

EUROPEAN INSTITUTE OF INNOVATION, ENTREPRENEURSHIP AND TECHNOLOGY

MODULE

Operations Management in Hospitality

Technology, Guest Experience, and the Limits of Automation:
Innovation across Industries and the Risks of Over-Reliance

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1. Innovative Technology in Customer Experience: Examples Across Industries

Across industries, the technologies now being used to shape customer experience share a common thread: removing friction from a journey that customers used to simply tolerate. Looking online at how different sectors are experimenting with this shows both what hospitality can borrow and where the same innovations have run into limits.

Retail: Frictionless Checkout

Amazon's "Just Walk Out" system, which uses computer vision, sensor fusion and RFID tags to let shoppers pick up items and leave without a checkout line, is one of the most cited examples of experience-driven retail technology of the last decade. In 2026, Amazon expanded the concept into portable RFID lanes for pop-up shops, stadiums and concert venues, reporting tens of millions of items sold through the system in a single year (Bishop, 2026). Yet the same year, Amazon closed its own Amazon Go and Amazon Fresh stores after customers proved reluctant to abandon familiar checkout habits, even as the underlying technology continued to succeed when licensed to arenas and warehouses (PaymentsJournal, 2026). The lesson for hospitality is direct: a technology can be operationally sound and still fail if it does not match how guests actually want to experience a space.

Hospitality: AI Concierges and Connected Rooms

Within hospitality itself, Hilton's AI-powered robot concierge, "Connie," answers guest questions about local attractions and refines its responses through repeated interactions, illustrating how AI can extend front-desk capacity without replacing it outright. Marriott's continuous investment in mobile check-in, digital room keys and app-based service requests, highlighted as an example of "continuous innovation" in Lecture 4, shows the same logic applied to the guest journey rather than a single touchpoint (Abdou, 2025). Recent industry interviews with hotel professionals describe similar deployments of Internet-of-Things-enabled connected rooms, voice assistants and Bluetooth-linked entertainment systems that let guests recreate a home-like environment inside a hotel room (Youssofi et al., 2024).

Leisure and Pre-Arrival Experience: Virtual and Augmented Reality

A further innovation gaining traction is the use of virtual reality before a guest ever arrives. Hotels are beginning to offer VR previews of rooms and nearby attractions so guests can experience a destination before booking, a "try before you buy" approach borrowed from retail marketing and adapted to leisure travel (Marković & Gjurašić, 2020). Because VR immerses the user in a 3D environment rather than

presenting a written description, it reduces the uncertainty guests feel about an unfamiliar property and can shape expectations more accurately than photographs alone.

Restaurants: Kiosks, Robots and Order Tracking

In food service, self-ordering kiosks and tabletop payment systems have become common precisely because they reduce two of guests' most consistent complaints slow ordering and payment delay while freeing staff to focus on more complex requests (Abdou, 2025). Some restaurants have gone further, introducing service robots for food delivery to tables, and quick-service brands widely use real-time order-tracking apps that let customers watch their food move through preparation, a small transparency feature that measurably reduces perceived wait time even when actual preparation time is unchanged.

What These Examples Share

Looking across these cases, three patterns stand out. First, the most successful implementations solve a specific, well-defined operational problem queuing, payment friction, information gaps rather than adding technology for its own sake. Second, the technology that survives contact with real customers tends to be the technology guests barely notice: Marriott's mobile key and restaurant order-tracking apps succeed partly because they are optional and intuitive, not because they are novel. Third, and most instructively, even well-engineered systems can fail when they conflict with how customers actually want to feel during the experience, as Amazon's retreat from its own checkout-free stores demonstrates. For hospitality organizations evaluating similar investments, the evidence across industries suggests that technology should be judged less by its technical sophistication and more by whether it removes a genuine point of friction without removing the sense of being looked after that guests are ultimately paying for.

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2. Operational Value, Hospitableness, and the Drawbacks of Over-Reliance

Technology earns its place in hospitality only when it does two things at once: solve a genuine operational problem and support, rather than substitute for, the sense of being personally cared for that guests call hospitableness.

