

Enhancing Guest Experience through Augmented Reality and Architectural Design: Global insights and Their Potential for Algeria's Hospitality Sector

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Received: 15/11/2024

Accepted: 13/01/2025

Published: 20/01/2025

Abstract:

This paper explores how integrating architectural design and augmented reality (AR) technology can enhance guest experiences in hotels, with a particular focus on potential applications in emerging markets like Algeria. The main objective is to investigate how AR-driven innovations can transform hospitality practices and elevate customer experience. The study adopts a qualitative approach by analyzing selected international hotel case studies, evaluating architectural design strategies, and reviewing documented AR implementations. Key findings show that AR integration can significantly improve hotel services—offering virtual room tours, interactive dining experiences, and on-the-spot access to local attractions—which together strengthen operational efficiency and enrich guests' stays. Through the identification critical design considerations and technological enablers, the paper outlines how Algerian hotels could leverage AR to align with modern hospitality trends. Consequently, hotels that merge thoughtful architectural planning with AR technologies can offer a multifaceted and engaging environment, delivering immersive experiences that resonate with diverse customer segments while boosting overall market competitiveness.

Keywords : Guest Experience, Architectural Design, Augmented Reality (AR), Hospitality Industry.

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I- Introduction:

In the competitive landscape of the hospitality industry, hotels constantly seek innovative strategies to distinguish themselves and enhance the guest experience. One promising approach combines the aesthetic and functional aspects of architectural design with the immersive potential of augmented reality (AR). This integration not only creates visually stunning and user-friendly environments but also introduces interactive, high-tech features that captivate and engage guests. The fusion of architectural design and AR offers hotels a unique opportunity to transform traditional hospitality experiences through carefully planned physical spaces that harmonize with digital enhancements. By providing personalized and memorable interactions, such as AR-enabled room service, virtual concierge services, interactive art tours, and smart room controls, hotels can add layers of convenience, entertainment, and sophistication to their offerings.

This study addresses a key question: How can integrating architectural design and AR enhance the overall guest experience in hotels? To explore this, the research will examine specific architectural features that can be designed to optimize the use of AR in hotels, review case studies of successful implementations of AR and architectural design integration in international hotels, and assess the potential to enrich the guest experience in Algerian hotels with unique architectural characteristics. The objectives of this study include analyzing how the combination of architectural design and AR can elevate the guest experience, identifying architectural elements that can be optimized for AR applications, and providing evidence from international case studies on successful AR integrations in hotel environments.

The integration of architectural design and AR is of significant importance for the hotel industry, especially in emerging markets like Algeria, where such innovations can create competitive advantages. By adopting these technologies, Algerian hotels have the potential to offer unique, high-tech experiences that attract both local and international tourists, thereby enhancing their competitiveness. Additionally, this approach could position Algeria as a modern and appealing destination, boosting tourism and ultimately driving economic growth. Enhanced guest satisfaction and memorable experiences may also lead to repeat visits and increased revenue through higher occupancy rates, premium pricing, and AR-enabled services.

To achieve these objectives, a qualitative analysis will be conducted, focusing on selected case studies of international hotels that have successfully integrated AR technology within their architectural design. Data for the study was collected from various sources, including hotel websites, reports, and academic journals. Through an analysis of common themes, benefits, and challenges associated with AR in hospitality, the findings will be contextualized to explore their implications for the hotel industry, with a particular emphasis on potential applications in Algeria.

1. The theoretical framework of the study.

1.1. Augmented reality (AR) in hospitality.

In 1990, Boeing researcher Thomas Caudell introduced the concept of AR to aid aircraft workers in assembling wiring for the 777 jetliner, offering a more cost-effective alternative to traditional diagrams and marking tools. AR has become increasingly popular in recent years, thanks to advancements in sensors, optics, computer vision, image and audio processing, and computing technology (Shabani et al., 2019, p. 44).

AR is a technology that connects the digital and physical worlds, creating an interactive blend of both (Turki, 2022, p. 956). It is a term to describe a “practice of layering people’s reality of objects, people, or spaces in physical world with digital information display”. (Widita et al., 2021, p. 2). It is also defined as “the overlay of computerised information in the real environment.” (Han et al., 2018, p. 4)

The most comprehensive and widely adopted definition of AR describes it as "a technology that allows the superimposition of synthetic images over real images, providing augmented knowledge about the environment in the user’s vicinity, which makes the task more pleasant and effective for the user." (Wei, 2019, p. 540). AR systems possess the following key characteristics (Nayyar et al., 2018, p. 157):

Integration of Real and Virtual Elements: AR combines real-world environments with virtual objects, seamlessly blending the two;

Synchronization: AR ensures that real and virtual objects are synchronized with each other, maintaining a cohesive experience;

Interactivity and Real-Time 3D Operation: AR is highly interactive and operates in real time, providing a dynamic 3D experience.

