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Crafting an organizational strategy for the new era: a qualitative study of artificial intelligence transformation in a homegrown Singaporean hotel chain

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Abstract

Purpose – This study discusses the strategic integration of artificial intelligence (AI) within the hospitality industry by examining the experience of a locally owned Singaporean hotel chain. It will address a central gap in the prior research's lack of attention to employees' perspective of AI adoption in domestic hotel chains.

Design/methodology/approach – Using the grounded theory approach, this study used a thematic analysis of in-depth interviews with ten managers of a locally owned hotel chain who plan to implement AI in their chain.

Findings – The results show that while AI offers many advantages, including lower costs, more effectiveness, and better customer experience, human intervention is still necessary to provide individualized and personalized attention and service. The study emphasizes the necessity of a well-rounded strategy that uses AI's potential without sacrificing the crucial human element that characterizes the best hospitality experience.

Research limitations/implications – Future research should address this study's limitations using larger, diverse samples and mixed methods to explore AI adoption's impact on hospitality.

Practical implications – Leaders in the hospitality industry should foster an organizational culture emphasizing empowerment and continuous learning to integrate AI technologies successfully. The insights from a Singaporean hotel chain suggest that AI adoption can enhance employee and customer experiences. However, effective AI strategies require considering cultural and organizational differences and communicating their benefits. Aligning AI implementation with customer preferences, such as offering tech-driven solutions for younger, tech-savvy guests while maintaining personal interaction for less IT-savvy customers, is key to maintaining branding. This strategic, differentiated approach ensures AI enhances operational efficiency and maximizes guest satisfaction through tailored, personalized services.

Originality/value – This study is unique in its focus on the employees' perspective of AI adoption within a domestic hotel chain in Singapore, a viewpoint that has been largely overlooked in previous research. By employing a grounded theory approach and conducting in-depth interviews with managers, the study provides rich, qualitative insights into the practical challenges and benefits of integrating AI in the hospitality sector. This approach highlights the operational advantages of AI and underscores the indispensable role of human interaction in delivering personalized and high-quality service, thus offering a balanced view of AI's impact on the industry.

Keywords Artificial intelligence, Local homegrown hotel chain, Qualitative study, Organizational study

Paper type Research paper

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Introduction

Artificial intelligence (AI) has ushered in a transformative era in the hospitality industry, revolutionizing how consumers experience and engage with services. AI, with its myriad applications, has become an integral part of the hospitality landscape, reshaping everything from booking accommodations to enhancing the in-person experience at hotels and restaurants. According to Furman and Seamans (2019), AI is a loose term used to describe a range of advanced technologies that exhibit human-like intelligence including machine learning, autonomous robotics and vehicles, computer vision, language processing, virtual agents, and neural networks.

The recent pandemic has affected the hospitality industry worldwide, forcing many operators to re-strategize their approach by adopting AI technologies to both streamline operational processes and elevate the quality of consumer experiences (Malik *et al.*, 2023). AI has indeed made its presence felt. From personalized recommendations and automated check-ins to intelligent room service and responsive chatbots, it promises more efficient and tailored interactions in hospitality (UNWTO, 2022). Studies such as that of Oncioiu and Priescu (2022) echo this point in arguing that integrating AI into the sector has not only offered convenience but also redefined the essence of what it means to have a memorable hospitality experience.

Despite the significant strides made by AI in reshaping the hospitality landscape, it has also added a layer of complexity. By its very nature, the hospitality industry is people-centric, built on the foundation of human interaction, warmth, and personalized service (Mariani and Wirtz, 2023). While AI can enhance efficiency and streamline various processes, it cannot entirely replace the human touch which is integral to the hospitality experience (Lela and Indi, 2020). The challenge lies in striking the right balance between AI's technological advancements and preserving the irreplaceable qualities of genuine human interaction, empathy, and understanding. On this note, it is well documented across the literature that guests often seek a connection with the staff and the establishment's culture, making it crucial for the industry to find ways to incorporate AI without compromising the people-focused essence of hospitality (Khaliq *et al.*, 2022). This delicate equilibrium between automation and personalization is a central theme in the modern hospitality narrative, where the successful integration of AI aims not to replace human service but to augment and improve it, ultimately enriching the guest experience.

