



TRAVEL AND TOURISM

AI-First Hotels: Faster to Build, Leaner to Operate, and Richer in Customer Experience

By [Suresh Subudhi](#), [Tom McCaleb](#), [Adam Goldberg](#), [Oliver Bonke](#), and [Rashmitha Vasa](#)

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This article was produced in collaboration with New York University and the following hospitality and AI experts: Vanja Bogicevic, Nicolas Graf, Jukka Laitamaki, Riita Katila, and Jerome Barthelemy.

The hotels of tomorrow won't be discovered through ad-heavy doomscrolling on online travel agencies (OTAs). Instead, they'll be found instantly by AI-based digital assistants. Travelers won't spend hours researching "best hotels in Miami." They'll simply say, "Book me the perfect trip." In seconds, they will receive an itinerary, room, and personalized experience.

These hotels will be designed in days, assisted by AI architects. They'll be built in months by robots using modular systems and 3D printing to speed and streamline the process. Their blueprints will be fluid, with common spaces, event areas, and private rooms reconfigured as customer needs evolve.

Sounds like science fiction but, as AI takes hold in hospitality, these scenarios are well within reach. Even in AI's earliest applications, some hotel companies are already realizing benefits, including cost savings, revenue growth, and improvements in customer experience, talent management, and productivity. The window for catching up won't stay open long. Hotel leaders must ask themselves: Are we embracing the technologies that will soon disrupt our industry? Or are we about to be left behind?

Companies that move away from incremental fixes and rework the core of their operations will become AI-first hotels: faster to grow, leaner to operate, and richer in customer and employee experience.

The report that follows, written in collaboration with hospitality and AI experts from New York University (NYU) and elsewhere, highlights three significant AI-driven innovations that can enable hotel companies to move beyond table-stakes technology into the AI-first era.

AI Is Already Paying Off

In BCG's 2025 global pan-industry analysis of AI adoption, fewer than 10% of hospitality companies surveyed could be called "future built," defined as having cutting edge AI capabilities and generating substantial value from it. Twenty-five percent of hospitality firms fell into the "AI-scaling" category, meaning that they have an AI strategy that is starting to produce real returns across multiple organizational activities.

Specifically, AI-scaling companies are using AI to upgrade processes and operations in the following critical areas (see Exhibit 1):

- **Marketing, Revenue, and Commercial Growth.** Boosting property visibility and delivering hyper-targeted offerings; improving demand forecasting and enabling real-time dynamic pricing.
- **Enhanced Guest Experience and Engagement.** Using chatbots and digital concierges to elevate on-property interactions and services.
- **Property Efficiency and Productivity.** Optimizing staffing, procurement, inventory, and maintenance.

EXHIBIT 1

AI Is Improving ROI and Performance Across Hotel Operations and Services

Value chain	Marketing, Revenue, & Commercial Growth	Enhanced Guest Experience & Engagement	Property Efficiency & Productivity	Risk, Safety, & Resilience	Asset & Portfolio Optimization
Priority AI use cases	Marketing & trip planning Boost visibility and guide discovery and choices with tailored digital presence	Seamless arrival & journeys Contactless check-in and frictionless movement	Automation & workforce augmentation Automate tasks and support staff with AI	Predictive risk management Anticipate and mitigate emerging threats	Identification, planning & development Smarter siting, design, and construction
	Loyalty & engagement Embed personalized offers and rewards throughout guest journey to drive repeat business	On-property experience & services Smart rooms, enhanced food and beverage services, and tailored amenities	Resource & cost optimization Optimize inventory, staff, and energy usage	Data driven safety & security AI-enabled surveillance and real-time alerts	Capital strategy & portfolio optimization Optimize reinvestment and rebalance portfolios
	Pricing optimization Forecast demand, use dynamic pricing, and adopt personalized cross-selling and up-selling		Property performance & maintenance Predictive maintenance and sustainability monitoring		
AI enablers	People —design organization & operating model, talent recruitment and development, and culture for change management efforts				
	Technology & Data —collect & maintain guest & operations data across platforms				

■ Established AI adoption: AI enhancement happening, proven ROI
 ■ Early-stage AI adoption: some movement, next wave of AI

Source: BCG analysis.