AR has become a key technological advancement in the hospitality and tourism industry, offering numerous opportunities. Companies like Disney, Emirates, and Virgin use AR for "try before you buy" experiences, while hotels such as Hyatt and Marriott leverage it to shape tourist behavior. AR enhances the entire tourist journey, starting from trip planning, by providing location-based information on destinations. Tourists can preview hotels, access information, navigate locations, and explore attractions using their mobile devices, enriching their overall experience (Lim et al., 2024, p. 2).

The use of AR in the hospitality industry, particularly in hotels, has been explored in several studies. (Bernardos et al., 2018) highlight the potential of mobile AR in creating innovative services that enhance the traveler's experience. (Demir & Karaarslan, 2018) and (Brito, 2015) further support this, with Demir developing a prototype AR application for smart tourism and Brito identifying the benefits of AR in tourism mobile applications. These studies collectively underscore the potential of AR in transforming the hotel experience, from providing information about tourist attractions to enhancing on-site experiences.

The hospitality and tourism sectors are increasingly adopting augmented reality (AR) technologies, which, though still evolving, are gaining mainstream recognition for their potential. As AR matures, early adopters, especially in the hotel industry, are exploring its various applications. The following analysis highlights key current uses of AR in hotels and the opportunities these technologies offer as they continue to develop. (Nayyar et al., 2018, pp. 159–160):

Figure (1): An example of Augmented Reality in a restaurant



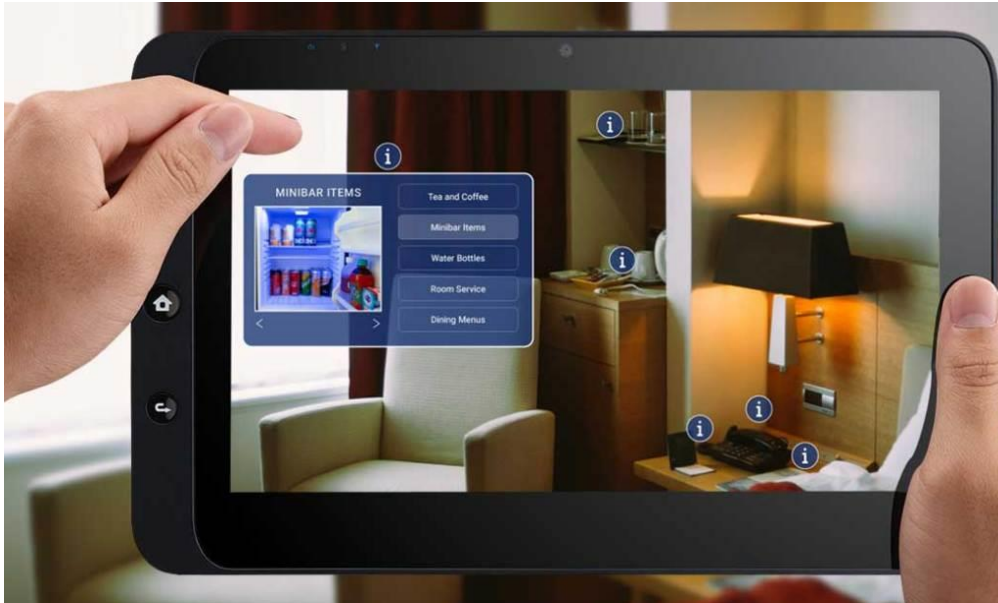
Source: (Sam, 2021)

- **Interactive Dining Experience:** AR technology enhances the dining experience by allowing guests to take virtual tours of restaurants, view seating arrangements, and explore menus interactively. It provides features like mobile access to virtual menus, coupons, and advance reservations, enabling guests to personalize their dining experience and make reservations before arrival, ensuring a seamless and tailored experience.

The previous figure (1) showcases AR technology in dining, where a smartphone scans a plate of food to display detailed nutritional information, such as calories, protein, and vitamins. This enhances the dining experience by allowing hotel guests or diners to make informed dietary choices, particularly benefiting those with specific dietary needs or health concerns. AR integration adds interactivity and promotes healthier eating habits through easily accessible nutritional data.

- **Convenient Translation Capabilities:** AR technology can help non-local travelers overcome language barriers by providing real-time translations. This improves their overall experience and understanding of the environment. A tourist in a foreign country can use an AR app to translate menus, signs, and other important information instantly, making their stay more comfortable and enjoyable.
- **Real-Time and Reliable Navigation:** AR enhances navigation by adding digital elements like arrows and helpful information to maps. This simplifies directions and ensures safe and easy travel within the hotel and surrounding areas. For example: Guests arriving at a large resort can use an AR-enabled map on their smartphone to navigate from their room to the pool, restaurants, and other amenities without getting lost.
- **Booking Rooms:** AR technology allows potential guests to virtually tour rooms before booking. They can check the size, floor plans, and amenities, helping them make informed decisions. For instance, a traveler can use an AR app to virtually walk through different room options, view the layout and amenities, and then book the room that best fits their needs (figure 2).

