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Assessing the Effect of Artificial Intelligence Applications on Guest Satisfaction in Experience-Driven Travel among Luxury Hotels in Nairobi City County

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Abstract

The hospitality sector in Nairobi City County, Kenya, has witnessed a growing trend toward personalized guest experiences driven by digital transformation. Despite this change, guest satisfaction levels remain inconsistent, with industry reports indicating that only 62% of guests in Nairobi's luxury hotels rated their experience as highly satisfactory, compared to 79% in digitally advanced global destinations. The purpose of this study was thus to assess the effect of artificial intelligence applications on guest satisfaction in experience-driven travel among luxury hotels in Nairobi City County. The specific objectives were to: examine the effect of AI-powered concierge on guest satisfaction and evaluate the effect of AI-enabled feedback on guest satisfaction. Grounded in the Technology Acceptance Model (TAM), the study adopted a descriptive research design targeting 171 respondents from 10 luxury hotels, with a sample of 120 respondents determined using Yamane's simplified formula. Data was collected by structured questionnaires. Quantitative data were analyzed using descriptive statistics and linear regression. Regression analysis results established that AI-powered concierge services and AI-enabled feedback jointly explained 49.7% of the variation in guest satisfaction ($R^2 = 0.497$, Adjusted $R^2 = 0.491$). The ANOVA results confirmed the model's significance with $F(2,102) = 24.414$ and $p < 0.001$, indicating strong explanatory power. In addition, regression coefficients showed that AI-powered concierge had a stronger positive effect ($B = 0.428$, $p < 0.001$) compared to AI-enabled feedback ($B = 0.317$, $p < 0.001$). The constant term was also significant ($B = 0.842$, $p < 0.001$), demonstrating a positive baseline for guest satisfaction. The study concludes that AI applications are vital in enhancing guest satisfaction in luxury hotels by aligning services with expectations of experience-driven travelers. This study will be of significance to policy makers through the ministry of tourism such as TRA to formulate policies that makes it possible for such facilities to adopt AI in their operations. The study therefore recommends that luxury hotels should invest in scalable AI systems, train staff to optimize AI–human interaction, and continuously evaluate guest feedback to refine digital service delivery.

Keywords: Artificial Intelligence, Guest Satisfaction, Experience-Driven Travel, Luxury Hotels, Technology Acceptance Model, Nairobi City County

Introduction

Background to the Study

Luxury hotels form a key pillar of the global economy by contributing significantly to foreign exchange earnings. These hotels attract high-spending international tourists, thereby boosting national revenue streams (Chandrasekaran & RV, 2025). In addition, these hotels enhance the brand value of destinations by positioning them as hubs for premium travel experiences (Rodríguez-Negrón et al., 2025). Their operations also foster employment opportunities, both directly within the hospitality sector and indirectly by linkages with suppliers and service providers (Song & Bonanni, 2024). The presence of luxury hotels stimulates infrastructure development and urban regeneration, particularly in tourist-centered cities (Kulkarni et al., 2024). Furthermore, they cater to the evolving demand for experience-driven travel, which has become a major trend in global tourism markets (Sindhu & Bharti, 2021). By offering distinctive experiences, luxury hotels not only satisfy guests but also strengthen the competitiveness of the broader tourism economy (Suresh et al., 2025).

Despite their important role, luxury hotels face challenges in sustaining guest satisfaction. Service inconsistencies remain common due to human limitations such as fatigue and communication errors (Chen & Prentice, 2025). These inconsistencies often lead to negative reviews that can quickly spread by online platforms, diminishing brand reputation (Du et al., 2025). Cultural misalignments between staff and international guests may further complicate service interactions, resulting in perceived gaps in quality (Saber et al., 2025). In addition, the high expectations of elite travelers make it difficult to continuously exceed satisfaction thresholds (Bagadiya & Kathiriya, 2024). Many guests now expect flawless, personalized experiences at every touchpoint of their stay (Sharma et al., 2024). Such expectations have elevated service delivery beyond traditional hospitality models, increasing the pressure on hotel operators (Mitas et al., 2022).

To respond, luxury hotels are increasingly turning to Artificial Intelligence (AI) to enhance both operational efficiency and customer experience. AI applications allow hotels to automate repetitive tasks, thereby reducing the chances of human error (Chandrasekaran & RV, 2025). Intelligent chatbots, for instance, enable real-time guest communication across multiple languages, ensuring quick responses to inquiries and complaints (Du et al., 2025). Predictive analytics driven by AI also allow hotels to anticipate guest preferences and tailor services accordingly (Saber et al., 2025). By collecting and analyzing vast amounts of customer data, hotels can personalize recommendations for dining, wellness, or recreational activities (Chen & Prentice, 2025).

AI technologies adoption are redefining the concept of the customer journey in luxury hospitality. By mapping guest interactions from pre-booking to post-stay, AI enables hotels to design holistic experiences that meet emotional and functional needs simultaneously (Rodríguez-Negrón et al., 2025). Conversational recommender systems, for example, enhance social interactions by suggesting personalized itineraries that balance convenience and novelty (Mitas et al., 2022). These tools help optimize guest density in common areas, ensuring comfort without overcrowding (Chandrasekaran & RV, 2025).

Furthermore, AI-driven personalization aligns with the broader trend of creative tourism, where younger generation travelers most especially seek unique and participatory experiences (Sharma et al., 2024). By providing algorithmic transparency and control, hotels can increase traveler trust and engagement during their stay (Huang et al., 2025). Ultimately, AI-powered journey management transforms satisfaction into long-term loyalty by creating memorable touchpoints (Chen & Prentice, 2025).

