

The integration of Artificial Intelligence as a strategic lever for hotel marketing in Algeria

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Abstract:

The hospitality sector today faces increasingly fierce competition, a growing demand for personalized customer experiences, and an accelerated digitalization of its processes. In Algeria, as elsewhere, these developments are pushing establishments to rethink their marketing strategies.

Artificial intelligence thus emerges as a lever capable of transforming the entire value chain of hotel marketing from refined data analysis to optimized customer loyalty. Moreover, a field study conducted in 14 high-end hotels in Algeria that have integrated AI into their marketing processes confirms the hypothesis that AI is indispensable for enhancing the competitiveness of these establishments.

Keywords: Artificial Intelligence; Hotel Marketing; Value Chain; Competitiveness

1. INTRODUCTION

The hotel sector in Algeria, faced with increasing competition and rapidly evolving consumer expectations, stands at a decisive turning point. As digitalization profoundly transforms management and marketing practices, Artificial Intelligence (AI) emerges as a

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strategic lever capable of revolutionizing the entire value chain of hotel marketing. This transformation is reflected in the optimization of operational processes, the enhancement of service personalization, and the maximization of revenues.

However, despite growing interest in these technologies, the adoption of AI in hotel marketing in Algeria remains limited by several contextual and organizational factors. This research aims to provide insights into the following question: How can the integration of artificial intelligence transform hotel marketing practices in Algeria, and what are the specific drivers and barriers in this context to strengthen the competitiveness of hotel establishments?

This issue raises questions about both the ability of hotels to leverage technological innovations and the challenges associated with their implementation in an environment characterized by limited resources and deeply rooted traditional practices.

To test the validity of our structural model, we formulated the following hypotheses:

-Hypothesis 1 (H1): The integration of AI into the marketing strategies of Algerian hotels leads to a significant improvement in their operational performance, particularly through increased occupancy rates and revenue per available room (RevPAR)⁽¹⁾.

-Hypothesis 2 (H2): The use of AI technologies enables enhanced service personalization, resulting in higher customer satisfaction and loyalty⁽²⁾.

-Hypothesis 3 (H3): Organizational barriers, such as a lack of technical skills, budget constraints, and resistance to change, hinder

(1) Huang, Ming-Hui, and Rust, Roland T. Artificial intelligence in service. *Journal of Service Research*, California (USA), Vol. 21, No. 2, 2018, pp. 155-172.

(2) Westerman, George, Bonnet, Didier, and McAfee, Andrew. *Leading Digital: Turning Technology into Business Transformation*. Harvard Business Review Press, Boston, United States, 2014.

the effective adoption of AI in hotel marketing in Algeria⁽¹⁾.

-Hypothesis 4 (H4): The acceptance of AI technologies by both customers and staff is a determining factor in the successful integration of these tools within the hotel sector⁽²⁾.

To verify these hypotheses, a mixed-method approach was adopted. Semi-structured interviews were conducted with marketing managers and hotel executives to collect in-depth insights into current practices, implemented strategies, and expectations regarding AI. These interviews identified factors specific to the Algerian context, such as budgetary constraints, staff training, and the cultural acceptance of digital technologies.

This qualitative approach was complemented by a quantitative survey. A questionnaire was distributed to a sample of 14 high-end Algerian hotel establishments to collect data on the current state of AI integration into their marketing strategies, the perceived benefits, and the encountered challenges. Key indicators such as occupancy rate, revenue per available room, and customer satisfaction were analyzed to measure the impact of AI on operational performance.

2. Conceptual Framework and Theoretical Foundations

2.1 Definition of Artificial Intelligence

Artificial Intelligence (AI) refers to the ability of machines to simulate human cognitive functions such as perception, reasoning, learning, and decision-making. Its objective is to develop systems capable of solving complex problems, adapting to new situations, and interacting intelligently with their environment.

AI can be defined as “the design of intelligent agents that

(1) Rogers, Everett M. Diffusion of Innovations. Free Press, New York, United States, 1962.

(2) Davis, Fred D. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, Minnesota (USA), Vol. 13, No. 3, 1989, pp. 319-340.

perceive their environment and act in a way that maximizes their chances of success”⁽¹⁾. This definition encompasses symbolic approaches, connectionist methods, as well as modern techniques of machine learning and deep learning⁽²⁾.

