its tourism sector and overall economic development. The industry's economic contributions are multifaceted, encompassing revenue generation, job creation, and the stimulation of related sectors such as agriculture and transportation. Hotels, restaurants, and event management services in Owerri are vital to the local economy, attracting both domestic and international tourists (Kulu and Bola, 2023). The inflow of visitors generates substantial income for these businesses, which, in turn, contributes to the city's GDP. Additionally, the hospitality industry plays a crucial role in creating employment opportunities, both directly and indirectly. Jobs in hospitality range from managerial roles to positions in housekeeping, catering, and security, providing livelihoods for many residents (Amahalu, Okoye, and Nnadi, 2023). The growth of this sector is essential for reducing unemployment and enhancing economic stability in Owerri.

However, the economic performance of the hospitality industry in Owerri is not without its challenges. One significant issue is the impact of fluctuating economic conditions on consumer spending and business profitability. Economic downturns, inflation, and currency devaluation can lead to reduced

spending on luxury services such as travel and hospitality, thereby affecting the revenue of hospitality businesses (Edeh and Dialoke, 2020). Additionally, the high cost of operations, including energy costs, taxes, and import duties on essential goods, poses a significant burden on these businesses. Many hospitality establishments in Owerri struggle to maintain profitability due to these financial pressures, which can hinder their ability to grow and reinvest in their operations. Moreover, the industry faces competition from other regions and international destinations, requiring businesses in Owerri to continuously innovate and offer unique value propositions to attract and retain customers.

AI Adoption:

The hospitality sector in Owerri, Imo State, Nigeria, is quickly adopting artificial intelligence (AI), which is increasing efficiency and boosting client experiences. A growing number of hospitality operations activities, from front-end customer service to back-end management procedures, use AI technologies, including chatbots, data analytics, and machine learning algorithms (Nneji, 2024). For instance, many hotels in Owerri have started using AI-powered chatbots to handle customer inquiries, booking processes, and even complaints, allowing for 24/7 service without the need for human intervention. These chatbots can process and respond to customer queries in real-time, ensuring quick and accurate service, which improves customer satisfaction and loyalty. According to Nkiru, Chinelo, and Raphael (2023), one common challenge in business is the difficulty in successfully implementing change initiatives and guaranteeing that these changes lead to increased performance. Many organizations face challenges associated with resistance from employees, inadequate measurement of performance enhancements, and lack of alignment with strategic goals, resulting from change efforts (Cameron & Green, 2015; Ezeanokwasa, Nwagbala & Nwachukwu, 2023).

Additionally, AI-driven data analytics tools enable businesses to analyze customer behavior and preferences, allowing for more personalized services and targeted marketing efforts, which are crucial in a competitive market like hospitality (Salawu, 2020). To facilitate broader AI adoption in Owerri's hospitality industry, a concerted effort is needed from both the private sector and the government. Policymakers should consider providing incentives, such as tax breaks or grants, to support SMEs in adopting AI technologies (Ajao and Ndu, 2024). Additionally, there is a need for more educational and training programs to develop the local workforce's AI-related skills, ensuring that businesses have access to the talent they need to implement and manage AI systems effectively. Nwachukwu, (2023), stated that collaboration between academic institutions, technology companies, and hospitality businesses could help bridge the skills gap and promote innovation. Furthermore, addressing the

ethical concerns associated with AI, such as data privacy and job displacement, will be crucial in ensuring that AI adoption is sustainable and socially responsible. By addressing these challenges, the hospitality industry in Owerri can fully leverage the transformative potential of AI, enhancing its competitiveness and contributing to the region's economic development.

Financial Investment in AI

Financial investment refers to the allocation of money or capital into an asset, project, or business with the expectation of generating a return or profit over time. This can include purchasing stocks, bonds, real estate, or investing in a business venture or technology, such as AI systems in the hospitality industry. The goal of financial investment is to increase the value of the invested capital, either through income (like interest, dividends, or rent) or through capital gains ((Eliza, 2024).