The above argument brings to the fore three research gaps this study seeks to address. First, while studies of AI technologies in the hospitality industry are increasing across different fields and disciplines, the field of tourism has been neglected—there are far fewer in the hospitality industry (Nannelli *et al.*, 2023). Besides, scholars such as Mariani and Wirtz (2023) argue that the existing studies are predominantly application-oriented, focusing on implementing AI technologies in specific functions rather than exploring their broader implications or potential for integration across the tourism industry. This limited scope is a critical oversight, as integrating AI technologies into tourism activities holds significant potential for transforming the industry. In this aspect, understanding the full impact of AI on tourism requires a more comprehensive approach beyond mere application. It necessitates examining how AI can seamlessly integrate into the entire tourism value chain—from customer service and personalized marketing to sustainable tourism practices and enhancing the overall travel experience. This holistic perspective is essential for unlocking the transformative potential of AI in tourism, enabling industry stakeholders to leverage these technologies to their fullest extent.

Another noticeable research gap within the existing body of literature is the disproportionate emphasis on customer experience in AI-driven hospitality studies as opposed to employees' perspectives within this industry (Zhang and Jin, 2023). This gap prevents us from comprehensively understanding the holistic dynamics of integrating AI into the hospitality industry. It overlooks the challenges, concerns, and experiences of the pivotal employees in delivering these services. The introduction of AI technologies can also bring

about various challenges and concerns for employees, including changes in job roles, the need for new skills, potential job displacement, and the psychological impact of working alongside intelligent systems (Tan *et al.*, 2023a, 2024a). Understanding employees' perspectives is crucial for ensuring the successful adoption and sustainability of AI technologies within the industry. After all, employees acceptance of and adaptation to AI can determine the effectiveness of these technologies in practice. If employees feel unsupported or threatened by AI, it could lead to resistance, decreased job satisfaction, or even attrition, which in turn could negatively affect the overall service quality and customer satisfaction (Bulchand-Gidumal *et al.*, 2024). Hence, there is need for in-depth research that considers the employees' perspective in the context of AI technologies in hospitality.

The third gap pertains to the lack of studies focusing on the impact of AI on homegrown hospitality chains. Most of the limited research on AI in the hospitality industry focuses on established global hotel chains. For example, Tan *et al.* (2023a) focused their research on 224 hospitality employees working for a leading Chinese hospitality group with a presence in Asia. Examining local homegrown hotel chains in Singapore is essential for several compelling reasons. Firstly, their hotels offer unique and culturally immersive experiences that differentiate them from international brands. They provide travellers with a deeper connection to the local culture and heritage (Yoon and Lee, 2017). This is particularly appealing to the growing number of tourists seeking authentic and personalized travel experiences. Studies such as Oh *et al.* (2020) have shown that tourists increasingly value authentic cultural experiences, and these can significantly enhance their overall satisfaction and loyalty. Furthermore, local homegrown hotels often incorporate traditional design elements, local cuisine, and personalized services, which enhance the overall guest experience (Yoon and Lee, 2017). Besides, the local homegrown hotel sector significantly supports the local economy by promoting small and medium-sized enterprises and creating job opportunities within the community. As such, the economic impact is as important as that of any other international hotel brands (Stumpf and Swanger, 2017). However, it can be assumed that local homegrown hospitality chains, unlike established international hospitality chains, face distinct challenges, resource constraints, and market dynamics (Tan *et al.*, 2020). They may have a different appreciation of business landscapes, leading to different patterns of business strategy, including AI adoption. Accordingly, this study addresses the unique AI-related strategies, challenges, and opportunities experienced by homegrown hotel chains, contributing to a more comprehensive understanding of the AI landscape in the hospitality sector in Singapore.

Theoretical lens

This study uses the socio-technical-system (STS) framework as the theoretical basis for investigating the deployment of AI in a local homegrown hotel chain. According to Appelbaum (1997), the STS framework is one of the most extensive bodies of conceptual work positing that organizations are composed of both social systems (people, culture, and organizational structures) and technical systems (tools, technology, and processes). The theory emphasizes the interdependence of these systems and advocates for their joint optimization to achieve successful organizational performance and innovation. Scholars such as Yu *et al.* (2022) have leveraged this framework in the context of AI deployment. In the same spirit, we argue that antecedents such as leadership style, organizational culture, and employees' perspectives are needed to set the stage for AI deployment. These represent the "socio" component of the theory. The deployment phase, which includes front-of-house and back-of-house AI applications, highlights the technical systems. For optimal performance, these technical innovations must be aligned with and supported by the social systems, demonstrating the interface between human and AI. The outcomes, which can include improved operational efficiency, employee satisfaction, managerial decision-making, resource optimization, and enhanced customer experience, represent the benefits of joint optimization as proposed by the

socio-technical-system framework. By addressing human and technological aspects, this framework ensures a balanced approach that maximizes the benefits of AI while supporting employee needs and organizational goals.