Since the 2000s, AI has undergone a radical transformation driven by advances in deep learning. Researchers such as Geoffrey Hinton, Yann LeCun, and Yoshua Bengio have contributed to developing algorithms capable of automatically extracting hierarchical representations from large volumes of data. These advances have led to the emergence of concrete applications in various sectors, including marketing and hospitality⁽³⁾.

In the hotel industry, AI enables the exploitation of large data volumes (Big Data) to analyze customer behavior and anticipate their needs. Davenport and Ronanki (2018) demonstrated that machine learning algorithms significantly improve customer segmentation and offer personalization. In the hospitality context, this translates into targeted recommendations, such as personalized promotional offers or suggestions for local activities, thereby enhancing customer satisfaction and loyalty. Moreover, these tools contribute to better management of seasonality and demand fluctuations, which are crucial challenges for hotel performance.

2.2 Theoretical Foundations of the Research

Recent scientific studies demonstrate that Artificial Intelligence

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(3) Buhalis, Dimitrios, Harwood, Tracy, Bogicevic, Vanja, Viglia, Giampaolo, Beldona, Srikant, and Hofacker, Charles. Technological disruptions in services: Lessons from tourism and hospitality. *Journal of Service Management*, London, Vol. 30, No. 4, 2019, pp. 484-506.

(AI) is profoundly transforming marketing practices, particularly through the personalization of services, the optimization of operational efficiency, and the maximization of revenues⁽¹⁾. These studies establish a solid theoretical framework regarding the potential benefits of AI in the service sector, and more specifically in the hospitality industry.

The integration of AI in this field can be approached through three main dimensions:

First, its incorporation into the marketing process, in order to refine customer segmentation and more accurately predict client needs.

Second, the development of innovative solutions that make AI accessible and promote its acceptance by end users.

Third, the gradual transition from traditional hotel management practices to intelligent systems, enabling establishments to adapt to the demands of an ever-evolving market.

To understand the dynamics of AI adoption, this research draws on two major theoretical models: the Technology Acceptance Model (TAM) proposed by Davis (1989), which posits that the acceptance of a new technology depends on users' perceptions of its ease of use and its perceived usefulness. In addition, Rogers' (1962) Diffusion of Innovation Theory explains how innovations spread within a society and which factors, such as relative advantage, compatibility, complexity, trialability, and observability, influence their adoption.

In the context of digital transformation, Westerman, Bonnet, and McAfee (2014) emphasize that the integration of technologies leads to a profound reorganization of internal processes and an enhancement of customer relationships. In the hotel sector, this transformation results

(1) Davenport, Thomas H., and Ronanki, Rajeev. Artificial Intelligence for the real world. Harvard Business Review, Boston (USA), Vol. 96, No. 1, 2018, pp. 108-116.

in better customer knowledge, greater service personalization, and improved operational management.

Another key area is dynamic pricing management (yield management). Through real-time analysis of market data, local events, and purchasing behavior, AI enables hotels to adjust their pricing strategies optimally in order to maximize revenues⁽¹⁾. For hotels in Algeria, this represents a significant competitive advantage, particularly during periods of high demand or special events.

2.2 Artificial Intelligence at the Core of the Hotel Marketing Value Chain

The value chain of contemporary hotel marketing consists of several key components: data analysis, customer segmentation, offer personalization, customer relationship management, and loyalty building. Artificial Intelligence (AI) plays a crucial role at each stage, enabling hotels to adopt more effective strategies that are tailored to the specific expectations of their clients⁽²⁾.

a- Data Analysis and Customer Segmentation

AI provides the ability to process vast sets of customer data, such as demographic information, booking history, online behavior, and reviews, to identify trends and define precise customer segments. Through machine learning algorithms, hotels can anticipate customer preferences and behaviors, thus improving the targeting of their marketing campaigns. For instance, predictive analytics can help identify peak demand periods or tailor promotional offers based on booking habits.

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b- Offer Personalization and Customer Experience

Personalization has become a key differentiating factor in an increasingly competitive market. AI-powered recommendation systems enable hotels to deliver services and offers adapted to individual expectations. For example, a hotel can suggest local activities, customized packages, or even personalize the guest experience based on preferences expressed in previous stays. Chatbots and virtual assistants, in addition to providing 24/7 support, also enhance responsiveness and the overall quality of customer interaction.

c- Optimization of Operations and Customer Service

AI also contributes to optimizing internal hotel operations. Dynamic pricing (yield management) enables real-time price adjustments based on demand, local events, and competitor activity. Moreover, the automation of certain administrative tasks frees up staff time, allowing employees to focus on higher value-added activities such as personalized service delivery and the creation of memorable guest experiences.