Financial investment in Artificial Intelligence (AI) within the hospitality industry in Owerri, Imo State, Nigeria, is becoming increasingly crucial as businesses strive to remain competitive in a rapidly evolving market. AI technologies offer significant potential to enhance operational efficiency, customer service, and overall profitability, making them an attractive investment for hospitality businesses. In recent years, there has been a growing trend among hotels, restaurants, and other hospitality enterprises in Owerri to allocate resources toward AI-driven solutions such as automated check-in systems, personalized customer service, and advanced data analytics (Eldor and Asal, 2024). These investments are seen as essential not only for improving the guest experience but also for reducing operational costs by automating routine tasks and optimizing resource management. The return on investment (ROI) for AI in hospitality is becoming more apparent as businesses report increased customer satisfaction, higher occupancy rates, and improved financial performance (Olumekor and Oke, 2024).

Organizational Factors

An organizational factor refers to any element within an organization that can influence its operations, performance, and decision-making processes. These factors can be internal aspects such as the organization's culture, leadership style, structure, policies, employee skills, and resource availability. Quinn, (2024) organizational factors play a critical role in determining how effectively an organization can achieve its goals, adapt to changes, and implement new technologies or strategies. For example, in the context of AI adoption in a hospitality business, organizational factors would include the company's readiness to embrace technology, the support from leadership, the skills and attitudes of employees, and the availability of financial and technological resources.

Organizational factors play a crucial role in the successful adoption and implementation of Artificial

Intelligence (AI) in the hospitality industry in Owerri, Imo State, Nigeria. These factors include organizational culture, leadership, employee readiness, and resource availability, all of which significantly influence how AI technologies are integrated into business operations. A supportive organizational culture that encourages innovation and technological adoption is essential for AI implementation. In many hospitality businesses in Owerri, there is a growing recognition of the need to embrace new technologies to remain competitive. Organizations that foster a culture of learning and adaptability are more likely to succeed in AI adoption because employees are encouraged to explore and integrate new tools and practices into their workflows (Shalom, Ugwuanyi, and Okoh, 2024). Additionally, businesses that prioritize technological advancement as part of their strategic vision are better positioned to leverage AI for operational efficiency and enhanced customer service.

Cultural Attitudes towards AI

Cultural attitude refers to the collective set of beliefs, values, and behaviors that characterize a particular culture or social group. It encompasses how individuals and groups perceive and react to various aspects of life, including new technologies, social changes, and external influences. Nana (2024) expressed that cultural attitudes are shaped by historical experiences, social norms, religious beliefs, and other cultural factors, and they influence how people interact with and adopt innovations or practices. For example, cultural attitudes towards technology can determine how open or resistant a society is to adopting new technologies like AI. In some cultures, there may be a high level of acceptance and enthusiasm for technological advancements, while in others; there might be skepticism or reluctance due to concerns about losing traditional values or jobs. Understanding cultural attitudes is crucial for businesses and policymakers when introducing new products, services, or policies, as it helps in tailoring approaches that resonate with the values and expectations of the target audience (Adaki, 2023).

One significant cultural attitude towards AI in the hospitality sector in Owerri is the perception of technology as an outsider that might disrupt established practices and traditions. There is often a concern that AI could erode the personal touch and warmth that are valued in Nigerian hospitality. In a culture that highly values personal interactions and relationships, the idea of replacing human contact with machines can be met with resistance (Yakubu, Adamu and Umar, 2024). Many hospitality businesses in Owerri are cautious about fully integrating AI, fearing that it might alienate customers who prefer face-to-face interactions and personalized service. This cultural reluctance can impact the speed and extent to which AI technologies are adopted, as businesses weigh the benefits of efficiency against the potential loss of personal engagement.

Theoretical Framework

This study is anchored on the Fourth Industrial Revolution (4IR) theory, proposed by Klaus Schwab in 2016. The Fourth Industrial Revolution (4IR) theory talks about the current era of technological advancements and societal shifts that are transforming the way people live, work, and interact. This theory is relevant to the present study because it emphasizes the fusion of physical, digital, and biological systems, with AI being a key driver. In the context of hospitality businesses, AI can enhance sustainability by optimizing energy consumption, streamlining operations, and personalizing customer experiences. By adopting AI technologies, hospitality businesses in Owerri can improve their environmental footprint, reduce costs, and increase competitiveness, aligning with the principles of the 4IR. This study can explore how AI can be leveraged to drive sustainable practices in the hospitality industry, contributing to the region's economic growth and environmental stewardship.