The next wave of AI applications in hospitality will further enhance these links of the value chain and extend to additional crucial dimensions of hotel operations. Among them:

- **Risk, Safety, and Resilience.** Strengthening safety processes, fraud detection, and compliance monitoring.
- **Asset and Portfolio Optimization.** Improving efficiency in construction planning and capital expenditure allocation.

Importantly, capturing such advances requires two essential AI enablers: *People*—the talent and change-management capabilities to lead the transformation—and *data*—robust, integrated information on guest behaviors and facility operations.

Over the coming years, the scope of AI implementation in hospitality will clearly widen substantially. But initial activities are already transforming the industry in the following areas:

Marketing and Trip Planning. Already, 37% of travelers use AI large language models embedded in online travel sites to plan and book trips. These web assistants generate custom itineraries instantly, tailored to preferences and budgets, at no cost and with just a few clicks. As users connect their social media activity and other online behaviors, the tools will continue to learn and refine, delivering ever-more personalized and relevant recommendations.

Pricing Optimization. AI-powered revenue management is ushering in a new era where prices adjust in seconds, accounting for supply and demand, competitor moves, booking pace, event calendars, and sentiment data from reviews and social media. The impact is already measurable: at some hotels, AI-driven pricing optimizers have generated upward of 15% growth in revenue per available room (RevPAR), according to hotel industry analysts STR.

Seamless Arrival and Journeys. From Hilton’s “Connie” (an actual robot) to Marriott’s crew of text-based chatbots, multilingual AI concierges are handling everyday requests that bog down front desk staff—Wi-Fi requests, late checkouts, room transfers. Their adoption has been rapid. According to a Statista report, 65% of global travel leaders believed that the most impactful implementation of GenAI is related to chatbots, virtual device assistants, and customer service. AI concierges are more than just an added convenience: for hoteliers, they allow customer support teams to deliver the human touch experiences (solving more complex challenges and finding opportunities to delight) that can differentiate a brand.

Automation and Workforce Augmentation. The hospitality industry is in a labor crisis. In North America alone, 65% of hotels reported staffing shortages in 2025, according to the American Hotel & Lodging Association. At the same time, labor costs have jumped 11.2% year-over-year. To tackle these challenges, Ritz-Carlton San Francisco implemented an AI system that synchronizes room-cleaning schedules with check-out patterns, guest preferences, and staff availability—speeding up the time it takes to clean and prepare guest rooms by 20%. IHG followed suit with predictive housekeeping models that anticipate peak cleaning times and allocate resources accordingly.

Resource and Cost Optimization. AI also helps hotels better align inventory with demand, ensuring that supplies, from linens to breakfast buffets, match occupancy patterns. This minimizes shortages and curbs costly overstocking. Four Seasons Peninsula Papagayo, for instance, is using AI waste-tracking tools like Winnow—combining cameras and scales to monitor buffet leftovers and feeding real-time analytics back to the kitchen. Such tools have cut food waste by roughly 50% within eight months.

The AI-first Hotel Company

These applications demonstrate the promise of AI in hospitality, but they are just scratching the surface. What if companies went further, stripping away legacy systems, static assets, and outdated processes? What would an AI-first hotel company look like—one designed to harness the latest technology for core operations to accelerate growth?

Our team identified three ways AI can transform an incumbent into an AI-first hotel company. These extend AI's reach beyond isolated functions to lift the entire business, improving loyalty, satisfaction, revenue, and margins by focusing on three broad shifts (see Exhibit 2):

- 1. Commercial and Customer Excellence at Scale.** AI-optimized visibility, distribution, pricing, and loyalty secure top placement in discovery, maximize upselling opportunities, and keep guests coming back.
- 2. Unparalleled Cost Advantage.** Automation and robotics reduce manual work, while AI-driven back-end optimization streamlines staffing and cuts waste—lowering cost per key and enabling hotels to do more with less.
- 3. Supercharged Building Design and Development.** AI-powered design and construction compress timelines, accelerate openings and refresh cycles, and create an adaptive, capital-efficient portfolio that grows ahead of the market.