Figure (2): An example of AR before booking.

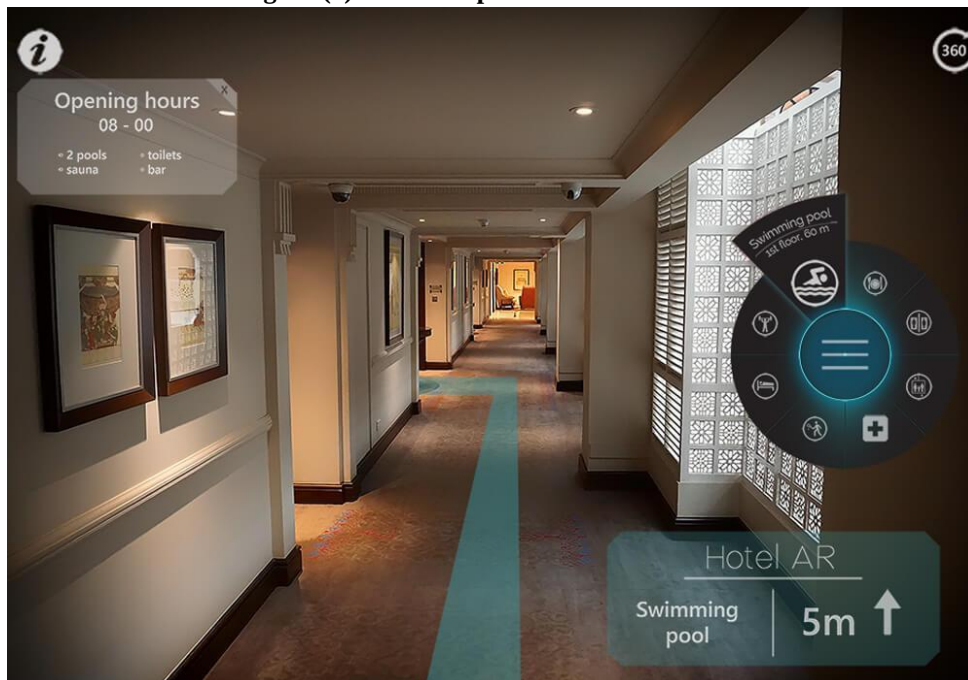


Source: (*How Augmented Reality Can Transform Hospitality 2022, 2022*)

AR allows clients to virtually explore hotel rooms in a way that mimics an in-person visit, offering a 360-degree view of the space and its amenities. Previously, businesses relied on photos, videos, and text descriptions to showcase their features. With AR, clients gain extra confidence in their booking decisions through a more immersive, interactive experience.

- **Exploring the Property:** Instead of relying on website images and brochures, visitors can virtually explore the hotel's facilities, such as restaurants, spas, and fitness centers. For instance, an eco-friendly hotel may offer a virtual tour of its rooftop herb garden or showcase its green building materials, providing an engaging experience that enhances customer loyalty.

Figure (3): An example of AR inside a Hotel



Source: (Pavlov, 2022)

Figure (3) depicts a hotel hallway enhanced with AR technology. Guests use a smartphone or AR device to access interactive features, including virtual navigation guiding them to

destinations like the swimming pool, and an information overlay displaying details such as facility hours and amenities. An interactive AR menu provides quick access to additional information, enhancing the guest experience with easy-to-navigate, real-time data.

- **Luxurious Restaurant Experience:** AR can be integrated into restaurant menus, allowing guests to view them in their language and visualize dishes in 3D. For example, at a luxury hotel, guests can use an AR app to see realistic projections of menu items on their table, helping them decide what to order.
- **Local Attractions:** AR technology can highlight a hotel's proximity to nearby attractions by offering virtual tours of historical landmarks and cultural sites. This enhances the guest's travel experience by showcasing local experiences and sightseeing opportunities.

Figure (4): An example of AR showing local surroundings and facilities



Source: (Pavlov, 2022)

The previous image demonstrates the use of AR on a smartphone to provide detailed information about local attractions and facilities. As a person views their surroundings through the phone's camera, AR overlays real-time data about nearby amenities such as ATMs, pizzerias, hotels, grocery stores, and parking locations. Each point of interest is labeled with relevant details such as distance, ratings, and special features.