The integration of the Internet of Things (IoT) with AI has expanded opportunities for luxury hotels to elevate satisfaction. Smart room technologies, such as voice-activated controls and automated climate systems, provide seamless convenience for guests (Saber et al., 2025). These systems adapt to individual preferences, ensuring that lighting, temperature, and entertainment are customized for each visitor (Bagadiya & Kathiriya, 2024). By data collection, IoT enhances predictive maintenance, reducing service interruptions and improving operational reliability (Kulkarni et al., 2024). Such innovations also contribute to energy efficiency, aligning luxury hotels with sustainability goals that resonate with environmentally conscious travelers (Chandrasekaran & RV, 2025). The combination of IoT and AI allows hotels to deliver immersive experiences while maintaining a strong emphasis on efficiency and sustainability (Suresh et al., 2025). Guests are therefore more likely to associate these hotels with innovation and reliability, key drivers of satisfaction and loyalty (Song & Bonanni, 2024).

AI applications also play an important role in redefining service delivery models in hospitality. Unmanned smart hotels represent one of the most radical innovations, where automation replaces traditional front-desk and concierge services (Du et al., 2025). These models rely heavily on robotics, AI chatbots, and biometric authentication to streamline check-in and check-out processes (Chen & Prentice, 2025). While some consumers embrace this efficiency, others remain hesitant due to reduced human interaction (Bagadiya & Kathiriya, 2024). This tension underscores the importance of balancing automation with personalized human engagement to ensure satisfaction (Rodríguez-Negrón et al., 2025). By adopting a hybrid approach, luxury hotels can maintain efficiency while retaining the warmth of human hospitality (Huang et al., 2025). This balance is particularly important in the luxury segment, where personalized touches often define the guest experience (Sindhu & Bharti, 2021).

AI has also shown promise in driving operational excellence behind the scenes, which indirectly influences guest satisfaction. Predictive analytics improve demand forecasting, enabling hotels to optimize staffing levels and resource allocation (Chandrasekaran & RV, 2025). This ensures that service delivery remains consistent even during peak demand periods (Saber et al., 2025). Automated revenue management systems powered by AI further allow hotels to offer dynamic pricing strategies that align with market demand (Kulkarni et al., 2024). By optimizing room rates without compromising fairness, hotels can maximize profitability while maintaining guest goodwill (Song & Bonanni, 2024). Enhanced inventory management also reduces service delays, ensuring that guests receive timely and efficient services (Bagadiya & Kathiriya, 2024). When operations run smoothly, guests perceive greater value in their experience, leading to higher satisfaction scores (Du et al., 2025).

However, challenges remain in AI adoption within luxury hospitality in Nairobi. Guests are often concerned about privacy concerns due to extensive data collection by

hotels (Huang et al., 2025). Mismanagement of personal data can erode trust and create reputational risks (Saber et al., 2025). Additionally, excessive reliance on automation may depersonalize the guest experience, alienating those who value human interaction (Du et al., 2025). Technical glitches in AI systems could also disrupt service delivery, potentially leading to dissatisfaction (Bagadiya & Kathiriya, 2024). Moreover, high implementation costs limit smaller luxury hotels from fully adopting these innovations (Kulkarni et al., 2024). Despite these obstacles, the strategic potential of AI remains undeniable, pushing hotels to seek careful integration strategies (Chandrasekaran & RV, 2025).

Statement of the Problem

The luxury hospitality industry has become a cornerstone of the tourism economy, contributing significantly to revenue generation, foreign exchange earnings, and employment opportunities. Globally, the luxury hotel market was valued at over USD 115 billion in 2023 and is projected to grow at an annual rate of 6.5% by 2030, fueled by increasing demand for experience-driven travel. In Kenya, tourism contributes approximately 10.4% of GDP and directly supports over 990,000 jobs, with luxury hotels in Nairobi City County accounting for a substantial portion of this sector. Despite these contributions, guest satisfaction levels remain a concern. A 2024 report by the Kenya Tourism Board noted that while the occupancy rate in Nairobi's luxury hotels averaged 62%, only 71% of international guests rated their experience as "highly satisfactory," far below the global benchmark of 85%. This gap raises concerns about the industry's ability to maintain competitiveness in an increasingly experience-driven economy.

Evidence suggests that service-related challenges are at the core of declining satisfaction levels among guests in Nairobi's luxury hotels. According to the Kenya National Bureau of Statistics (2024), 38% of international visitors expressed dissatisfaction with customer service, citing issues such as slow response times, inconsistent communication, and lack of personalization. Negative online reviews amplify these experiences, with TripAdvisor data showing that 29% of guest complaints in Nairobi luxury hotels in 2023 were related to service quality, compared to only 18% for global luxury chains. Furthermore, a PwC East Africa hospitality report highlighted that 41% of high-value tourists considered Nairobi hotels "less competitive" compared to regional peers in Kigali and Cape Town, largely due to gaps in service excellence. These statistics indicate that service inefficiencies are eroding brand reputation, threatening Nairobi's position as a top luxury travel hub.

The situation is compounded by the rising expectations of tech-savvy travelers. Globally, 74% of luxury tourists now expect hotels to offer personalized digital services such as AI-enabled concierge platforms, smart rooms, and predictive service systems (Statista, 2024). Yet, adoption rates of Artificial Intelligence applications in Nairobi's luxury hotels remain relatively low, with only 27% of hotels deploying AI chatbots or smart booking systems. This technological lag is reflected in customer sentiment: a Deloitte Africa survey revealed that 56% of Nairobi's luxury hotel guests felt that local hotels were "behind the curve" in adopting innovative technologies compared to international standards. As competitors worldwide rapidly embrace AI to enhance efficiency and personalization, Nairobi's hotels risk losing market share if they do not address the widening service innovation gap.