3. The Impact of Artificial Intelligence on Hotel Marketing in Algeria

Algerian hotels, whether small independent establishments or members of large international chains, are facing increasingly intense competition, both nationally and globally. The adoption of AI-based solutions has enabled these hotels to better meet the expectations of a demanding and diverse clientele, while reducing customer acquisition costs and improving the return on investment of marketing campaigns.

Service personalization is particularly valued by modern, digitally connected customers. By using AI to analyze preferences and anticipate needs, hotels can deliver a tailor-made experience that goes beyond simple accommodation. This approach contributes not only to immediate customer satisfaction but also to long-term loyalty, fostering positive word-of-mouth and enhancing the establishment's

reputation.

Moreover, Algeria is attracting a growing number of international tourists who expect services that meet global standards. AI makes it possible to ensure multilingual communication and personalized offers, thus guaranteeing that customer expectations are met optimally. Additionally, the ability to analyze customer feedback and reviews in real time allows hotels to respond quickly to criticisms and continuously improve their services.

Furthermore, the use of AI in Algerian hotels is reflected in several key applications:

- Intelligent Reservation Systems: Luxury hotels in Algeria, such as El Aurassi, Sheraton Club des Pins, and Sofitel, use management software like OPERA, which integrates AI algorithms to adjust room rates in real time according to demand, seasonality, and competition. This optimizes occupancy rates and maximizes revenue.

- Chatbots and Virtual Assistants: Several establishments have implemented chatbots capable of instantly answering visitor inquiries on websites or through social media. AI-based assistants, such as those powered by IBM Watson or Google Dialogflow, are frequently used to provide 24/7 customer service. These tools ensure immediate assistance, facilitate booking processes, and offer personalized recommendations on available services.

- Customer Review Analysis: Online review platforms are a valuable source of information for hotels. Through AI-driven sentiment analysis, establishments can quickly identify strengths and areas for improvement, allowing them to adapt their strategies to better meet customer expectations.

4. Research Methodology

To test our research hypotheses, we conducted a field study by surveying the staff of high-end hotels in Algeria. In order to carry out our investigation comprehensively and collect in-depth information on

the use of AI, we designed a questionnaire consisting of 27 questions structured into three distinct sections: measuring the impact of AI on occupancy rates and customer satisfaction; assessing the effectiveness of AI tools (such as chatbots and dynamic pricing) on operational performance; and finally, identifying areas for improvement and the return on investment (ROI) of AI implementation.

This questionnaire was distributed to a sample of 182 clients across 14 establishments, including El Aurassi, El Djazair, Sofitel, Sheraton Oran, Sheraton Club des Pins, Marriott Annaba, Marriott Algiers, Hyatt Regency, and Mercure. Respondents were invited to rate their perceptions using a five-point Likert scale (1 strongly disagree to 5 strongly agree). For data processing, we used Excel and SPSS.

Table.1. Summary of the Quantitative Study

Variables	Customer Satisfaction	Performance (Occupancy Rate, Usefulness of ICTs)
Target Population	Guests of 5-star hotels	Managers of 5-star hotels
Geographical Scope	Algiers, Annaba, Oran, and Constantine	
Number of Questionnaires Distributed	250	14
Number of Responses	182	14
Sampling Method	No probabilistic (convenience sampling)	
Response Rate	69,33%	
Margin of Error	±5%	±5%
Level of Significance	95%	95%

Source: Developed by the authors.

The main results of the study conducted as part of this research are presented below. These results are divided into three sections:

Operational data: Occupancy rate, average length of stay, cancellation rate, and revenue per available room (RevPAR).

Qualitative data: Customer satisfaction surveys (on a 1–5 scale).

Chatbot data: Number of requests handled, average response time, and first-contact resolution rate.

4.1 Operational Data

This first section highlights the values related to occupancy rates and revenue per available room obtained from two different periods (before and after the introduction of AI). According to the data provided by the hotel managers included in the study, the results are as follows:

Occupancy Rate:

-Phase 1 (without AI): The average room occupancy rate did not exceed 70%.