Empirical Review

Oke, Ramachandran, Afolayan, Ihemereze, and Udeh (2024) explored the role of artificial intelligence in shaping sustainable consumer behavior: a cross-sectional study of Southwest, Nigeria. Data was collected for the research using a pre-tested, well-structured questionnaire administered to 320 respondents. Data collected were analysed using SPSS version 20 and STATA version 12.0. Results of the analysis showed that the experience of the respondents is relatively high. Consumers believe that the influence of AI on consumer choices is reflected in receiving personalized recommendations for products and services, but believe AI plays a moderate role on the level of influence these personalized recommendations have on the decision to purchase a product is relatively low. The results suggest that AI could impact Sustainable consumer behaviour in the study area.

Arachie, Dibua and Idigo (2023) examined artificial intelligence as a catalyst for the sustainability of small and medium-scale businesses in Nigeria. This study adopted a descriptive design. The population of the study was 27546 small businesses that were registered under the Cooperate Affairs Commission (CAC), and a sample size of 379 was arrived at by adopting Krejcie and Morgan's 1970 sample size determination formula. Results showed that most SMEs in Nigeria are still operating manually; hence, they do not enjoy the massive potential of AI deployment and remain perpetually small in size.

Igani, (2024) the study investigated artificial intelligent and customer patronage of food and beverage firms in Port Harcourt. The main objectives of the study was to find out the relationship between Artificial Intelligent (AI) and customer patronage of food and beverage firms in Port Harcourt. The population of the study comprised of 12 food and beverages firms in Port

Harcourt. The research design used was the Correlation research. The hypotheses were tested with the use of Pearson product-moment correlation and supplemented with SPSS version 21.0. The results were that there was a significant relationship between artificial intelligence and customer patronage of food and beverage firms in Port Harcourt.

Al-Romeedy and Alharethi, (2024) investigated the effect of artificial intelligence (AI) on organizational sustainability (OS) and delved into how this relationship is mediated by various dimensions of intellectual capital (IC), namely human (HC), structural (SC), and relational capital (RC). Data were collected from employees of Saudi travel agencies, resulting in 1122 valid responses, which were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicate that AI positively impacts OS as well as the three IC dimensions. Additionally, HC, SC, and RC have a positive influence on OS. The study also reveals that these dimensions partially mediate the relationship between AI and OS. This study advances the literature by clarifying how AI-enabled capabilities are translated into sustainable outcomes within the tourism and hospitality sectors. The findings offer valuable insights for industry professionals aiming to harness AI technologies for sustainable transformation. The study also offers strategic recommendations for tourism and hospitality organizations to invest in enhancing their IC, thereby optimizing the sustainability advantages of AI integration.

Gajić, Ranjbaran, Vukolić, Bugarčić, Spasojević, Đorđević Boljanović and Rakić (2024) explored the impact of artificial intelligence (AI) on customer perceptions and behavior in restaurants, airline companies, and hotel sectors within the hospitality industry of Iran. The primary objective was to analyze how AI affects customer trust, brand engagement, electronic word-of-mouth (eWOM), and tourists' readiness to use AI technologies. Using a comparative analysis approach and surveys, the research tested hypotheses about the effects of artificial intelligence on various dimensions of customer interaction. Their findings highlight significant relationships between the quality of artificial intelligence and customer engagement metrics, such as trust and brand loyalty, which are crucial for understanding and predicting customer behavior in response to technological advancements. The study lays the groundwork for theoretical assumptions about sustainability in these sectors in developing countries, providing a basis for future empirical research that could validate these assumptions and explore broader implications of AI integration in enhancing sustainable practices within the hospitality industry.

Nwagbala, Udemmadu and Okafor (2021) examined innovation and customer patronage in the hospitality industry in selected hotels in Anambra State.

The study adopted a descriptive research design on a sample of 369 hotel customers. Data collected for the study were analyzed using ANOVA and regression techniques of the ordinary least square. Findings showed that product innovation, marketing innovation, process innovation, and organizational innovation have a significant influence on customers' patronage of hotels in Anambra state. Based on the findings, the study recommends that hotels should develop a strategic plan and implementation strategy on product innovation, process innovation, marketing innovation, and organizational innovation to enhance their patronage and also remain competitive in the market.

