

Task, Risk, and Return: Cognitive Foundations of Robotic Adoption in Hotels	
<i>Jacky Wi Chung Tseng, University of St.Gallen</i> <i>Florian Gasser, University of St. Gallen & Zurich University of Applied Sciences</i>	
Address of corresponding author: First and last name: Jacky Wi Chung Tseng Institution line 1: University of St.Gallen Institution line 2: Institute for Systemic Management and Public Governance Address line: Dufourstrasse 40a ZIP, place, country: 9000, St.Gallen, Switzerland E-Mail: Jacky.tseng@unisg.ch Phone: +41 79 303 91 14 Fax: -	
This study examines heuristic decision-making in the pre-adoption phase of service robotics among managers of small- and medium-sized hotels in the DACH region (Germany, Austria, and Switzerland). Using an exploratory qualitative design with semi-structured interviews analyzed through the Gioia methodology, the study investigates how managerial heuristics shape perceptions of automation, uncertainty, and investment decisions related to robotic technologies. Preliminary findings suggest that robotics decisions are shaped less by technology-level evaluation than by task-level automatability judgements, human-centred service boundaries, experience-based investment heuristics, and governance-mediated legitimation requirements. The study contributes to tourism technology adoption research by conceptualising pre-adoption decision-making as a staged cognitive filtration process.	
Keywords: Service Robots, Tourism, Hotel, Management, Automation, Decision-Making	

Please observe the following contribution classifications!

General contribution classification

Please **classify your contribution** by ticking (1) type of intervention, (2) stream of discussion, and (3) sub-stream of discussion.

(1) Stream of discussion	☐ Tourism definition(s) revisited – 75 years after the first AIEST conference	☐ Designing tourism systems for a sustainable future	☒ AIEST's Advances in Tourism Research - Perspectives of Actors, Institutions and Systems
(2) Type of intervention	(3) Sub-streams:		
☒ Academia	☒ Actors' behaviour ☐ Institutional settings ☐ Systemic perspective ☐ other		
☐ Practice			

If your contribution is academic in nature, go to “Academic contribution classification”; otherwise go to Practice contribution classification.

➔ Academic contribution classification

Please tick one box, classifying the **stage of work** you intend to present.

- ☐ Basic conceptual ideas, seeking general feedback.
- ☐ Research design and methodology, seeking validation of logic and plan.
- ☒ Study results, seeking inputs for its discussion.
- ☐ Study results and discussion, seeking inputs for conclusions.
- ☐ Completed studies, seeking final feedback.

➔ Practice contribution classification

Please tick one box, classifying the **stage of work** you intend to present.

- ☐ Basic conceptual ideas or projects, seeking for general feedback.
- ☐ (Observed) problems or challenges, seeking an explanation.
- ☐ (Explained) problems or challenges, seeking a solution.
- ☐ Think tank type of session on specific topics (multilateral exchange).

Introduction

Persistent skilled-labor shortages in the hospitality industry have intensified managerial interest in service robotics. Existing research predominantly examines post-adoption outcomes, including customer acceptance, service quality, and performance effects (Pizam et al., 2022; Ivanov & Webster, 2024). Comparatively little attention has been devoted to the pre-adoption decision processes through which managers evaluate automation potential and justify investment choices. As a consequence, the cognitive foundations of automation strategy in hospitality remain insufficiently theorized.

Against this background, this extended abstract outlines empirical research aimed at analysing how managers in small- and medium-sized hotels in the DACH region (Germany, Austria, Switzerland) assess task-level automatability across the service chain and how these assessments inform strategic investment decisions. Rather than treating technology adoption as a behavioral outcome of acceptance, the study investigates the interpretive and evaluative processes that precede adoption and structure which options are cognitively available for consideration.

In this study, pre-adoption decision-making is conceptualised as a staged cognitive filtration process in which task-level automatability assessments, experience-conditioned heuristics, and governance constraints precede formal evaluation. The analytical focus is situated at the level of managerial cognition: belonging to a particular operational context – ownership structure, brand affiliation, prior technology experience – structures specific evaluation regimes, differentiated investment thresholds, and processes through which automation options are filtered, legitimised, or excluded.

