HY2026

Technology Edition

AI Everywhere

The Hotel Yearbook

Foresight and innovation in the global hotel industry

HYB

Digital Labour: Rethinking Work in Hospitality

Mid-Stay

Stanislav Ivanov
Founder and Editor-in-Chief, ROBONOMICS: The Journal of the Automated Economy

ROBONOMICS
The Journal of the Automated Economy

Stanislav Ivanov reframes the automation debate by shifting the unit of analysis from jobs to tasks — and in doing so, arrives at conclusions that challenge common assumptions. Physical tasks, he argues, are often harder to automate than cognitive ones, which means low-paid housekeepers may be safer from replacement than high-paid marketing managers, and the future of hospitality labour is not fewer people but differently assembled teams of humans and machines.

Technology is changing not only the guest journey but also labour in hospitality. Hospitality managers are no longer deciding only how many employees they need; they are deciding which tasks should be performed by people, software, kiosks, robots, and collaborative teams of humans and autonomous agents. The central managerial question is not whether work will change, because it already has, but how to redesign work so that robots, artificial intelligence and automation technologies improve productivity, service quality and employee wellbeing at the same time.

FROM JOBS TO TASKS

Hospitality jobs are often discussed as if they were indivisible. In reality, every job consists of tasks. Some tasks are cognitive, such as analysing data, answering routine questions, writing marketing copy, or setting prices. Others are physical, such as cleaning a room, delivering a room service order, carrying linen or maintaining equipment. This distinction matters because technologies do not automate entire jobs in one stroke. They automate, augment or transform particular tasks first, and only then affect the job as a whole.

A further nuance is critical. Physical tasks are usually more difficult to automate than cognitive ones. This seems counterintuitive to many managers. Writing a sales contract or determining a room price looks more intellectually demanding for humans than making a bed or cleaning a bathroom. Consequently, a marketing manager is remunerated much more than a housekeeper. Yet, the robot that performs a physical task must also perceive the environment, identify objects, navigate around obstacles and decide how to act in real time. In this sense, physical tasks include cognitive tasks as well, which is why it is easier today to automate much of the work of a high-paid marketing manager than to automate the job of a low-paid housekeeper.

Software applications have become the primary tools for automating cognitive work, while robots are primarily used for specific physical tasks. Hotels already use revenue management systems, marketing automation tools, chatbots, generative AI applications and robotic process automation to handle information-rich activities. At the same time, physical automation remains narrower: vacuum robots, robotic carts, pool-cleaning robots, and room-service delivery robots can assist employees, but only in carefully defined contexts. For hospitality managers, the implication is clear: digital labour does not completely replace human labour. It arrives through the gradual reallocation of tasks between humans and machines.

A task-based perspective provides a more realistic way to think about labour transformation in hotels. Receptionists do not simply “work at reception”; they answer questions, check guests in and out, process payments, issue keys, provide directions, solve problems and handle exceptions. Housekeepers do not simply “clean rooms”; they move items, assess cleanliness, replace linens, note maintenance issues, protect guest belongings, and adapt to the unique condition of each room. Marketing specialists do not simply “market” the hotel services; they analyse data, create content, manage campaigns, respond to online comments and coordinate digital channels.

Once the job is decomposed into tasks, the automation logic becomes easier to understand. Hospitality tasks that are routine, standardised, repetitive and information-based are usually easier to automate. Tasks that depend on perception, dexterity, mobility, empathy, improvisation, or contextual judgement are harder to fully automate at the current level of technological development. This does not mean that the second group will remain untouched. It means that the technologies used there will more often enhance or transform employees rather than replace them entirely.

MAIN EFFECTS OF TECHNOLOGY ON HOSPITALITY WORK

The effects of automation, robotics, and AI on hospitality work at the task level can be grouped into five categories: elimination, substitution, enhancement, transformation, and creation. These effects may happen simultaneously in the same process, which is why the impact of technology is rarely linear.

Elimination occurs when a task disappears altogether. If guests use mobile keys on their phones, the task of issuing and coding physical keycards may be eliminated entirely.

Substitution occurs when the task remains but is performed by technology instead of a human. A chatbot that answers standard guest questions, a kiosk that checks in a guest, or a software tool that produces a first draft of a marketing message all substitute for work previously done by employees.

Enhancement occurs when technology increases employees' productivity. A marketing specialist who uses generative AI to draft campaigns can produce more work in less time, while a hotel employee supported by a delivery robot can serve more rooms without making more corridor trips.

Transformation occurs when the nature of the task changes. A waiter no longer walks the tray to the room; instead, they load a robot, monitor its status, and handle only orders that a robot cannot fulfil. The process still exists, but the employee performs different actions within it.

Creation occurs when entirely new tasks emerge due to technology. Someone has to supervise automated workflows, update chatbot knowledge, validate AI-generated content, coordinate robots, maintain systems and train colleagues to use them. These are genuine additions to work, not merely reworded old tasks.