Cavus, Mohammed, and Yakubu (2021) explored an artificial intelligence-based model for the prediction of parameters affecting the sustainable growth of mobile banking apps in Nigeria. The study adopts two methods of analysis, artificial intelligence-based methods (AI), and structural equations modeling (SEM). Data were collected from 823 respondents. The study AI results found risk, trust, facilitating conditions, and inadequate digital laws to be the most dominant parameters that affect mobile banking growth in Nigeria, and discovered social influence and service quality do not influence Nigerians' resolve to use moveable banking apps. Moreover, the results proved the superiority of AI-based models above the classical models.

Gap in Literature

There exists a methodological gap, variable gap, geographical gap, and periodic gap. There is limited research on the present study. From the reviewed studies, the methodologies, variables, location and time are different from that of the present study. Therefore, this study sought to bridge these gaps.

METHODOLOGY

This study employed a descriptive survey research design. The study adopted a primary source of data and a secondary source of information. The study employed a random sampling probability technique in selecting 20 hotels in Owerri, Imo State. The target population was 203 staff of the selected 20 hotels in Owerri, Imo State. The hypotheses were tested with the Pearson Product Moment Correlation Coefficient on Statistical Packages for Social Science (SPSS version 27) at a 5% level of significance.

RESULT AND DISCUSSION

Decision Rule:

Accept the null hypothesis (Ho) if the calculated P-value is less than 0.05 ($p\text{-value} < 0.05$); otherwise, accept the alternate hypothesis (Ha).

Hypotheses Testing

Hypothesis One

Ho: There is no significant relationship between AI and the environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria.

Table 1: Relationship between AI and environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria

		Artificial Intelligence	Environmental Sustainability
	Pearson correlation	1	.882**
Artificial Intelligence	Sig. (2-tailed)		.001
	N	203	203
	Pearson correlation	.882**	1
Environmental Sustainability	Sig. (2-tailed)	.001	
	N	203	203

Source: SPSS version 27 Outputs

DISCUSSION OF FINDINGS

Table 1 shows that there is a significant positive relationship between AI and environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria, with $r = 0.882$ $n = 203$ and p value of 0.001 ($p < 0.05$). Therefore, the study accepted the alternate hypothesis and concluded that there is a significant positive relationship between AI and environmental sustainability of hospitality businesses in Owerri, Imo State, Nigeria. This implies that the

adoption of Artificial Intelligence (AI) in hospitality businesses in Owerri, Imo State, Nigeria can significantly enhance environmental sustainability by optimizing resource consumption, reducing waste, and improving operational efficiency, leading to a more eco-friendly and responsible hospitality industry.

Hypothesis Two

Ho: There is no significant relationship between AI and social sustainability of hospitality businesses in Owerri, Imo State, Nigeria.

Table 2: Relationship between AI and social sustainability of hospitality businesses in Owerri, Imo State, Nigeria

		Artificial Intelligence	Social Sustainability
	Pearson correlation	1	.801**
Artificial Intelligence	Sig. (2-tailed)		.000
	N	203	203
	Pearson correlation	.801**	1
Social Sustainability	Sig. (2-tailed)	.000	
	N	203	203

Source: SPSS version 27 Outputs.

DISCUSSION OF FINDINGS

Table 2 shows that there is a positive significant relationship between AI and the social sustainability of hospitality businesses in Owerri, Imo State, Nigeria, with $r = 0.801$, $n = 203$ and p -value of 0.000 ($p < 0.05$). Therefore, the study accepted the alternate hypothesis and concluded that there is a positive significant relationship between AI and the social sustainability of hospitality businesses in Owerri, Imo State, Nigeria. This implies that the effective adoption of Artificial Intelligence (AI) in hospitality businesses in Owerri, Imo State, Nigeria can significantly enhance social sustainability by improving customer satisfaction, employee welfare, and community engagement, leading to a more socially responsible and inclusive hospitality industry.

CONCLUSION

The study concluded that there is a statistically significant positive relationship between Artificial Intelligence and the sustainability of hospitality businesses in Owerri, Imo State, Nigeria. The study's finding implies that the adoption of Artificial Intelligence (AI) can significantly contribute to the long-term sustainability of hospitality businesses in Owerri, Imo State, Nigeria, by enhancing their economic, social, and environmental performance.