These are not discrete initiatives but interlocking pillars of a self-reinforcing ecosystem. Strong commercial performance fuels growth; operational efficiency frees up capital; rapid, cost-effective development expands the footprint—each feeding new data back into the system.

Transformation #1: Commercial and Customer Excellence at Scale

Until recently, hotels thought they knew their “frenemies”: online travel agencies. These platforms diverted customers who might otherwise have booked directly, yet they also became a vital, if costly, revenue stream. The tradeoffs are steep: 15%–30% commissions, limited access to guest data, and little brand visibility on crowded search pages. Even luxury brands have been forced to compete on price rather than experience.

AI is roiling the relationship. The future of online booking is uncertain, but change is likely to accelerate. OTAs may be forced to reinvent themselves as natural-language, conversational platforms powered by next-generation AI. Yet even that may not be enough to insulate them from disintermediation. In the near future, AI providers—particularly those embedded with banks and credit-card issuers expanding into premium travel and lifestyle services—could integrate travel supply via commercial API agreements with global distribution systems and other aggregators. If that occurs, travelers may no longer know, or even care, where their itineraries originate, instead

interacting solely with an AI front end that researches options and books and manages the trip end-to-end.

AI-first hotels see this moment as an opportunity to radically reshape how they reach customers. Brand equity is shifting from name recognition to algorithmic relevance. To stay discoverable in AI-driven environments, hotel databases and content must be machine-readable and optimized for AI answer engines—whether on Google, OTAs, social platforms, or ChatGPT. Content will need to be broader and deeper, able to address both general questions (“Does the hotel offer breakfast?”) and specific ones (“Does breakfast offer vegan-friendly options?”). For more on this topic, please see an earlier BCG report [“The Future of Discoverability.”](#)

Critically, AI will not rely on a single review platform or brand site; it will aggregate and weigh content from an exponentially wider universe of sources. Guest-generated content—descriptions, reviews, photos—will play a major role, because algorithms will be sensitive to reputation signals. Expanding presence through syndication and partnerships on influential platforms will also be essential. AI engines like ChatGPT favor content from authoritative sources such as Wikipedia, Forbes, or Amazon. In this environment, content is a core commercial lever, as algorithms elevate properties with comprehensive, high-trust, multisource information over those with sparse or inconsistent digital footprints.

The familiar OTA commission model will evolve into AI-era distribution fees, charged for prominence and relevance in algorithmic recommendations. Early examples are already appearing: Google’s AI Overviews are testing sponsored placements, Perplexity’s Research Explorer sells premium visibility, and ChatGPT’s plug-ins and browsing features offer new but limited brand engagement channels.

Pricing optimization, already in use by some hotel groups, is increasingly dynamic. AI models will continuously analyze booking pace, competitor rates, flight capacity, search trends, local events, brand sentiment, and even weather. When airlift spikes or a major concert drops, rates and length-of-stay rules will adjust automatically—reallocating inventory between OTAs and direct channels to maximize profit. In short, hotels will finally have the data to push the right room, to the right guest, through the right channel, at the right price and time.

So where does that leave direct bookings? In 2024, digital direct bookings (\$262 billion) nearly matched OTA transactions (\$266 billion). Growth is being driven by loyalty perks, member-only rates, and richer storytelling on brand sites that emphasize experience over price. Direct bookings can thrive—but only if loyalty programs are blended into this new ecosystem. Hotel groups must integrate their booking channels directly into AI search, enabling travelers to search, compare, and book hotels stays without leaving the AI conversation for an external booking site.

In the hotel of the future, distribution will be about securing a spot in the “top three” recommendations—winning the algorithmic conversation between guests’ digital assistants and the hotel’s AI. Hotels that invest in data, integration, and AI-native distribution will own the guest relationship—and the margin. Those that don’t may not even appear: if the AI can’t “see” them, they’ll be left out of the recommendation list entirely.