- **Marketing:** AR technology can enhance guest satisfaction through effective marketing strategies, such as interactive billboards and informative apps. As an example, hotels can place AR-enabled billboards at airports or high-traffic areas that, when scanned with a smartphone, provide detailed information about the hotel's amenities, special offers, and booking options.
- **Hotel Management:** Finally, AR also benefits business operations and staff training by creating blueprints and real-feel environments for skill enhancement. For instance, hotel managers can use AR to visualize renovations or new constructions, while employees can undergo interactive training sessions to improve their guest interaction skills.

While AR technology is still emerging in the hotel industry, its potential to transform guest experiences and operational efficiencies is vast. As these technologies continue to develop,

they are expected to have a substantial impact on the hospitality sector, enhancing customer satisfaction and driving innovation.

1.1. Combining Architectural Design and Augmented Reality to enhance Guests' Experience

Customer experience can be defined as the internal and subjective response that arises from any direct or indirect interaction with a company's products, services, or brands (Fradi, 2020, p. 459). In marketing research, the concept of experience is understood to occur at various stages, including when consumers search for, shop for, receive, and ultimately consume a product or service. It has been associated with multiple domains, such as product, shopping and service experience, as well as the overall consumption experience (Gouacem & Attallah, 2021, p. 294).

The design of a hotel is critical to its success and competitiveness in the market. This multifaceted task involves building architecture, interior design, and landscaping, which together create a cohesive and attractive image that aligns with the hotel's overall concept. Key factors to consider in hotel design include location, capacity, type and class, and priority areas of activity. Effective design integrates various functional areas to avoid operational issues while creating cozy and attractive interiors and memorable facades. The hotel should also provide diverse services such as recreation, conference facilities, business meeting spaces, and areas for public events, sports, and communication. Developing a unique concept with appealing interior and exterior layouts is essential for attracting attention and ensuring the hotel's success in a competitive market (Zhuravlova et al., 2023, p. 177).

Recent research in hotel architectural design has explored various themes and concepts. (Mbuu & Ora, 2021) focused on a 3-star resort hotel in Raterua Village, in Indonesia using a post-modern architectural theme to create a nature-related tourism experience. (Zhuravlova et al., 2023) emphasized the importance of efficient design, and high-quality infrastructure in business hotel design. (Tampubolon, 2023) highlighted the integration of local Balinese architectural elements in a resort hotel on South Nusa Dua Beach, Bali, using the Neo Vernacular¹ Architecture theme. (Puspitasari & Anisa, 2024) discussed the application of the industrial architecture² concept in The Amartya Hotel, Yogyakarta, in Indonesia focusing on the basic form, materials, color, and exposure to utilities. These studies collectively underscore the significance of design themes, local elements, and functional considerations in hotel architectural design.

¹Neo-Vernacular Architecture is a modern style that revives traditional vernacular architecture by using local materials and techniques suited to regional climates and cultural needs. It blends traditional methods with contemporary approaches. The style focuses on sustainability, regional identity, and culture, using locally sourced materials and passive design strategies to reduce energy consumption. Influential architects like Hassan Fathy, Geoffrey Bawa, and Charles Correa have played a key role in promoting these principles. (Neo-Vernacular, 2023).

² Industrial Architecture is a design style characterized by its emphasis on functionality and simplicity, reflecting the utilitarian nature of industrial spaces. It features wide-open spaces with open floor plans and high ceilings, providing flexible and expansive areas. The aesthetic is minimalist, prioritizing functionality with clean lines and a lack of decorative elements. (Industrial Architecture: 4 Characteristics of Industrial Architecture, 2021)

Advancements in hotel technology are swiftly evolving, and at the forefront of this revolution is AR. With the ability to overlay computer-generated images onto our physical world, AR provides a massive upgrade in how hotels engage with their guests and streamline their day-to-day operations. The use of AR is projected to expand significantly in the hospitality sector, with an anticipated growth rate of 34.2% from 2022 to 2028. We're already witnessing groundbreaking AR models being used in many aspects of the hotel industry. As AR continues to evolve, it promises to become a key element in hospitality (*How Augmented Reality Is Changing the Hotel Industry*, 2022; Lim et al., 2024)

The hospitality industry is continuously evolving, seeking innovative ways to enhance the guest experience. One groundbreaking approach is the integration of architectural design with AR technology. This fusion not only addresses the needs of all guests, including those with disabilities, but also creates immersive, interactive environments that elevate the overall experience. Integrating AR into the hotel design process, enables architects and engineers to create more inclusive and accommodating environments. Below, we discuss how AR can be integrated into architectural design to transform the hotel experience:

- **Enhancing Accessibility and Navigation:** This can be achieved via interactive floor plans and customized room previews.
 - **Interactive Floor Plans:** AR can be used to create interactive floor plans that guests can access via their smartphones or AR glasses. These floor plans can provide real-time directions, highlight accessible routes, and offer information about amenities and services. This feature helps guests, especially those with disabilities, navigate the hotel more easily and confidently.
 - **Customized Room Previews:** Before booking, guests can use AR to take virtual tours of different room types. This allows them to see the layout, size, and amenities of each room, ensuring they choose the best option for their needs. Guests can make informed decisions and have realistic expectations, leading to higher satisfaction.
- **Enhancing Functional Layouts:**
 - **Visualizing Design Changes:** During the design phase, architects can use AR to overlay proposed changes onto the existing environment. This helps in visualizing how structural elements like columns, walls, and partitions will affect the functional layout. Thus, designers can identify and resolve potential issues early, ensuring that the final design is both functional and aesthetically pleasing.
 - **Real-Time Space Planning:** AR can simulate different configurations of furniture and decor within a space. By visualizing these elements in real-time, designers can optimize the layout for both accessibility and visual appeal. This leads to more efficient use of space and enhances the overall guest experience.
- **Enhancing Sensory and Interactive Experiences:** Through:
 - **Immersive Dining Experiences:** Restaurants within the hotel can use AR to offer virtual menus that guests can interact with. Guests can see 3D images of dishes, read detailed descriptions, and even watch short videos of how the food is prepared. This interactive dining experience enhances guest engagement and makes meal selection more enjoyable.

- **Virtual Concierge Services:** AR-enabled virtual concierge services can provide guests with information about hotel amenities, local attractions, and events. Guests can simply point their devices at various locations within the hotel to receive detailed information. This service offers a personalized touch and ensures guests have all the information they need at their fingertips.

- **Addressing Structural and Functional Challenges:**

- **Enhancing Safety and Accessibility:** AR can highlight potential obstacles and barriers in real-time, guiding guests safely through the hotel. For example, AR can indicate the location of ramps, elevators, and accessible restrooms. This ensures that all guests, including those with disabilities, can navigate the hotel safely and comfortably.
- **Augmenting Aesthetic Appeal:** AR can be used to project digital art and interactive displays onto walls and other surfaces within the hotel. These projections can change based on the time of day, events, or seasons, creating a dynamic environment. This not only enhances the visual appeal of the hotel but also provides guests with a unique and memorable experience.

Integrating architectural design with AR technology offers numerous opportunities to elevate the guest experience in hotels. From enhancing accessibility and navigation to creating immersive and interactive environments, AR can transform the way guests interact with and perceive their surroundings. Embracing this innovative approach, allows hotels to set new standards in hospitality, ensuring that every guest's stay is both enjoyable and unforgettable.

2.The experimental framework for the study: International Case studies of integrating Architectural Design and AR in hotels

The integration of Augmented Reality (AR) in the hospitality industry represents a significant innovation aimed at enhancing guest experiences. By overlaying digital content onto the physical world, AR enriches real-world environments with interactive, immersive elements, catering to tech-savvy travelers and setting new standards for convenience and engagement within hotels. AR's use in architectural design adds sophistication and functionality, enabling enhanced navigation, interactive room features, and real-time access to amenities and local attractions. This fusion not only boosts a hotel's aesthetic appeal but also improves operational efficiency and guest satisfaction. Several pioneering hotels worldwide have adopted AR to provide guests with unique and memorable experiences. The following case studies illustrate how leading hotels are leveraging AR technology and architectural design to transform the guest experience, setting themselves apart in a competitive market.

2.1. HÔTEL DES ARTS SAIGON MGallery- Vietnam

Hotel des Arts Saigon in Vietnam has redefined the guest experience with its innovative luxury hotel app that incorporates AR. This AR app provides guests with a 3D interactive journey through the hotel's facilities and surrounding attractions. Below we discuss some of the AR features available at Hotel des Arts Saigon (*Hôtel Des Arts Saigon Redefines Reality with New Luxury Hotel App*, 2023):

- **3D Interactive Tours:** The 3D interactive tours provided by the AR app allow guests to virtually explore the architectural layout and interior design of the hotel. This feature highlights the hotel's design elements, such as room layouts, furniture placement, and

overall aesthetic, offering a virtual walkthrough that showcases the hotel's architecture and design before guests physically experience it.

- **Virtual Concierge:** The virtual concierge service enhances the functional design of the hotel by providing detailed information about the architectural features and amenities. For instance, guests can use AR to navigate the hotel's layout, including finding specific rooms, restaurants, or facilities, which is particularly useful in a well-designed, complex architectural space.
- **Enhanced Guest Services:** By integrating AR with in-room features like the mini-bar or room service menu, the hotel's design is augmented to offer a seamless and interactive experience. This interaction between AR and the physical space enhances the functionality of the room's design, making it more user-friendly and engaging.