Recommendations

The study recommended that:

1. Hospitality businesses in Owerri should adopt AI technologies to enhance environmental sustainability. This can be achieved by implementing AI-powered energy management systems, waste reduction tools, and sustainable resource allocation solutions.
2. Hospitality businesses in Owerri should leverage AI-driven customer service chatbots and employee engagement platforms to enhance social sustainability. Implement AI-powered tools like customer relationship management (CRM) software and employee experience platforms to enhance social sustainability.

REFERENCES

- Adanma, U. M., & Ogunbiyi, E. O. (2024). Artificial intelligence in environmental conservation: evaluating cyber risks and opportunities for sustainable practices. *Computer Science & IT Research Journal*, 5(5), 1178-1209.
- Adekujajo, I. O., Fakeyede, O. G., Udeh, C. A., & Daraojimba, C. (2023). The digital evolution in hospitality: a global review and its potential transformative impact on our tourism. *International Journal of Applied Research in Social Sciences*, 5(10), 440-462.
- Aderibigbe, A. O., Ohenhen, P. E., Nwaobia, N. K., Gidiagba, J. O., & Ani, E. C. (2023). Artificial intelligence in developing countries: bridging the gap between potential and implementation. *Computer Science & IT Research Journal*, 4(3), 185-199.
- Adewale, B. A., Ene, V. O., Ogunbayo, B. F., & Aigbavboa, C. O. (2024). A Systematic review of the applications of AI in a sustainable building's lifecycle. *Buildings*, 14(7), 2137.
- Al-Hyari, H. S. A., Al-Smadi, H. M., & Weshah, S. R. (2023). The impact of artificial intelligence (AI) on guest satisfaction in hotel management: An empirical study of luxury hotels. *Geo Journal of Tourism and Geosites*, 48, 810-819.
- Al-Romeedy, B. S., & Alharethi, T. (2024). Reimagining Sustainability: The power of AI and intellectual capital in shaping the future of tourism and hospitality organizations. *Journal of Open Innovation: Technology, Market, and Complexity*, 10(4), 100417.
- Ananeva, D. (2019). Artificial Intelligence as Disruptive Innovation in the Hotel Industry: Finnish Boutique and Lifestyle Hotels Perspective.
- Arachie, E. A., Dibua, E. C., & Idigo, P. (2023). Artificial Intelligence as a Catalyst for the Sustainability of Small and Medium Scale Businesses (SMEs) in Nigeria. *Annals of Management and Organization Research*, 5(1), 1-11.
- Cavus, N., Mohammed, Y. B., & Yakubu, M. N. (2021). An artificial intelligence-based model for prediction of parameters affecting sustainable growth of mobile banking apps. *Sustainability*, 13(11), 6206.