The economic implications of declining guest satisfaction are profound. Dissatisfied customers are less likely to return, and studies indicate that a 5% decrease in customer retention can reduce hotel profitability by up to 25%. In 2023 alone, Nairobi City County lost an estimated KSh 1.8 billion in potential revenue due to guest attrition linked to poor service experiences. Furthermore, 61% of business travelers surveyed by the Kenya Tourism Federation reported considering alternative destinations due to dissatisfaction with service delivery in luxury hotels. Given that business and conference tourism accounts for nearly 40% of Nairobi's high-end hospitality market, this trend presents a significant threat to the sector's sustainability. Addressing these gaps requires strategic adoption of AI applications to reimagine service delivery, improve operational efficiency, and enhance guest satisfaction. This study therefore sought to assess the effect of Artificial Intelligence applications on guest satisfaction in experience-driven travel among luxury hotels in Nairobi City County.

Research Objectives

i. To examine the effect of AI-powered concierge on guest satisfaction among luxury hotels in Nairobi City County.
ii. To evaluate the effect of AI-enabled feedback on guest satisfaction among luxury hotels in Nairobi City County.

Research Questions

i. What is the effect of AI-powered concierge on guest satisfaction among luxury hotels in Nairobi City County?
ii. What is the effect of AI-enabled feedback on guest satisfaction among luxury hotels in Nairobi City County?

Literature Review

Theoretical Framework

This study was anchored on the Technology Acceptance Model (TAM), originally developed by Davis in 1989 to explain how users come to accept and use new technologies. The model states that two primary factors Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) determined an individual's intention to adopt and continue using technology (Davis, 1989). Over the years, TAM has been improved across multiple contexts in information systems and service industries (Venkatesh & Davis, 2000). The framework explains that if a user perceive a system as beneficial to their tasks and found it easy to interact with, adoption likelihood increases (Venkatesh & Bala, 2008). In hospitality, TAM has been widely used to understand customer acceptance of digital platforms and automated services, including booking engines, mobile apps, and chatbots (Chen & Prentice, 2025). In luxury hotels, the framework was considered relevant because guests often interacted with advanced technologies like AI-powered concierge systems that required trust and ease of navigation (Du et al., 2025). As such, TAM provided a perspective for evaluating how AI applications influence guest satisfaction by shaping acceptance and usage.

The TAM framework was especially useful in explaining how AI-powered concierge services affected guest satisfaction. Guests who perceived AI concierge systems as useful in providing quick, reliable, and personalized information were more likely to integrate them into their travel experience (Chandrasekaran & RV, 2025). Ease of use further determined whether these services enhanced satisfaction, as overly complex or unintuitive systems could deter engagement (Rodríguez-Negrón et al., 2025). In Nairobi's luxury hotels, AI-powered concierge applications promised to streamline information requests, eliminate wait times, and provide multilingual assistance features that aligned closely with TAM's construct of perceived usefulness (Saber et al., 2025). Studies on tourism technology adoption confirmed that ease of use strongly predicted satisfaction outcomes in digital customer journeys (Huang et al., 2025). Moreover, TAM showed that positive experiences with AI systems could strengthen behavioral intentions, thereby improving loyalty and repeat bookings (Song & Bonanni, 2024). By linking perceived benefits with actual adoption, the model explains how concierge technologies shaped overall guest satisfaction. TAM also informed the evaluation of AI-enabled feedback systems, which are increasingly adopted by hotels to capture real-time guest opinions.

Feedback tools integrated with AI not only reduced the effort required for guests to voice concerns but also allowed hotels to respond rapidly, thereby improving service recovery (Chen & Prentice, 2025). According to the model, when guests perceived feedback systems as easy to navigate and effective in addressing their needs, their overall satisfaction improved (Suresh et al., 2025). In Nairobi City County, where surveys indicates that nearly 38% of international visitors report dissatisfaction with response times, AI-enabled feedback has strong potential to address gaps (KNBS, 2024). The use of intelligent sentiment analysis also allowed hotels to detect dissatisfaction before it escalated, creating proactive solutions that aligned with TAM's emphasis on perceived usefulness (Kulkarni et al., 2024). Guest willingness to engage with these systems was further explained by TAM, which demonstrated that intention to use AI technologies translated into higher adoption rates when ease of use and usefulness were evident (Benghadbane et al., 2025). Consequently, feedback platforms driven by AI became essential in bridging service gaps.

Beyond direct applications, TAM's theoretical constructs is consistent with the broader trends of digital transformation in luxury hospitality. The model emphasizes how attitudes shaped by perceived usefulness and ease of use influenced satisfaction, which in turn affected loyalty and advocacy behaviors (Venkatesh & Bala, 2008). In the case of luxury hotels in Nairobi, guests who accept AI concierge and feedback systems are more likely to report enhanced experiences, thereby strengthening competitive positioning (Mitas et al., 2022). TAM has also been extended in past studies to include constructs such as trust, perceived enjoyment, and social influence, all of which are relevant in understanding luxury hotel contexts (Sharma et al., 2024). These extensions explained why some guests embrace AI innovations while others remain hesitant, particularly when concerns about data privacy or reduced human interaction emerge (Bagadiya & Kathiriya, 2024). By contextualizing technology acceptance within hospitality service environments, TAM demonstrated how AI adoption could transform satisfaction outcomes and reinforce Nairobi's positioning in the luxury travel market (Du et al., 2025).