Figure (5): Art paintings exhibited using AR in Hôtel Des Arts Saigon



Source: (*Hôtel Des Arts Saigon Redefines Reality with New Luxury Hotel App*, 2023)

- **Immersive Local Experiences:** The AR app's feature of overlaying information about local attractions helps guests appreciate the hotel's strategic location within Saigon's architectural landscape. The app provides context and historical insights into nearby cultural landmarks, thereby enriching the guests' understanding and appreciation of the surrounding architecture and urban design.
- **Augmented Art and Culture:** The integration of AR with art and cultural elements within the hotel allows for a dynamic interaction with the physical space. Virtual art exhibitions and cultural stories are overlaid onto the hotel's architecture, turning walls and public spaces into interactive displays. This fusion of digital and physical design elements enhances the cultural and aesthetic appeal of the hotel's architecture.

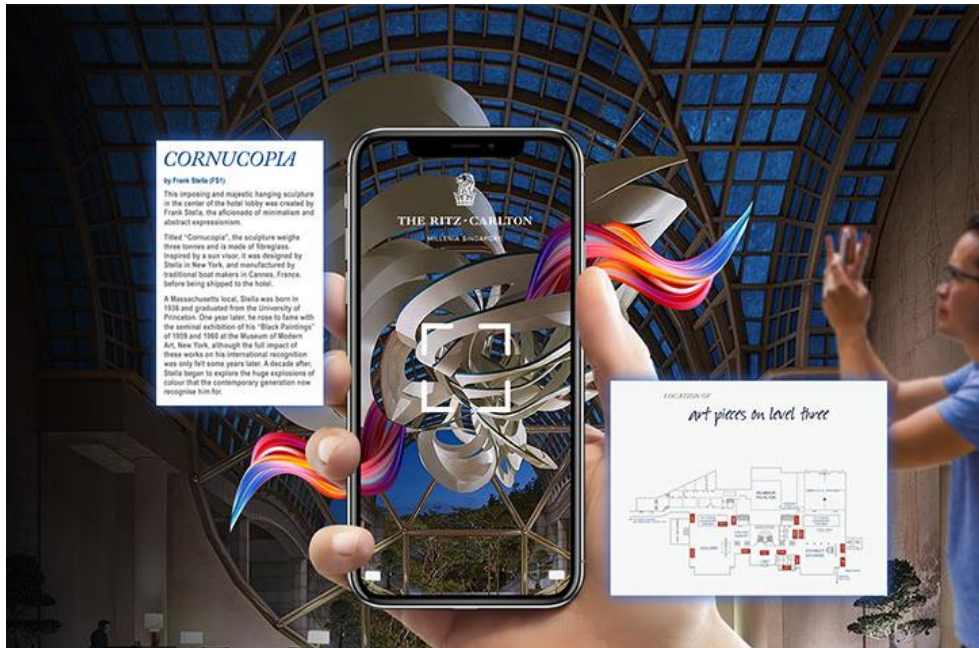
2.2. The RITZ-CARLTON, Millenia Singapore

The Ritz-Carlton, Millenia Singapore has pioneered the first-ever AR hotel art tour, creating an immersive experience that blends technology with its extensive art collection. This AR tour features interactive experiences with artworks by renowned artists such as Frank Stella, Dale Chihuly, and Andy Warhol. By using AR, guests can see computer-generated graphics and hear sounds that bring the art pieces to life, offering a dynamic way to appreciate the hotel's curated collection.

- **Enhanced Art Experience:** The AR tour seamlessly integrates with the hotel's architectural spaces, showcasing art pieces in their intended locations. This enhances the

guest experience by allowing them to engage with the artworks in the context of the hotel's design.

Figure (6): “Cornucopia “ by Frank Stella visualized via AR



Source: *(The Ritz-Carlton, Millenia Singapore Launches the First Ever Augmented Reality Hotel Art Tour, 2021)*

- **Interactive Elements:** The AR features add an interactive layer to the hotel's architecture, inviting guests to explore and interact with the environment in a novel way. This integration turns static spaces into dynamic experiences.
- **Cultural Enrichment:** By combining AR with the architectural design, the hotel offers a cultural enrichment that enhances the aesthetic appeal of its spaces. Guests can gain deeper insights into the art pieces and the architectural intent behind their placement.