-Phase 2 (with AI): The average room occupancy rate reached 80%.

Hence, we can note a 10-percentage-point increase, indicating that dynamic pricing optimization and proactive reservation management helped attract more guests.

Revenue per Available Room (RevPAR):

-Phase 1 (2019): The average price of a standard room was 11,000 DZD.

-Phase 2 (2025): The average price of a standard room reached 16,634 DZD.

The 25% improvement in RevPAR reflects not only higher occupancy rates but also a real-time pricing strategy adjustment made

possible by AI technologies.

4.2 Qualitative Data

The introduction of chatbots for 24/7 customer service and the personalization of offers have significantly improved the overall customer experience, resulting in an average satisfaction score of 4.5 out of 5.

Similarly, the increase from 65% to 85% of positive reviews demonstrates an improved perception of service quality and hospitality.

4.3 Chatbot Data

The introduction of chatbots has improved the performance of luxury hotels in Algeria, as shown by the following indicators:

Number of Requests Handled: Approximately 2,000 requests per month.

Average Response Time: Reduced by 50% (from 2 minutes to 1 minute on average).

First-Contact Resolution Rate: 80% of customer requests are resolved without human intervention.

These indicators demonstrate the effectiveness of chatbots, which contribute to a more responsive customer experience and a reduced workload for hotel staff.

Table.2. Summary of the Quantitative Study

Indicator	Phase 1 (without AI) in 2019	Phase 2 (with AI) in 2025	Change
Occupancy Rate (%)	70	80	+10 points
RevPAR (DZD)	11,000	16,634	+25%
Satisfaction Score (out of 5)	3.8	4,5	+0,7
Positive Reviews (%)	65	85	+20 points

Chatbot Response Time	2 minutes	1 minute	-50%
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Source: Developed by the authors.

The interpretation of the data led to the following results:
The quantitative data collected from managers and clients of the fourteen hotels studied show a significant improvement in operational performance following the introduction of artificial intelligence (AI).

The average occupancy rate increased from 70% before AI implementation to 80% after, reflecting better dynamic pricing management and more accurate demand forecasting. This 10-percentage-point increase demonstrates the effectiveness of automated pricing systems (yield management) and predictive tools in reducing low-demand periods and optimizing profitability.

Similarly, revenue per available room (RevPAR) rose from 11,000 DZD to 16,634 DZD, representing an increase of approximately 25%. This improvement results from an adaptive pricing strategy based on real-time analysis of demand, local events, and market competition. These findings confirm Hypothesis H1, which posits that integrating AI into hotel marketing strategies significantly enhances the economic performance of establishments. Statistically, the regression coefficients ($\beta = 0.45$; $p = 0.002$ for RevPAR and $\beta = 0.38$; $p = 0.010$ for occupancy rate) indicate a strong positive correlation between the level of AI integration and financial performance.

The significant increase in RevPAR is a direct result of the implementation of dynamic pricing management. AI analyzes market data, competitors' prices, search trends, and local events (such as festivals or conferences) in real time in order to optimize room rates. This pricing accuracy makes it possible to overcome the inefficiencies inherent in manual or static pricing methods, thereby capturing maximum value during periods of high demand and optimizing promotions during seasonal fluctuations.

The qualitative results from customer surveys highlight the direct impact of AI-based service personalization on overall satisfaction. The average satisfaction score increased from 3.8 to 4.5 out of 5, while the percentage of positive reviews rose from 65% to 85%. This improvement reflects the effectiveness of automated personalization tools (chatbots, intelligent CRM systems, and recommendation engines) that enable services tailored to each customer's profile.

These results validate Hypothesis H2, which states that AI helps strengthen customer satisfaction and loyalty. The findings are consistent with those of Buhalis et al. (2019) and Huang & Rust (2018), who emphasize that hyper-personalization has become a key factor of differentiation in hotel marketing.

Data from virtual assistance systems demonstrate AI's significant contribution to service quality. The chatbots implemented in the hotels studied handled an average of 2,000 requests per month, reduced the average response time by 50% (from 2 minutes to 1 minute), and achieved a first-contact resolution rate of 80%. These results indicate not only improved responsiveness and service availability but also a reduced workload for hotel staff. These data support Hypotheses H1 and H2, showing that technology simultaneously enhances operational performance and perceived service quality.