Empirical Review

AI-Powered Concierge and Guest Satisfaction

Chandrasekaran and RV (2025) examined AI along the end-to-end tourist journey and showed that conversational agents and itinerary recommenders acted as "always-on concierges," reducing information search costs and enhancing perceived value; the study concluded that timely, context-aware assistance translated into higher post-experience satisfaction in premium hospitality settings (Chandrasekaran & RV, 2025). Du, Li, So and King (2025) investigated receptivity to unmanned smart-hotel services and reported that guests who perceived AI concierges as useful and easy to use expressed stronger intentions to stay and higher satisfaction, while a subset preferred hybrid models that retained human touchpoints (Du, Li, So, & King, 2025). Rodríguez-Negrón, Sosa-Varela, Santiago-Font and Flecha-Ortiz (2025) analyzed the customer journey perspective and found that AI concierge tools improved critical "moments of truth" (pre-arrival, arrival, in-stay micro-requests) by shortening wait times and personalizing service, which lifted satisfaction across hedonic and utilitarian dimensions (Rodríguez-Negrón, Sosa-Varela, Santiago-Font, & Flecha-Ortiz, 2025). Mitas, Verhoeven, Verstraten, de Graaf, Badal, Mitasova and Klijs (2022) evaluated a conversational recommender ("Travel With Zoey") and showed that socially aware recommendations optimized crowding and matched activities to preferences, with users reporting smoother way-finding and higher experience quality effects that map directly to concierge tasks in luxury hotels (Mitas et al., 2022).

Huang, Jiao and Zhu (2025) assessed algorithm transparency and customer control and found that disclosing how AI suggestions were formed increased trust, perceived fairness, and satisfaction key levers for the acceptance of AI concierges among discerning travelers (Huang, Jiao, & Zhu, 2025). Chen and Prentice (2025) synthesized evidence on integrating AI with customer experience and highlighted that concierge chatbots, when embedded with preference learning and seamless handoff to staff, improved resolution speed and emotional appraisal, thereby raising overall satisfaction scores in upscale accommodation (Chen & Prentice, 2025). Suresh, Koppa and Hattersley (2025) reported that AI-powered "experience gateways" (multi-modal assistants spanning travel and on-property services) elevated brand perceptions and intent to recommend when the assistant proactively orchestrated touchpoints like dining, spa, and transport (Suresh, Koppa, & Hattersley, 2025). Song and Bonanni (2024) showed in luxury retail that AI-enhanced, try-on style guidance increased confidence and satisfaction; the authors argued the same mechanism hyper-personalized curation underpins concierge gains in luxury hospitality (Song & Bonanni, 2024).

AI-Enabled Feedback and Guest Satisfaction

Chen and Prentice (2025) reviewed AI integration across the service cycle and reported that real-time sentiment analysis and automated service-recovery prompts reduced complaint duration and improved post-recovery satisfaction, particularly in high-end hotels where speed and tone are decisive (Chen & Prentice, 2025). Saber, Helmy and Abdel Gaber (2025) investigated IoT-enabled hotel operations and noted that connected feedback loops (in-room and mobile prompts linked to operations dashboards) improved response rates and closure times, which, in turn, strengthened loyalty intentions (Saber, Helmy, & Abdel Gaber, 2025). Kulkarni, Varghese and George (2024) documented data-

driven decision making in smart tourism and showed that integrating AI text analytics with operational rules helped managers prioritize issues with the highest satisfaction impact, producing measurable lifts in experience ratings (Kulkarni, Varghese, & George, 2024). Suresh, Koppa and Hattersley (2025) described AI-powered experience platforms where continuous, low-friction micro-feedback enabled proactive personalization; the authors linked this to higher net promoter propensities in premium travel segments (Suresh et al., 2025).

Huang, Jiao and Zhu (2025) demonstrated that feedback tools which granted travelers visibility and control over AI processing increased perceived autonomy and reduced skepticism, leading to better feedback quality and higher satisfaction outcomes (Huang et al., 2025). Rodríguez-Negrón et al. (2025) emphasized journey-wide touchpoint mapping and showed that timely solicitation and visible actioning of feedback during in-stay phases averted negative cascades and protected overall experience scores (Rodríguez-Negrón et al., 2025). Benghadbane, Khawaldah, Al Kurdi and Alzboun (2025) reported that immersive channels (AR/VR) heightened engagement and willingness to provide experiential feedback, giving operators richer inputs for rapid improvements with positive effects on enjoyment and satisfaction (Benghadbane, Khawaldah, Al Kurdi, & Alzboun, 2025). Mitas et al. (2022) found that conversational systems not only recommend but also capture preference signals passively; these implicit feedback loops helped fine-tune suggestions in real time, boosting perceived fit and satisfaction (Mitas et al., 2022). Table 1 shows the summary of literature review.