2.3. Marriott Hotels

Marriott Hotels has integrated AR technology to enhance guest experiences in several innovative ways:

- **AR Room Service Menus:** Guests can use AR on their smartphones to view and order room service, seeing detailed images and descriptions of menu items. This technology, implemented in locations like New York and London, allows guests to make informed choices without physical menus.
- **Virtual Concierge Services:** Marriott offers AR concierge services, providing real-time information about hotel amenities, services, and local attractions. For example, at the JW Marriott Anaheim Resort, guests can access information about Disneyland, nearby dining, and entertainment.
- **Interactive Art and Cultural Experiences:** Marriott has utilized AR to create immersive art experiences within their hotels. This includes virtual art tours where guests can interact with and learn about the art pieces displayed throughout the hotel.

Figure (7): AR display in Moxy Hotels restaurant - Hong Kong-



Source: (Koumelis, 2022)

- **Enhanced Check-In and Navigation:** AR technology facilitates a smoother check-in process and helps guests navigate large hotel properties by providing digital overlays of directions and information. Moxy Hotels, part of Marriott Bonvoy, have implemented the "Moxy Universe, Play Beyond" campaign in the Asia Pacific region, where guests can use AR to interact with digital characters and elements throughout the hotel's public spaces, enhancing the playful and engaging atmosphere

3. Potential AR hospitality Application in Algeria

Integrating AR technology in hotels with notable architectural design can significantly enhance their appeal and guest experience. Below, a suggestion of some distinguished local hotels in Algeria known for their architectural uniqueness and how they can benefit from AR integration:

Table (1): Suggested AR Applications in some Hotels in Algeria

Hotel	Overview	Architectural Features	Potential AR Applications
Royal Hotel Oran - MGallery by Sofitel	Located in Oran, this hotel is renowned for its luxurious design that blends classical and contemporary styles	The hotel features elegant interiors, intricate detailing, and a harmonious blend of modern amenities with historical charm	• Virtual historical tours highlighting the hotel's architecture and history. • Interactive art displays and cultural stories integrated into the physical space. • Real-time navigation aids to help guests explore the hotel's amenities.
El Aurassi Hotel, Algiers	This iconic hotel in Algiers is known for its modernist	Spacious, elegant rooms with floor-to-ceiling windows, and	• AR-enhanced virtual tours of the hotel's facilities and rooms. • Interactive guides for local

	architectural design and panoramic views of the city	expansive public areas showcasing contemporary design	attractions and historical sites in Algiers. •AR event planning tools for conferences and banquets
La Gazelle d'Or, El Oued	A luxury oasis in the Sahara Desert, La Gazelle d'Or is known for its stunning architecture that reflects traditional Saharan styles.	The hotel features traditional adobe structures, lush gardens, and intricately designed interiors that blend with the desert landscape	•AR-guided tours of the hotel and its unique architectural elements. •Virtual concierge services offering detailed information about desert excursions and local culture. •Interactive dining experiences with virtual menus showcasing traditional dishes.
Le Méridien Oran Hotel & Convention Centre	This hotel is a prime example of modern luxury and architectural sophistication in Oran.	The design includes contemporary elements, state-of-the-art facilities, and expansive conference spaces.	•Interactive AR guides for conference attendees to navigate the convention center. •Virtual tours of the hotel's amenities and rooms. •AR art tours featuring the hotel's contemporary art collection.

Source: Elaborated by the authors

Leveraging AR technology, helps these architecturally distinguished hotels in Algeria to offer unique and engaging experiences that enhance their appeal and set them apart in the competitive hospitality market.

Conclusion

The integration of AR in hotel design offers a multifaceted approach to enhancing guest experiences. AR technology allows hotels to provide interactive and immersive services that cater to the needs of modern travelers. By overlaying digital information onto physical environments, AR enhances both the functional and aesthetic aspects of hotel design. This not only improves operational efficiency but also creates memorable and engaging experiences for guests. The case studies from Hotel des Arts Saigon, The Ritz-Carlton Millenia Singapore, and various Marriott properties demonstrate the diverse applications of AR, from virtual art tours to interactive room service menus.

Managerial implications and recommendations:

▪ Managerial implications:

- **Enhanced Customer Engagement:** AR can significantly improve customer engagement by providing interactive and personalized experiences. For example, virtual concierge services and interactive dining menus can cater to individual guest preferences, leading to higher satisfaction and loyalty.