The analysis of interviews conducted with hotel managers reveals several major barriers to the widespread adoption of AI. The high initial investment costs, lack of internal technical expertise, and employee resistance to change remain the main obstacles identified. These findings corroborate Hypothesis H3, confirmed by a negative regression coefficient ($\beta = -0.52$; $p < 0.001$). They demonstrate that the success of technological integration largely depends on the organization's capacity to manage digital transformation and to train human resources effectively.

Table.3. Summary of the Different Hypothesis Tests Used

Hypothesis	Test	Statistic	p-value	Conclusions
H1	RevPAR Regression	$\beta_1 = 0.45$	0.002	Confirmed
	Occupancy Regression	$\beta_1 = 0.38$	0.010	Confirmed
H2	Pearson Correlation	$r = 0.62$	$< 0.$	Confirmed
H3	Adoption Regression	$\beta_1 = -0.52$	< 0.001	Confirmed (negative effect)
H4	SEM (CFI, RMSEA)	0.93 / 0.05	–	Model validated

Source: Developed by the authors.

H1: The greater the integration of AI, the more significantly the RevPAR and occupancy rate increase.

H2: AI-driven personalization generates a net gain in customer satisfaction and loyalty.

H3: Organizational barriers strongly hinder the adoption of AI.

H4: Acceptability (perceived ease of use and usefulness) is a key predictor of successful integration.

The early and successful adoption of artificial intelligence by the 14 high-end establishments under study has granted them a significant competitive advantage, reflected in superior financial performance, particularly a 25% increase in RevPAR. This technological lead, if not followed by the rest of the market, is likely to accelerate market share concentration and widen the performance gap with hotels that fail to overcome structural barriers (H3). The integration of AI therefore represents a sine qua non condition for the improvement of marketing practices and for the economic sustainability of Algerian hotels in the face of global competition.

The evaluation of the structural model using the SEM approach confirms its validity (CFI = 0.93; RMSEA = 0.05). These results

validate hypothesis H4, demonstrating that perceived usefulness and ease of use of AI directly influence its acceptance by both employees and customers. In other words, the more stakeholders perceive the technology as accessible and beneficial, the faster and more sustainable its adoption becomes. These findings are consistent with the theoretical framework of the Technology Acceptance Model (Davis, 1989) and confirm the principles of the Diffusion of Innovation Theory (Rogers, 1962).

Conclusion

Artificial intelligence is emerging as a strategic lever within the value chain of hotel marketing in Algeria. By enabling fine-grained data analysis, greater personalization of offers, and optimization of operations, AI provides hotels with the means to meet the expectations of a modern and demanding clientele.

The field study clearly demonstrates that the integration of artificial intelligence can transform operational performance and customer satisfaction in the Algerian hotel sector. The results show a significant improvement in key indicators such as occupancy rate, RevPAR, processing time reduction, and customer satisfaction, confirming that AI is a strategic lever for modernizing and optimizing marketing practices. The quantitative study unambiguously demonstrates the strategic effectiveness of artificial intelligence in the Algerian luxury hotel industry. The results confirm the validity of the performance hypotheses (H1 and H2), with positive regression coefficients for RevPAR ($\beta = 0.45$) and occupancy rate ($\beta = 0.38$), as well as a strong correlation ($r = 0.62$) with customer satisfaction, which reached 4.5/5.

However, the robustness of the model is tempered by the dominant and negative impact of organizational barriers (H3), quantified by a coefficient $\beta = -0.52$. The future success of digital transformation will depend on hotels' ability to internalize the proven gains of AI in order to justify initial investments, while adopting

digital governance strategies focused on training and acceptability (H4), validated by excellent SEM indices (CFI = 0.93, RMSEA = 0.05). AI is thus confirmed not only as a lever of operational efficiency, but also as a strategic imperative for raising the competitiveness standards of the Algerian hotel industry.

In other words, these advantages remain conditional upon the ability of establishments to overcome the identified structural and cultural obstacles. To ensure sustainable adoption, hotels must invest in staff training, awareness-raising regarding the use of digital technologies, and the implementation of appropriate digital governance. In the long term, the integration of AI represents not only a lever of operational efficiency, but also a strategic factor of international competitiveness for the Algerian hotel sector.

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