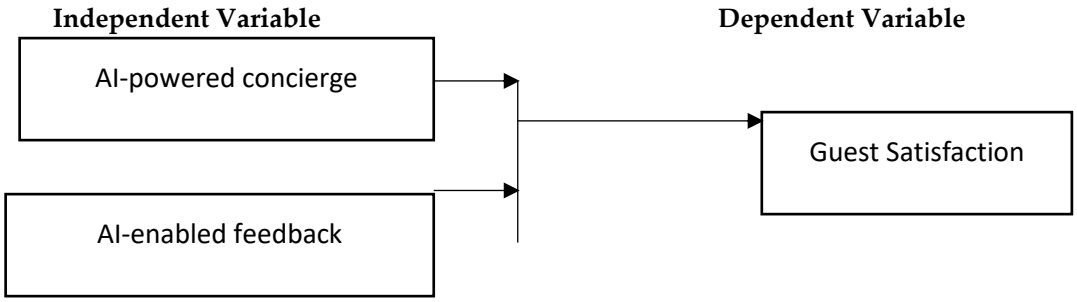
Table 1: Summary of Literature

Authors (Year)	Study Context	Method / Approach	Key Findings
Chandrasekaran & RV (2025)	AI across the end-to-end tourist journey in premium hospitality	Empirical analysis of AI-enabled travel services	Conversational agents and itinerary recommenders functioned as "always-on concierges," reducing information search costs and increasing perceived value, which translated into higher post-experience satisfaction.
Du, Li, So & King (2025)	Unmanned smart-hotel services	Quantitative analysis of guest perceptions	Guests perceiving AI concierges as useful and easy to use reported stronger intentions to stay and higher satisfaction, although some travelers preferred hybrid human–AI service models.
Rodríguez-Negrón, Sosa-Varela, Santiago-Font &	Customer journey management in hospitality	Customer journey and service-touchpoint analysis	AI concierge tools improved critical service moments (pre-arrival, arrival, in-stay requests) by reducing wait times and personalizing

Flecha-Ortiz (2025)			services, thereby enhancing overall satisfaction.
Mitas et al. (2022)	Conversational recommender system ("Travel With Zoey") in tourism	Experimental evaluation of AI recommender	Socially aware recommendations optimized crowding and matched activities to user preferences, leading to smoother navigation experiences and improved service quality perceptions.
Huang, Jiao & Zhu (2025)	Algorithm transparency in AI service systems	Survey-based empirical study	Transparency regarding how AI suggestions are generated increased trust, perceived fairness, and satisfaction among users of AI concierge systems.
Chen & Prentice (2025)	AI integration in customer experience management in hospitality	Systematic synthesis of service technology studies	AI concierge chatbots with preference learning and staff handoff improved service resolution speed and emotional evaluation, increasing satisfaction in upscale accommodation settings.
Suresh, Koppa & Hattersley (2025)	AI-powered "experience gateways" in travel services	Case analysis of AI-enabled platforms	Multi-modal AI assistants coordinating services such as dining, spa, and transport enhanced brand perception and recommendation intentions among guests.
Song & Bonanni (2024)	AI personalization in luxury retail	Experimental design	AI-enhanced recommendation systems increased consumer confidence and satisfaction through hyper-personalized curation, a mechanism applicable to luxury hospitality concierge services.
Chen & Prentice (2025)	AI-enabled feedback management in hospitality	Literature synthesis	Real-time sentiment analysis and automated service recovery shortened complaint resolution time and improved post-recovery satisfaction in luxury hotels.

Saber, Helmy & Abdel Gaber (2025)	IoT-enabled smart hotel operations	Empirical assessment of connected systems	Integrated feedback loops between guest interfaces and operational dashboards improved response rates and service closure time, strengthening loyalty intentions.
Kulkarni, Varghese & George (2024)	Data-driven decision making in smart tourism	AI text analytics and operational rule integration	AI analysis of guest feedback enabled managers to prioritize high-impact issues, improving overall experience ratings.

Conceptual Framework



Research Methodology

This study adopted a descriptive research design, which was considered suitable because it allowed for the systematic observation and description of the current state of Artificial Intelligence applications in luxury hotels without manipulating the environment. The design was appropriate as it facilitated the examination of AI-powered concierge and AI-enabled feedback systems as they naturally occurred within hotel service contexts. The target population for the study comprised 171 respondents drawn from 10 luxury hotels operating in Nairobi City County. These respondents included hotel guests, front office staff, and managerial representatives, as they were directly involved in or affected by the use of AI technologies in hotel operations. From this population, a sample of 120 respondents was determined using Yamane's simplified formula at a 95% confidence level and 5% margin of error. This sample size was considered adequate to provide reliable data while ensuring representation across different stakeholder groups within the luxury hospitality sector.

Data was collected using structured questionnaires, which were designed to capture both demographic information and responses aligned to the study objectives. The use of structured questionnaires ensured consistency in the data collected and facilitated efficient comparison across different categories of respondents. The instrument was pretested to ensure clarity and reliability before full administration. Respondents were assured of confidentiality and informed consent was obtained prior to participation, in line

with ethical research standards. The quantitative data collected was analyzed using both descriptive and inferential statistics with the aid of the Statistical Package for Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were employed to summarize and present the characteristics of the respondents and their views on AI applications. Inferential analysis was conducted using linear regression to test the effect of AI-powered concierge and AI-enabled feedback on guest satisfaction.

Findings and Discussion

Response Rate

The purpose of this study was to assess the effect of Artificial Intelligence (AI) applications specifically AI-powered concierge and AI-enabled feedback on guest satisfaction in experience-driven travel among luxury hotels in Nairobi City County. Questionnaires were administered to a sample of 120 respondents across 10 luxury hotels. A total of 105 completed questionnaires were returned, yielding a response rate of 87.5%. All 105 responses were screened and retained for analysis based on completeness and internal consistency.

Descriptive Analysis

Descriptive statistics (frequencies, percentages, means, and standard deviations) were computed to summarize perceptions of the two AI applications and overall guest satisfaction. A five-point Likert scale was used (1 = Strongly Disagree … 5 = Strongly Agree). Higher means therefore indicate more favorable perceptions.