- **Operational Efficiency:** AR technology can streamline various operational processes, such as navigation within the hotel, room service orders, and concierge services. This can reduce the workload for staff and improve overall service delivery.
- **Marketing and Competitive Advantage:** Implementing AR can differentiate a hotel in a competitive market. AR-enabled features can be a unique selling point that attracts tech-savvy travelers and sets the hotel apart from competitors.
- **Application in Algeria:** For hotels in Algeria, adopting AR technology can enhance their appeal to both local and international tourists. AR can help showcase the unique cultural and historical aspects of Algerian destinations, providing guests with immersive experiences that promote the country as a modern and attractive tourist destination. Additionally, AR can support the training and development of hotel staff, improving service quality and operational standards.
- **Recommendations:**

The following recommendations aim to provide tangible, market-relevant strategies that Algerian hospitality stakeholders can adopt, guiding them from small-scale AR pilots to broader, integrated digital transformations:

- Select high-visibility hotels (e.g., in major urban centers or key tourist destinations such as the Algerian hotels mentioned earlier) to pilot AR functionalities—such as interactive hotel navigation and room previews—to demonstrate feasibility and gauge guest receptiveness in an Algerian context;
- Form partnerships between hotels and local AR/VR startups or university research labs to develop cost-effective, customized AR solutions. This supports the local tech ecosystem and ensures that AR applications are culturally relevant and user-friendly;
- Use AR overlays to highlight Algeria’s rich heritage, cuisine, and architectural history within hotel environments (e.g., virtual art exhibits featuring local artists or digital storytelling of regional traditions), thus offering guests a unique and memorable cultural experience;
- Integrate Arabic, French, and English language options within AR applications to accommodate diverse guest profiles and mitigate language barriers, improving overall accessibility and user satisfaction;
- Develop AR-based staff training modules to improve service quality, familiarize employees with the hotel layout, and streamline operations such as room service or maintenance. This ensures seamless back-of-house integration and heightens guest-facing service standards;
- Use AR to promote eco-friendly initiatives—for instance, interactive info overlays that guide guests on energy-saving tips or highlight the hotel’s environmental conservation efforts—reinforcing sustainability and positive brand image.

Limitations and future directions

The current study has certain limitations. The analysis is primarily based on case studies from international hotels, and it lacks direct empirical data from the Algerian context, which may affect the applicability of findings. Furthermore, the fast-evolving nature of AR technology means that some applications discussed might quickly become outdated or require further adaptation to fit specific cultural and operational contexts within Algeria.

Future research could address these limitations by conducting empirical studies within Algerian hotels to evaluate AR's practical impact on guest experience and business performance. Additionally, further exploration of AR's potential in other areas of tourism and hospitality, such as eco-tourism or historical tourism, would provide a more comprehensive understanding of AR's benefits in diverse settings. Embracing these prospects will allow Algerian hotels to not only improve guest satisfaction but also foster innovation in the regional hospitality sector, contributing to long-term growth and competitiveness.

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El Aurassi Hotel, Algiers



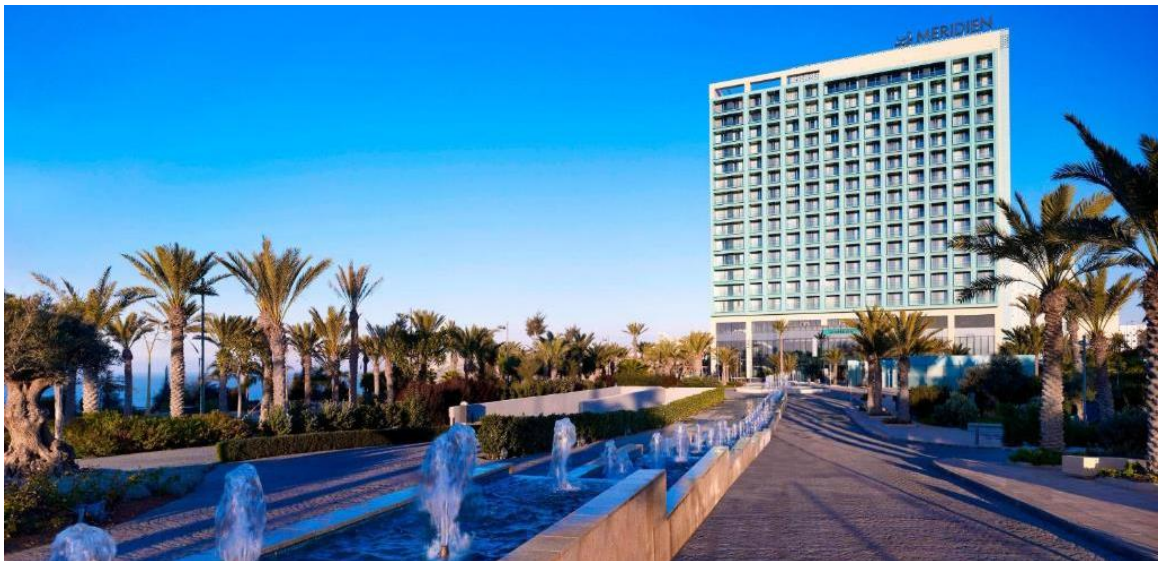
Source : elaurassi.dz

La Gazelle d'Or, El Oued



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Le Méridien Oran Hotel & Convention Centre



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