- Chinelo, S.N., Chika, F.U., & Ifeanyi, D.O. (2021). "Innovation and Customers Patronage in the Hospitality Industry: A Study of Selected Hotels in Anambra State" *International Journal of Trend in Scientific Research and Development (ijtsrd)*, 5(5), 2388-2395, URL: www.ijtsrd.com/papers/ijtsrd46443.pdf
- Chinelo, S. N., & Ejike, A. A. (2022). Security challenges and the implications on business Sustainability in Nigeria", *Electronic Journal [online]* Available: <http://KcKcc.edu/KcKcc-e-journal>, (13), 1-16
- Dibua, C.E., Chiekezie, M.O., Chinelo, S.N. & Maureen, N.O. (2023). Environmental Scanning and Performance of Brewing Firms in South-East, Nigeria. *Journal of Public Administration, Policy and Governance Research (JPAPGR)*, 1(3) 22-34. Available online at <https://jpapgr.com/index.Php/research>.
- Ezeanokwasa, F.N., Nwagbala, S. C., & Nwachukwu, R. (2023). Assessing Change Management and Performance of Selected Banks in Anambra State, Nigeria. *International Journal on Economics, Finance and Sustainable Development*, 5(9), 108-120.
- Gajić, T., Ranjbaran, A., Vukolić, D., Bugarčić, J., Spasojević, A., Đorđević Boljanović, J., & Rakić, S. R. (2024). Tourists' Willingness to Adopt AI in Hospitality—Assumption of Sustainability in Developing Countries. *Sustainability*, 16(9), 3663.
- Ifekanandu, C. C., Anene, J. N., Iloka, C. B., & Ewuzie, C. O. (2023). Influence of artificial intelligence (AI) on customer experience and loyalty: Mediating role of personalization. *Journal of Data Acquisition and Processing*, 38(3), 1936.
- Igani, D. C. (2023). Artificial intelligence and customer patronage of food and beverages firms in Port Harcourt. *BW Academic Journal*, 9-9.
- Itai, M., Emena, O. U., & Daniel, U. (2024). Exploring the role of artificial intelligence capabilities on small and medium-sized enterprises growth in Nigeria. *African Journal of Economic and Business Research*, 3(2).
- Milton, T. (2024). Artificial intelligence transforming hotel gastronomy: an in-depth review of AI-driven innovations in menu design, food preparation, and customer interaction, with a focus on sustainability and future trends in the hospitality industry. *International Journal for Multidimensional Research Perspectives*, 2(3), 47-61.
- Nahar, S. (2024). Modeling the effects of artificial intelligence (AI)-based innovation on sustainable development goals (SDGs): Applying a system dynamics perspective in a cross-country setting. *Technological Forecasting and Social Change*, 201, 123203.
- Nkiru, F.E., Chinelo, S.N., & Raphael, N. (2023). Assessing Change Management and Performance of Selected Banks in Anambra State, Nigeria. *International Journal on Economics, Finance and Sustainable Development*, 5(9), 108-120.
- Nneji, O. V. (2024). Impact of disruptive technologies on business organizations (small and large) in Nigeria. *BW Academic Journal*.
- Nwachukwu, D. (2023). Evaluating the influence of artificial intelligence marketing on customer satisfaction with products and services of telecommunication companies in Port Harcourt, Rivers State, Nigeria. *Rivers State, Nigeria*.
- Nwagbala, S. C., Udemadu, F. C., Okafor, D. I. (2021). "Innovation and Customers Patronage in the Hospitality Industry: A Study of Selected Hotels in Anambra State" *International Journal of Trend in Scientific Research and Development (ijtsrd)*, 5(5), 2388-2395, URL: www.ijtsrd.com/papers/ijtsrd46443.pdf
- Nwokediegwu, Z. Q. S., Ugwuanyi, E. D., Dada, M. A., Majemite, M. T., & Obaigbena, A. (2024). AI-driven waste management systems: a comparative review of innovations in the USA and Africa. *Engineering Science & Technology Journal*, 5(2), 507-516.
- Nwokorie, E. C., Igbojekwe, P. A., & Ukabuilu, E. N. (2024). Customer intelligence and customer retention in hotels in south-west Nigeria. *Research in Hospitality Management*, 14(1), 43-56.
- Oke, T. T., Ramachandran, T., Afolayan, A. F., Ihemereze, K. C., & Udeh, C. A. (2024). The role of artificial intelligence in shaping sustainable consumer behavior: a cross-sectional study of Southwest, Nigeria. *International Journal of Research and Scientific Innovation*, 10(12), 255-266.
- Promise-Elechi, K. C., & Onuoha, B. C. (2023). Talent Development and Firm Resilience of Hotels in Port Harcourt, Nigeria. *Research Journal of Management Practice | ISSN, 2782, 7674*.
- Rawat, A., Kukreti, R., Dimari, A., & Dani, R. (2024). Artificial intelligence in Hmi system. In *2024 4th International Conference on Advance Computing and Innovative Technologies in Engineering (ICACITE)* (pp. 1362-1367). IEEE.
- Štilić, A., Nicić, M., & Puška, A. (2023). Check-in to the future: Exploring the impact of contemporary information technologies and artificial intelligence on the hotel industry. *Turističkoposlovanje*, (31).
- Usman, F. O., Eyo-Udo, N. L., Etukudoh, E. A., Odonkor, B., Ibeh, C. V., & Adegbola, A. (2024). A critical review of AI-driven strategies for entrepreneurial success. *International Journal of Management & Entrepreneurship Research*, 6(1), 200-215.