This study is guided by three research questions:

- RQ1. How do hotel managers structure and rationalize decisions regarding automation and robotics investments?
- RQ2. How does perceived task automatability influence prioritization across service activities?
- RQ3. Which implicit assumptions, evaluative criteria, and reservations shape managerial judgments concerning robotization?

By addressing these questions, this study aims to clarify how task-level cognition and heuristic reasoning shape investment decisions for service robotics in the DACH hotel context.

State-of-the-art

Service robotics and AI-driven automation are widely discussed as strategic responses to persistent labor shortages, post-pandemic workforce attrition, and rising operational costs in hospitality (Birdir & Sahilli Birdir, 2024). Global evidence identifies perceived relative advantage, competitive pressure, and top management support as the principal drivers of adoption intentions (Pizam et al., 2022). Adoption rates in European markets, and particularly in the DACH region, nevertheless remain well below what technological feasibility and economic pressure would suggest.

The Technology–Organization–Environment framework (Tornatzky & Fleischer, 1990) is used to analyse these dynamics. This lens, however, captures structural and contextual antecedents of adoption rather than the cognitive processes through which managers narrow the option space prior to formal evaluation. Pizam et al. (2022) report that perceived cost and organizational readiness fail to reach significance in their global model, an outcome attributed

to limited managerial knowledge of robotics requirements. Nam et al. (2021) identify ROI legitimization logics and system fragmentation as critical structural barriers, while Milohnić and Kapeš (2024) show that lack of knowledge constitutes the single most critical adoption barrier and document a tacit “support-not-replace” philosophy. Ivanov and Webster (2024) further suggest that the emotional-intelligence requirements of a decision are negatively associated with managers' willingness to delegate to AI.

From a decision-process perspective, Simon's (1960, 1977) Intelligence–Design–Choice (–Review) model and Mintzberg, Raisinghani, and Théorêt's (1976) work on unstructured decision processes provide the procedural architecture for the present analysis. Particularly relevant is the pre-selection phase, in which managers filter alternatives through internalised criteria before formal evaluation begins. Betsch, Funke, and Plessner (2011) demonstrate that intuitive, experience-based processing tends to dominate under conditions of high complexity and time pressure. Argyris and Schön's (1997) distinction between espoused theories and theories-in-use directs analytical attention toward the often implicit decision architectures that guide real-world managerial action. Therefore, understanding how managers cognitively structure pre-adoption decisions is relevant for technology adoption research and for destination-level technology strategy.

Despite these insights, an empirical gap persists with regard to the research questions guiding this study. Existing research rarely examines the pre-selection phase that structures which technological options enter the decision space (RQ1, RQ2), and little is known about the implicit assumptions and evaluative criteria through which DACH hotel managers form judgements on robotization (RQ3). The DACH market itself remains conspicuously absent from the empirical literature, despite its structural distinctiveness in terms of independent owner-operator density, labor protections, and conservative investment cultures.

Methodology

This study is conducted in the DACH region, focusing on three- to five-star hotels with both independent owner-operator and chain-affiliated structures. It adopts an exploratory qualitative design based on semi-structured interviews. This design responds to the exploratory character of the research questions and to the need to reconstruct interpretative meaning-making processes that survey instruments fail to capture.

Data collection is ongoing and will continue throughout the coming months. To date, ten semi-structured interviews have been conducted with managers of small- and medium-sized hotels who hold decision-making authority over technology investments. Participants were recruited through purposive and theoretical sampling (Glaser & Strauss, 1967) to maximise structural variation across hotel category, ownership structure, property size, and technology adoption status. Preliminary indications of theoretical saturation emerged from the ninth interview onward; the tenth interview substantially confirmed the patterns observed. Continued sampling is planned to test the robustness of the emerging categories.

The interview protocol elicits perceptions of labor constraints, economic considerations, operational feasibility, and anticipated organizational consequences of automation. The protocol is structured into four thematic blocks aligned with Simon's IDC(R) framework: (1) service-quality conception and measurement standards; (2) personal technology openness and prior investment experience; (3) task automatability assessment along the service chain; and (4) organizational decision-making structure, governance mechanisms, and the role of intuition relative to formal analysis. All interviews were audio-recorded, transcribed verbatim, and member-checked by participants for interpretive accuracy.