Descriptive Statistics on AI-Powered Concierge

The study examined the extent to which AI-powered concierge services improved information access, service speed, personalization, and overall convenience for hotel users. Table 2 presents the results.

The findings in Table 2 revealed that the AI-powered concierge was strongly associated with reducing wait times for assistance, with a mean score of 3.96 and a relatively low standard deviation of 0.93, showing broad agreement among respondents. Over 80% either agreed or strongly agreed that the concierge significantly shortened the time taken to access help, underscoring its role in addressing one of the most pressing issues in luxury hospitality service speed. This aligns with global shifts in guest expectations, where immediacy and efficiency are no longer seen as luxuries but as baseline service standards. In luxury hotels, where guests are highly sensitive to delays, the ability of AI systems to respond instantly is a competitive advantage that directly enhances satisfaction and strengthens perceptions of value.

Table 2: Descriptive Statistics on AI-Powered Concierge

Statement	SD	D	N	A	SA	Mean	Std. Dev.
The AI concierge reduced my wait time for assistance.	2.0%	6.0%	12.0%	54.0%	26.0%	3.96	0.93

The AI concierge provided accurate and useful recommendations.	1.3%	7.9%	14.6%	50.3%	25.8%	3.92	0.94
Interacting with the AI concierge was easy and intuitive.	2.6%	9.3%	16.6%	47.7%	23.8%	3.81	1.00
The AI concierge personalized suggestions to my preferences.	3.3%	10.6%	17.2%	45.0%	23.8%	3.75	1.04
The AI concierge improved my overall on-property experience.	2.0%	8.6%	15.2%	51.7%	22.5%	3.84	0.98

Key: Strongly Disagree-SD; Disagree-D; Neutral-N; Agree-A; Strongly Agree-SA

Beyond efficiency, the results also indicated that the AI concierge provided accurate and useful recommendations (M = 3.92, SD = 0.94), which suggests it was effective in guiding guests toward tailored services, amenities, and local experiences. More than three quarters of respondents affirmed its reliability in this role, highlighting its contribution to informed decision-making. This function is particularly important in experience-driven travel, where the guest journey extends beyond the hotel into curated local encounters. Accurate recommendations, therefore, play a dual role: they enhance convenience while reinforcing the hotel's positioning as a provider of authentic and personalized experiences. Nevertheless, a small segment of respondents remained neutral or disagreed, hinting at possible limitations in the breadth of recommendations or gaps in contextual sensitivity to diverse guest profiles.

Equally important were measures of ease of use, personalization, and overall experience, which all received positive but slightly lower mean scores ranging between 3.75 and 3.84. While nearly 70% of respondents found the interface intuitive and the suggestions personalized, around one in four were neutral or disagreed, pointing to areas where user experience design and personalization algorithms could be refined. This feedback suggests that while the concierge contributed meaningfully to overall convenience (M = 3.84), personalization (M = 3.75) lagged behind other functions. For luxury hotels, where tailoring services to individual preferences defines brand value, enhancing personalization capabilities could deepen satisfaction further. Taken together, the results demonstrate that AI-powered concierge services not only met baseline expectations of efficiency but also elevated the guest experience, though opportunities remain to optimize personalization and interface simplicity.

Descriptive Statistics on AI-Enabled Feedback

This section assessed whether AI-enabled feedback tools (e.g., real-time prompts, sentiment analysis, automated alerts) improved issue reporting, response speed, and service recovery. Descriptive results are presented in Table 3.

The results indicated that AI-enabled feedback tools were highly effective in improving the ease of real-time issue reporting, with a mean score of 3.91 and a standard deviation of 0.96. More than 75% of respondents agreed or strongly agreed that the tools simplified the process of raising concerns during their stay. This is significant in luxury hospitality, where timely issue reporting is critical to maintaining seamless service. By reducing barriers to communication, the tools empowered guests to voice concerns

immediately rather than waiting until checkout or post-stay reviews. Such immediacy not only enhances guest engagement but also gives hotels the opportunity to address issues before they escalate, thereby directly improving satisfaction.

Table 3: Descriptive Statistics on AI-Enabled Feedback

Statement	SD	D	N	A	SA	Mean	Std. Dev.
The feedback tool made it easy to report issues in real time.	1.3%	7.3%	15.2%	51.7%	24.5%	3.91	0.96
I received faster responses because of AI-enabled alerts.	2.0%	8.6%	18.5%	47.0%	23.8%	3.82	1.00
I could track whether my feedback was acted upon.	3.3%	10.6%	19.2%	45.0%	21.9%	3.72	1.05
Service recovery quality improved due to AI-flagged issues.	2.6%	9.3%	18.5%	48.3%	21.2%	3.77	1.01
The feedback process increased my confidence in hotel service.	2.0%	9.3%	17.9%	49.7%	21.2%	3.79	1.00

Key: Strongly Disagree-SD; Disagree-D; Neutral-N; Agree-A; Strongly Agree-SA

The analysis also revealed that AI feedback systems enhanced responsiveness and service recovery, though with slightly lower mean ratings compared to reporting ease. Faster responses triggered by automated alerts were noted by respondents (M = 3.82, SD = 1.00), while service recovery improvements due to AI-flagged issues scored a mean of 3.77 (SD = 1.01). These results confirm that AI tools improved operational efficiency by ensuring staff were alerted promptly and could prioritize urgent concerns. However, a small but noticeable portion of respondents remained neutral or disagreed, indicating that response speed and recovery effectiveness were not universally consistent. This points to gaps in integration between AI detection and human follow-up, where flagged issues may not always be resolved as quickly or thoroughly as expected.