Solving Operational Problems

Many of the clearest technology wins in hospitality are operational rather than experiential on the surface. Mobile check-in and keyless entry reduce front-desk queuing and reallocate staff time away from routine transactions (Abdou, 2025). Customer relationship management systems and back-office platforms such as OPERA consolidate guest data across departments, letting hotels coordinate housekeeping, dining and loyalty offers from a single record rather than fragmented paper trails (Youssofi et al., 2024). Chatbots and AI-based digital concierges extend service availability outside staffed hours and handle repetitive queries, freeing employees for interactions that need judgement or empathy (Marković & Gjurašić, 2020). None of this is glamorous, but it is where most of technology's measurable return on investment actually sits.

Assisting Customers

Beyond back-office efficiency, technology also assists guests directly by reducing uncertainty at each stage of their journey. Virtual reality previews let travellers experience a room or destination before booking, lowering the perceived risk of an unfamiliar purchase (Marković & Gjurašić, 2020). Real-time information, such as accurate wait times, order tracking or service-request status, reduces the anxiety of not knowing what happens next, a documented driver of guest dissatisfaction independent of the actual speed of service. Voice-activated room controls and app-based requests give guests a degree of control over their own environment that traditional service delivery could not offer at scale.

Leveraging Hospitableness

The more interesting opportunity, and the one hospitality organizations most often miss, is using technology not just for efficiency but to intensify the personal warmth that distinguishes hospitality from other service industries. Interviews with luxury hotel professionals describe technology being used deliberately to create "positive surprises," for example a connected room system that quietly personalizes a returning guest's preferred lighting or music without being asked (Youssofi et al., 2024). Recent research explicitly recommends that hotels develop "care" as a new source of digital value, using guest data not merely to automate service but to anticipate needs the guest has not voiced, which

is precisely what a skilled human host has always tried to do (Youssofi et al., 2024). Buehring and O'Mahony (2019) similarly find that memorable luxury experiences depend on sensory and emotional generators that technology can support curated in-room scent, personalised welcome messages, staff briefed automatically on a returning guest's history but cannot substitute for entirely.

Drawbacks of Over-Reliance on Technology

The same research is unambiguous about the risks of leaning on technology too heavily. The most frequently raised concern among hotel professionals themselves is dehumanization: guests can be unsettled when an experience becomes too automated, and staff interviewed for recent research stressed that attentive human service is what prevents guests from feeling unsettled by heavy automation (Youssofi et al., 2024). A hotel receptionist interviewed in the same study warned that an excessive focus on technology risks undermining the essence of hospitality itself.

Reliability is a second drawback: when a chatbot or AI system misreads a guest's needs or malfunctions outright, the disappointment is often sharper than an equivalent human error, because guests expected the system to be faultless. Interviewees described malfunctioning systems as actively damaging to the experience, since guests have no one to hold a brief, forgiving conversation with when a machine fails.

Over-reliance also creates uneven guest experiences, since receptiveness to technology varies by age, culture, and travel purpose; younger and business travellers tend to embrace automation, while some luxury and older leisure guests explicitly prefer physical menus and human interaction over QR codes or self-service kiosks (Youssofi et al., 2024). A one-size-fits-all digital strategy risks alienating exactly the guests who value personal service most.

Finally, over-reliance carries genuine costs beyond guest perception: privacy concerns around data collection, the ecological footprint of always-on digital infrastructure, and the organizational cost of keeping systems consistent across every channel a guest might use (Youssofi et al., 2024). Service robots specifically also carry high upfront costs and require significant retraining of staff and restructuring of workflows, costs that are easy to underestimate before deployment (Marković & Gjurašić, 2020).

Taken together, the evidence suggests technology should be treated in hospitality as an amplifier of human hospitality rather than a replacement for it: valuable for solving the operational problems and information gaps guests genuinely have, but only sustainable when it is paired with staff empowered to notice when a guest needs the "real person" that no algorithm can fully replace.

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