Data analysis follows the Gioia methodology (Gioia, Corley, & Hamilton, 2013), enabling systematic inductive theory development through three stages: first-order analysis using informant-centric codes; second-order analysis clustering codes into theoretically meaningful themes; and aggregate dimension development that condenses themes into overarching conceptual categories. Analytical rigor is supported through independent cross-coding, an audit trail maintained throughout the analysis, and member-checking of preliminary findings. Hypotheses for a subsequent deductive phase will be derived from the consolidated dimensions and tested through structural equation modelling in a later study.

Results and discussion

Phase 1 – Qualitative semi-structured interviews

Across the ten interviews completed to date, pre-adoption decisions are negotiated primarily through task-level cognition rather than through technology-level evaluation. Hotel managers do not simply evaluate robotic technologies as given alternatives; rather, they filter automation options through task, service, experience, and governance logics before formal evaluation begins. Managers consistently decompose the service chain into front-stage and back-stage segments and into standardisable and judgment-dependent task categories. This working representation operates as the cognitive baseline that determines which segments of the service chain are even available for automation consideration. A humanocentric service philosophy categorically excludes emotionally charged and relationship-defining touchpoints from automation, regardless of the technical feasibility of doing otherwise.

Prior technology experience crystallises into durable heuristic rules that structure subsequent investment decisions. A single salient negative experience exerts a disproportionate influence on adoption dispositions, consistent with patterns of loss aversion under uncertainty. Managers operate with implicit payback thresholds that function as pre-screening filters applied before any formal ROI calculation. Observational learning from named peer properties substitutes for internal technical assessment, introducing peer-group dependency into adoption patterns and reducing the effective option space well before structured evaluation begins.

Task automatability is assessed through a consistent tripartite schema: standardisability, where rule-governed and low-variability tasks are perceived as automatable while judgment-dependent and emotionally complex tasks are treated as human-essential; guest-contact intensity, where even standardisable tasks face brand-legitimacy reservations when performed in guest-visible spaces; and labor-shortage urgency, where acute workforce deficits selectively activate automation consideration for specific task categories. This classification logic operates upstream of, and independently from, structural adoption factors – it determines which technologies enter the decision space, not how they are evaluated once inside it.

The organisational architecture of adoption decisions is characterised by multi-principal governance: most managers operate under ownership, brand-standard, or franchise constraints that condition decision authority and require legitimisation work directed at additional stakeholders. They report ambivalent decision autonomy – from operational discretion in back-office automation to substantial constraint in guest-facing investments. More distinctive is an intuitive-first, data-second decision sequence: a preliminary judgement formed through tacit knowledge and peer observation typically precedes the formal analysis that ostensibly drives the decision, suggesting a pattern of post-hoc rationalisation that departs from the rational-process assumptions embedded in dominant adoption models.

Phase 2 – Continued data collection and theoretical refinement

Data collection is ongoing and will continue in the coming months. The remaining interviews will broaden structural variation across hotel category, ownership structure, and adoption status, and will test the robustness of the four emerging dimensions. Consistent with the Gioia methodology, the qualitative phase will subsequently feed into the development of a process model articulating task-level cognition, heuristic filtration, and governance constraints. The analytical strategy in the next stage involves (1) consolidation of aggregate dimensions through additional cross-case analysis; (2) elaboration of a provisional process model of pre-adoption decision-making; and (3) derivation of testable propositions for a subsequent deductive phase using structural equation modelling. Updated preliminary results will be presented and discussed at the conference.

Conclusion

This abstract presents an ongoing study exploring pre-adoption decision-making for service robotics in DACH hotels, focusing on the cognitive processes through which managers assess task automatability, apply experience-based heuristics, and navigate governance constraints. The research aims to clarify how differentiated task-level cognition structures investment decisions, evaluative criteria, and managerial reservations regarding robotization. By examining pre-adoption decision-making as a staged cognitive filtration process grounded in lived managerial experience and operational positioning, the study seeks to fill an empirical gap regarding how managers structure and rationalise automation decisions (RQ1), how perceived task automatability shapes prioritisation across service activities (RQ2), and which implicit assumptions and reservations underlie managerial judgements (RQ3). The results will contribute to understanding how managerial cognition shapes technology adoption in hospitality, with implications for theory, practice, and the design of automation strategies in labor-constrained service settings.

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