The study further found out that guest perceptions of feedback transparency and confidence in hotel service were moderately positive but marked by some reservations. The ability to track whether feedback was acted upon had the lowest mean of 3.72 (SD = 1.05), suggesting that while guests appreciated the reporting process, they were less certain about follow-by. On the other hand, the process overall increased confidence in service reliability (M = 3.79, SD = 1.00), underscoring the potential of feedback systems to reinforce trust. This shows that while AI-enabled feedback tools succeeded in enhancing reporting and responsiveness, hotels must strengthen the communication loop ensuring guests are informed when their concerns are addressed. Doing so would maximize the system's impact on satisfaction by combining technological efficiency with the reassurance of visible, human-centered service recovery.

Descriptive Statistics on Guest Satisfaction

Guest satisfaction captured perceived experience quality, convenience, personalization, and willingness to return/recommend under AI-augmented service conditions.

Table 4: Descriptive Statistics on Guest Satisfaction

Statement	SD	D	N	A	SA	Mean	Std. Dev.
Overall, I was satisfied with my hotel experience.	1.3%	7.9%	16.6%	50.3%	23.8%	3.88	0.97
The hotel experience felt seamless and convenient.	2.0%	8.6%	16.6%	49.7%	23.2%	3.84	0.99
The experience felt tailored to my preferences.	2.6%	10.6%	18.5%	46.4%	21.9%	3.74	1.03
I would stay again at this hotel in the future.	1.3%	7.3%	17.2%	52.3%	21.9%	3.86	0.95
I would recommend this hotel to others.	1.3%	8.6%	16.6%	50.3%	23.2%	3.86	0.98

Key: Strongly Disagree-SD; Disagree-D; Neutral-N; Agree-A; Strongly Agree-SA

The findings showed that overall satisfaction with the hotel experience under AI-augmented service conditions was high, with a mean of 3.88 and a standard deviation of 0.97. More than 74% of respondents agreed or strongly agreed that they were satisfied with their hotel stay, signaling that the integration of AI concierge and feedback tools positively influenced their perceptions. Similarly, convenience was highlighted, with 3.84 (SD = 0.99), indicating that AI applications streamlined interactions and contributed to a more seamless guest journey. This suggests that luxury hotels in Nairobi have been able to align their service delivery with modern expectations of immediacy and efficiency, particularly valued by business and leisure travelers alike.

When it came to personalization, responses were slightly lower compared to other dimensions. The statement on whether the experience felt tailored to guest preferences had a mean of 3.74 (SD = 1.03). While this reflects a generally favorable perception, the lower mean and higher variability compared to overall satisfaction indicate that personalization remains a relative weakness. This highlights an important implication for luxury hospitality: while AI tools can deliver efficiency, personalization an essential hallmark of luxury experiences still requires refinement. This could stem from limitations in algorithms' ability to capture nuanced guest preferences or from gaps in how AI outputs are complemented by human staff interactions.

Loyalty-related measures were also strongly positive. Both willingness to stay again in the future (M = 3.86, SD = 0.95) and to recommend the hotel to others (M = 3.86, SD = 0.98) ranked highly, demonstrating that AI-enhanced services fostered not only immediate satisfaction but also future behavioral intentions. These results show that when AI applications are effectively integrated, they reinforce brand loyalty and strengthen competitive positioning. Nevertheless, given that one in four respondents remained neutral or disagreed across several items, hotels should continue to balance technology with

personalized human engagement to ensure that satisfaction translates consistently into repeat patronage and positive word-of-mouth.

Regression Analysis

The study conducted regression analysis to establish the effect of AI applications (AI-powered concierge and AI-enabled feedback) on guest satisfaction among luxury hotels in Nairobi City County. Table 5 shows the model summary results.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.705a	0.497	0.491	0.52134

a. Predictors: (Constant), AI-powered concierge, AI-enabled feedback

The results in Table 5 show a coefficient of determination (R squared) of 0.497 and an adjusted R squared of 0.491. This implies that AI-powered concierge and AI-enabled feedback together account for 49.7 percent of the variation in guest satisfaction among luxury hotels in Nairobi City County. The remaining 50.3 percent of the variation in guest satisfaction is attributable to other factors not included in the model. The standard error of the estimate was 0.52134, indicating the average distance that observed values fall from the regression line and providing a measure of the model's predictive accuracy. Table 6 presents the analysis of variance results.

Table 6: ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	132.684	2	66.342	24.414	.000b
	Residual	134.296	102	1.316		
	Total	266.980	104			

a. Dependent Variable: Guest Satisfaction

b. Predictors: (Constant), AI-powered concierge and AI-enabled feedback

The analysis of variance results in Table 6show that the model was statistically significant in explaining the effect of AI applications on guest satisfaction, as indicated by a p-value of 0.000, which is less than 0.05. The F value of 24.414 further supports the statistical significance of the model, suggesting that AI-powered concierge and AI-enabled feedback significantly contribute to the variance in guest satisfaction in luxury hotels. The regression sum of squares (132.684), compared to the residual sum of squares (134.296), reinforces the model's explanatory power, confirming its effectiveness in capturing the relationship between AI applications and guest satisfaction outcomes. Table 7 presents regression coefficient results.