Transformation #2: Unparalleled Cost Advantage

Behind every polished hotel lobby an invisible, labor-intensive engine keeps things running—housekeeping schedules, procurement orders, payroll, and maintenance logs all managed under significant time pressure and with limited room for error. With labor costs making up about half of gross operating margins, AI tools offer practical opportunities to streamline routine operations and ease cost pressures. A sensible approach is to introduce AI in areas where the return on investment is already clear, allowing organizations to build confidence and momentum. Hotel companies ultimately focus on operational outcomes—higher RevPAR, improved margins, and lower costs—and owners increasingly expect better economics.

In AI-first hotels, balancing AI implementation and the roles that staff play must be carefully considered. Depending on the hospitality segment and guest expectations, efficiency, comfort, and the quality of personal interactions can shape brand reputation and customer loyalty. In economy and midscale properties, agentic AI can remove substantial friction: automated biometric check-in, robot-delivered amenities, and multilingual AI concierges that respond instantly. And at the luxury end, high-touch service can be enhanced. With administrative tasks offloaded to AI, concierges and support staff can devote more time to creating deeper, more personalized guest experiences. For more on this topic, please see an earlier BCG report [“AI Agents.”](#)

To reduce costs in the near term, hotel companies can take practical, technology-enabled steps in a number of areas. For example:

- **Resource and Cost Optimization.** IoT sensors can track real-time materials usage and inventory, while AI-enabled procurement engines automatically trigger replenishment orders. Workforce planning engines similarly boost productivity and control costs by flexing staffing to match forecast demand. During demand peaks—conferences, events, or seasonal surges—AI tools can screen and onboard qualified gig workers automatically. Frontline AI “copilots” can then coach new hires on the spot, reducing the typical four-month training ramp to a fraction. Elements of this model are already being implemented. Nordic chain Scandic is rolling out Quinyx (an AI workforce management tool) to forecast demand and align schedules and labor costs with occupancy, while other hospitality operators are tapping platforms such as Nowsta to screen and onboard temporary workers rapidly.
- **Digital Twins for Highest Performance.** High-fidelity virtual models that mirror a hotel’s physical operations forecast energy use, guest flows, staffing, and maintenance needs continuously. Overseeing these models, AI agents detect anomalies, propose fixes, and execute changes—from adjusting HVAC loads to rebalancing staff schedules—maximizing both profit and sustainability.

- **Centralization and Streamlining.** An automated back office can give hotel companies moment to moment visibility into conditions at properties across their network. These AI- and robotics-enabled systems also create opportunities to centralize selected functions—finance, human resources, commercial and revenue management, security, and maintenance—at regional or headquarters levels. In practice, this means routine tasks such as room assignment and HVAC anomaly detection can be handled more consistently and at greater scale.
- **Robotic Automation.** Robots can restock minibars, deliver towels, transfer luggage, and clean common spaces, orchestrated by agentic AI that sequences deliveries, re-routes around obstacles, and resolves issues in real time. Hotels are already deploying autonomous delivery devices, such as Relay, which integrate with property-management and elevator systems to deliver amenities, food and beverage, and linens directly to guest rooms. Early adopters report notable reductions in low-value staff time and more reliable response times, particularly during late-night hours and peak-demand periods.

Transformation #3: Supercharged Building Design and Development

Gone are the days of 16-week design cycles to go over, at best, just a few hotel concepts. Generative design tools can now produce thousands of layouts in days—testing each for guest flow, revenue potential, and sustainability, while recommending energy-efficient materials and low-impact designs. Once approved, modular construction allows units to be built offsite while robotics automate onsite tasks and 3D printing delivers precision with minimal waste. Development timelines that once stretched for years can now shrink to months. Renovations also happen faster, keeping hotels in sync with shifting guest expectations.

On the ground, AI automation accelerates execution. It processes construction documents, checks compliance, and detects changes early—creating a structured database that flags scope, schedule, or cost risks before they escalate. AI-driven project management then optimizes labor and supplier schedules (factoring in weather and availability), while computer vision verifies progress in real time and escalates issues automatically to keep sites on track.