At the job level, the effects differ slightly. Jobs can be substituted, enhanced, transformed or created. If enough tasks are automated and the remaining ones can be reallocated, a job may disappear. More often, however, jobs in hospitality are being reassembled by reorganising their tasks rather than simply being removed. This is why the future of hospitality labour is not a future without people. It is a future in which all jobs have a strong digital component.

COLLABORATIVE TEAMS OF HUMANS AND MACHINES

The future hotel will not be staffed solely by humans or solely by robots and autonomous agents, although some will be. It will be organised around collaborative teams in which human employees, (humanoid) robots, software systems and virtual autonomous AI agents work together. This is already visible in many hotel functions, even if managers do not yet describe it in those terms. For example, a room service robot does not operate as an independent hotel employee. It depends on the people who prepare the order, load the robot, trigger the delivery process, and act when lift, corridor traffic, or guest behaviour creates a situation requiring human intervention.

A chatbot does not replace the whole guest relations team. It answers standard requests, routes messages and frees employees to deal with more demanding issues. A generative AI system in marketing does not "become the marketing department"; it drafts, suggests and analyses, while humans approve, edit, adapt and take responsibility. Therefore, while many tasks and processes will be automated, human employees will remain in control.

These examples point to a broader managerial shift. Productivity can no longer be measured solely at the individual employee level. It increasingly depends on how well the human-technology team is designed and coordinated. The relevant managerial questions, therefore, change. Instead of asking only, "How many employees are needed?", managers need to ask, "Which team configuration of people and technologies performs this process best?" This shift also changes supervision. Managers will not supervise only people. They will supervise hybrid teams. They will need to assess where automation works reliably, where it creates extra work for humans and friction in the human-agent interaction, where employees need more discretion, and where guests still expect human contact. Digital labour is therefore not only a technological issue. It is an operations management issue.

DIGITAL SKILLS OF HOSPITALITY EMPLOYEES

If hospitality work is becoming hybrid (i.e. human-agent collaboration), employee skills must become hybrid as well. Hospitality employees do not need to become software or robotics engineers, but they do need well-developed digital skills and a basic understanding that some of their co-workers may be (humanoid) robots or virtual autonomous agents. That change in mindset is as important as the technical training itself.

Digital skills in hospitality should be understood broadly. They include basic skills such as using property management systems, mobile applications, dashboards, kiosks, chatbots, and AI tools effectively. But they also include the ability to interpret outputs critically, recognise errors, protect privacy, troubleshoot basic failures and collaborate within digital workflows. For some roles, particularly in marketing and revenue management, work may increasingly focus on orchestrating autonomous agents rather than performing every task manually. A marketing manager may use different AI agents to generate campaign variants, monitor audience responses, draft offers and propose content calendars.

The tasks of the individual AI agents will even be supervised and coordinated by another agent. The human employee evaluates the agents' outputs, aligns them with the brand strategy, corrects mistakes, and decides what should actually be published. In other words, the employee becomes less a producer of outputs and more a conductor of a digital orchestra. Similar developments are likely in revenue management, distribution, guest communications and other processes.

At the same time, social and emotional skills do not lose value in digital labour. They become more important because they form a key comparative advantage of human employees. The high-tech hotel still needs employees who can reassure, empathise, improvise and create a sense of welcome. Therefore, hospitality employees need both digital competence and human sensitivity.

RESISTANCE, ADAPTATION AND EMPLOYEE WELL-BEING

Employee resistance to automation and digitalisation of their work is inevitable. Hotel workers may fear job loss, reduced status, tighter monitoring, deskilling or a gradual devaluation of their work experience. These fears are understandable and should not be dismissed as irrational conservatism. At the same time, resistance can be mitigated. With proper training, transparent communication and visible benefits, employees can become active drivers of the digital transformation of hospitality work. The key is that they must see what automation does for them, not only what it does for the company. If technology removes repetitive paperwork, heavy manual labour, unnecessary corridor trips to deliver room service orders, unsafe cleaning tasks or night-time routine work, employees may quickly recognise its value and positive impacts on their wellbeing.

CONCLUSION

The transformation of hospitality labour through robots, artificial intelligence and automation technologies is not a distant scenario. It is an operational agenda to prepare hotels for the forthcoming technological tsunami of very smart, capable humanoid robots and virtual, autonomous AI agents.

The most effective starting point for hoteliers is to map the processes in their properties and break them into tasks. Only then could they redesign the processes and identify which tasks should be eliminated, which should be implemented by humans, which by agents and which by human-agent collaborative teams. New role descriptions, performance metrics, and training systems are an integral part of this digital transformation. Some departments will become smaller, some more productive, and some more digital. This requires an active managerial approach to organisational design rather than passive adaptation.

Digital labour is therefore not about replacing people with machines. It is about how humans, robots and autonomous agents will increasingly operate in collaborative teams to create the core of hotel service: hospitality.