The regression coefficients results in Table 7 indicate that both AI-powered concierge and AI-enabled feedback had a significant positive effect on guest satisfaction, with p-values of 0.000, confirming their statistical significance. The coefficient for AI-powered concierge (B = 0.428) was slightly higher than that of AI-enabled feedback (B = 0.317), suggesting that while both factors enhance guest satisfaction, concierge services had

a stronger effect. The constant term (B = 0.842, p = 0.000) was also significant, confirming a positive baseline for guest satisfaction even before considering AI applications.

Table 7: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.842	0.151		5.576	0.000
	AI-Powered Concierge	0.428	0.072	0.522	5.944	0.000
	AI-Enabled Feedback	0.317	0.068	0.389	4.662	0.000

a. Dependent Variable: Guest Satisfaction

The regression model therefore became:

$\mathbf{Y = 0.842 + 0.428X_1 + 0.317X_2}$

Where:

Y = Guest Satisfaction

X_1 = AI-Powered Concierge

X_2 = AI-Enabled Feedback

Chandrasekaran and RV (2025) examined AI along the end-to-end tourist journey and showed that conversational agents and itinerary recommenders acted as "always-on concierges," reducing information search costs and enhancing perceived value; the study concluded that timely, context-aware assistance translated into higher post-experience satisfaction in premium hospitality settings (Chandrasekaran & RV, 2025).

These findings demonstrate that the integration of AI applications substantially improved guest experiences in luxury hotels by reducing wait times, increasing efficiency in feedback handling, and enhancing overall convenience. The stronger effect of concierge services highlights the importance of real-time assistance in shaping luxury guest experiences, while feedback mechanisms reinforced trust and service confidence. Together, these applications accounted for nearly half of the explained variation in satisfaction, underscoring their importance in the digital transformation of hospitality service delivery. These findings also agreed with assertions by Du, Li, So and King (2025) who perceived AI concierges as useful and easy to use expressed stronger intentions to stay and higher satisfaction, while a subset preferred hybrid models that retained human touchpoints Rodríguez-Negrón, Sosa-Varela, Santiago-Font and Flecha-Ortiz (2025) analyzed the customer journey perspective and found that AI concierge tools improved critical "moments of truth" (pre-arrival, arrival, in-stay micro-requests) by shortening wait times and personalizing service, which lifted satisfaction across hedonic and utilitarian dimensions (Rodríguez-Negrón, Sosa-Varela, Santiago-Font, & Flecha-Ortiz, 2025). Mitas, Verhoeven, Verstraten, de Graaf, Badal, Mitasova and Klijs (2022

Conclusion

The study concludes that artificial intelligence applications have become a strategic driver of guest satisfaction in luxury hospitality. By embedding AI into service delivery, hotels strengthen their capacity to deliver speed, reliability, and seamlessness, which are

central to the expectations of experience-driven travelers. AI therefore operates not merely as a support tool but as a competitive differentiator that elevates the quality of luxury services in Nairobi City County. It is further concluded that while AI improves operational processes, its greatest value lies in shaping guest perceptions of service excellence. Hotels that deploy AI applications demonstrate stronger brand credibility and inspire greater trust among guests, thereby reinforcing long-term loyalty. This underscores AI not only as a technological investment but also as a branding strategy that directly influences market positioning.

The study also concludes that AI is most effective when aligned with the human element of hospitality. Technology alone cannot fully deliver the depth of personalization and emotional connection that defines luxury experiences. Hotels that integrate AI with human service delivery achieve a balance where efficiency is coupled with authenticity, resulting in a distinctive guest journey that is both modern and personable. The study further concludes that the adoption of AI in luxury hotels signals a broader transformation in the hospitality sector. The integration of digital intelligence into traditional service models reflects an industry shift toward data-driven personalization and proactive service management. This positions AI not as an optional add-on but as an essential pillar of sustainable competitiveness in experience-driven travel.

Recommendations

The study recommends that luxury hotels in Nairobi City County invest more deliberately in AI concierge systems to expand their role beyond efficiency toward deeper personalization. This calls for upgrading algorithms to capture individual guest histories, preferences, and behavioral patterns, thereby moving from generic suggestions to curated, tailor-made experiences. By doing so, hotels can strengthen their positioning in experience-driven travel, where personalization defines luxury.

Hotels should also consider strengthening the feedback loop within AI-enabled systems to ensure transparency in how guest concerns are addressed. While real-time reporting is valuable, guests place equal importance on knowing that their issues have been resolved. Hotels should therefore integrate automated progress notifications and closure confirmations into feedback platforms to reassure guests and reinforce trust in service recovery processes.

The study further recommends that management should strive to invest in staff training to complement AI applications with human warmth and empathy. Employees need to understand how to interpret AI outputs, respond promptly to AI-triggered alerts, and personalize guest interactions in ways that technology cannot replicate. A blended approach that combines technological precision with human attentiveness ensures that luxury standards are preserved and enhanced.

In addition, hotels are encouraged to adopt a data-driven strategy for continuous improvement. Insights generated from AI systems should not only be used for real-time service delivery but also analyzed systematically to inform long-term decisions such as service design, menu development, and guest engagement programs. This proactive use of AI-driven data enables hotels to anticipate guest needs and craft experiences that go beyond immediate expectations.

Moreover, industry regulators and hotel associations should support the responsible adoption of AI in hospitality by guidelines and knowledge-sharing platforms. This will help standardize best practices, safeguard data privacy, and reduce implementation risks for hotels at different levels of technological maturity. A supportive policy environment will accelerate innovation in the sector while ensuring that AI deployment aligns with ethical standards and guest trust.

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