In the AI-first hotel, innovation in planning and development reshapes both capital strategy and portfolio growth. Faster openings and renovations shorten payback periods, boost returns, and reduce execution risk. Predictive analytics enhance site selection by modeling travel demand, local economic conditions, and competitive dynamics—pinpointing high-potential locations while steering developers away from bad bets. This is already happening: AI-powered location-intelligence platforms such as MapZot.AI continuously assess meaningful signals such as traffic flows, demographic shifts, airport volumes, and zoning activity to score potential sites and map white space in a market. This can reduce time to break even for new hotels and increase guest traffic.

What's Stopping You?

Hotel companies will have to embrace an AI strategy or fall behind the most agile players in their industry. Yet adopting the technology can be challenging for many hoteliers. By following proactive, sustained policies for AI implementation, however, these companies can overcome any number of structural and financial barriers, such as the following:

The Investment Dilemma

Often the toughest constraint is not AI's potential but whether companies are willing to invest in the underlying preparation required for AI's success—efforts that may not generate immediate, standalone returns. This foundational work—cleaning guest records, integrating systems, standardizing data—is essential but largely invisible to guests, and its benefits may not materialize for six months or longer. By contrast, a new spa or lobby renovation delivers an immediate, visible upgrade and a predictable ROI, prompting many hotel companies to favor those proven investments over longer term, less certain ones.

Generative AI is still often treated as a “testbed,” with players experimenting sporadically until clear savings or revenue gains appear. But when pursued coherently and strategically, AI's payoff is increasingly reliable. The greater risk lies in underinvesting—or focusing narrowly on early-stage tools, such as chatbots—without building the platform and infrastructure required for AI to scale. Companies that invest early will accumulate data, operating experience, and process efficiencies that compound over time. Laggards, by contrast, may discover that by the time they act, the relative value of their limited AI efforts has shrunk even further.

How to navigate this barrier. New money isn't always required—just smarter allocation. The winners have the opportunity to invest in AI with the millions in potential savings they'll gain by using the technology to curtail spending on digital ads, redundant labor, and inefficient processes.

Fragmented Systems and Broken Data

Regardless of when an AI investment is made, most hotel companies will face fragmentation across their data and software systems. Successful AI relies on seamless communication among the many data sources and technologies that manage them. Without that foundation, hotels risk deploying sophisticated tools on disjointed systems, where insights are unreliable and automation falls flat.

Hotels are especially burdened by a patchwork of PMS (property management systems), POS (point of sale), CRM (customer relations management), F&B (food and beverage), spa, and loyalty platforms that rarely integrate or communicate well with each other. Nearly half of hoteliers report

struggling to access critical information, and four in five spend up to two full workdays stitching together reports just to see a complete picture of their business.

How to navigate this barrier. While a large-scale digital transformation isn't always necessary, hotel companies will need to find a way to unify these technologies and create a central hub—a customer data platform with cleaned, deduplicated records. By replacing today's maze of custom interfaces with a standardized layer, companies can establish a single source of truth across properties, brands, and groups—the essential foundation for any meaningful AI deployment—and move from insight to action more rapidly.

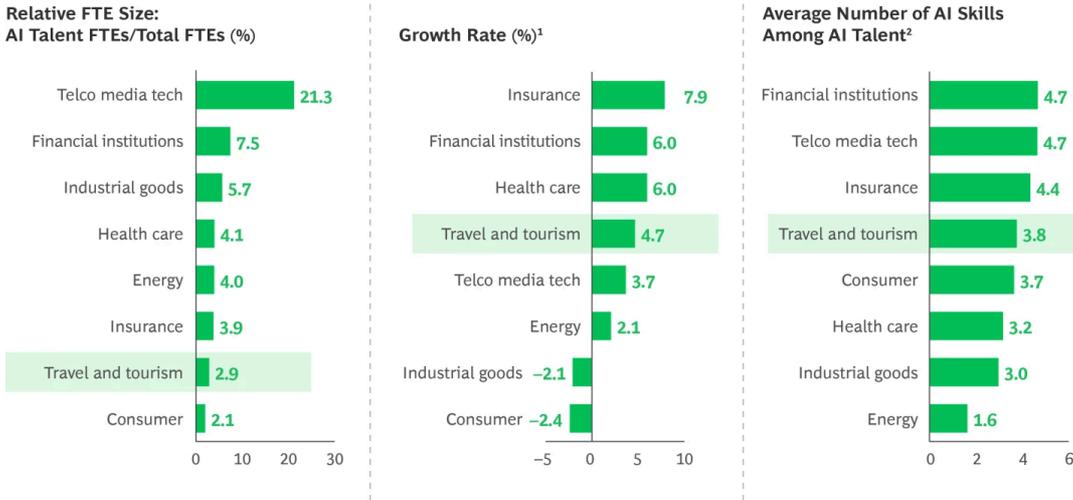
Skills Shortage

Staffing is another thorny challenge—and along with data, an indispensable enabler for implementing AI applications. AI has the potential to reshape nearly every hospitality role—from front desk associates to general managers. Routine tasks will be automated, freeing staff to take on higher-value roles as curators, up-sellers, and experience-builders. This shift will push hotels to hire more for customer-facing skills than administrative abilities, requiring retraining to align employees with new responsibilities and expectations. In some regions, particularly Europe, companies must also navigate labor protections that restrict automation or require union negotiations.

A widening skills gap compounds the issue (see Exhibit 3). Only 2.9% of full-time employees in travel and tourism possess AI skills, compared with 21% in the tech and media sectors. There are signs of progress, however: AI-skilled full-time-equivalent workers in hospitality are growing nearly 5% year over year, and the average AI-literate worker now has about four distinct AI skills.

EXHIBIT 3

AI Skills in the Travel and Tourism Sector Lag Behind Other Industries



Sources: LinkedIn and BCG analysis.

Note: GenAI/AI Talent defined by skills listed on profiles.

¹The full-time equivalent (FTE) growth rate is an annual growth rate for the last 12 months as of January 2025 (# of hires-# of departures)/# of total profiles 12 months ago.

²Total number of AI skills divided by the number of AI talent.

Consider Marriott. Mindful that many employees view AI as a threat rather than a tool, the hotelier framed its pilot of an AI-driven room-assignment engine as “empowerment, not replacement.” Frontline staff co-designed the tool alongside developers, shaping workflows and decision rules while maintaining override authority. The goal wasn’t full automation but smarter, more productive operations—freeing employees to focus on guests. Today the system processes more than 1.2 million room assignments across the hotel chain in just seconds.

How to navigate this barrier. Building an AI-ready workforce requires a clear people strategy, from recruiting and upskilling talent to engaging unions and regulators. It also demands dedicated AI leadership that bridges strategy, data, and hospitality, and a clear model for who owns AI across central and property teams. That way the organization can stay focused on a few high-value priorities rather than scattered initiatives. And because AI transformation is as much a cultural exercise as it is a technical one, organizations need to prioritize transparent communication, learning, and experimentation if they hope to equip their employees with the confidence and capabilities they’ll need to embrace AI.

AI shouldn’t be treated as an add-on to hospitality. It soon will form the backbone of how hotels are designed, operated, booked, chosen, and even perceived as brands. Companies that only dabble—adding a chatbot here or dynamic pricing there—will fall behind those that rewire the fundamentals: distribution, operations, and portfolio strategy. These leaders will create hotels that open faster, run smarter, and operate so seamlessly they’re almost invisible, delighting guests while outpacing the market.

So the question for hoteliers today is: What's stopping your organization from deploying AI today? And what price will you pay when your competitors get there first?

Authors



Suresh Subudhi

Managing Director and Senior Partner; Global Leader, Travel, Cities and Infrastructure
Dubai



Tom McCaleb

Managing Director & Partner
Atlanta



Adam Goldberg

Managing Director & Partner
Washington, DC



Oliver Bonke

Senior Advisor; CEO of Deutsche Hospitality
Atlanta



Rashmitha Vasa

Partner
Washington, DC



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