Literature review

Research context

The trend towards boutique and independent hotels is gaining momentum globally, with travelers increasingly prioritizing uniqueness over uniformity (Stumpf and Swanger, 2017; Ahmed *et al.*, 2024). Local hotel chains can capitalize on this trend by offering distinctive and memorable stays that international chains often cannot match. This focus on personalization and local flavor can lead to greater guest satisfaction and loyalty, which is crucial in a competitive market (Woo *et al.*, 2022). Studies have shown that personalized services and unique cultural experiences are key drivers of guest satisfaction in the hospitality industry (Iannuzzi, 2023; Oh *et al.*, 2020; Yoon and Lee, 2017). Moreover, the rise of local boutique hotels is supported by increasing international tourist arrivals and successful marketing campaigns by the Singapore Tourism Board (Singapore Tourism Board, 2020; The Borneo Post, 2018). In sum, with its world-class technological ecosystem and robust connectivity, the nation is well-positioned to experiment with and deploy AI in various facets of the hospitality industry. This advantage makes Singapore an ideal environment for piloting and fine-tuning AI-driven solutions, ranging from intelligent room automation and personalized guest services to efficient back-end operations. Given the above points, using Singapore's hospitality scene as the research context makes sense.

Artificial intelligence in the Southeast Asia region

The term AI can be interpreted from two aspects: "artificial," meaning something being created by humans, and "intelligence", implying that it can demonstrate thinking capacity and make decisions through a series of logic systems. In this context, scholars such as Malik *et al.* (2023) explain AI as a human-created thinking capability. AI adoption in Southeast Asia presents a unique dynamic influenced by varying technological infrastructure and workforce readiness levels. In Singapore, the rolling out of government initiatives, such as Singapore's Smart Nation strategy, sets the stage for making the necessary resources to foster the AI ecosystem, from attracting technology investments to skilling up human resources (Times, 2024). This ensures Singapore stays ahead of the technology curve. However, countries with emerging economies, such as Indonesia and Vietnam, face challenges related to resource constraints and skill gaps (CNBC, 2023). These contextual differences underscore the need for localized strategies in AI integration, aligning with findings from other industries like retail and finance. Despite these differences, there is a commonality – Integrating AI in industry is an important agenda that should be given high priority to stay relevant (Güner Gültekin *et al.*, 2025; Quang *et al.*, 2023; Vietnam News, 2023).

Artificial intelligence in the hospitality industry

As highlighted earlier, AI is highly proficient at executing specific tasks and can revolutionize virtually every sector of a nation's economy by empowering computers to make effective decisions that enhance operational efficiency (Pan and Froese, 2023). It is expected to transform the nature, structure and conditions of work in almost all industries, including hospitality. To this end, emerging AI technologies have significantly transformed service-oriented industries. For instance, natural language processing enables conversational AI systems such as chatbots and voice assistants to provide real-time, personalized customer support (Zhang and Prebensen, 2024). Similarly, robotics applications in front-of-house services, such as automated concierge robots, have been piloted in Japan and South Korea (Khaliq *et al.*, 2022).

From these, it is unsurprising to argue that AI eliminates routine and redundant tasks, reduces headcount, and changes job designs. According to Mergel *et al.* (2023), AI creates strategic value for organizations by integrating the front-end and back-end systems of the institutions. The front-end integration refers to the horizontal integration of the sub-activities of each value chain activity and their subsequent vertical integration with business strategy using digitalized front-end integrating mechanisms. Meanwhile, the back-end integrating mechanisms help to integrate and connect an organization's supply-chain management system, enterprise resource planning system, product/service design management system, partners system, and customer relationship management system (Güner Gültekin *et al.*, 2025).

Furthermore, AI facilitates individuals' work more effectively, promising to improve business and individual outcomes such as an increase in work satisfaction (Bankins and Formosa, 2023). However, it also necessitates the development of new competencies and abilities (Yudiatmaja *et al.*, 2021). For instance, employees must cultivate critical thinking skills to evaluate and interpret AI-generated insights critically, ensuring decisions are well-informed and ethical (Zhang and Prebensen, 2024). With AI increasingly handling repetitive tasks, creativity, social intelligence, and emotional intelligence become more important for innovation and problem-solving (Bulchand-Gidumal *et al.*, 2024). The rapid pace of technological change also necessitates adaptability and a commitment to lifelong learning to stay current with evolving tools and methods (Tan *et al.*, 2024b).

Therefore, with AI continuing to reshape the hospitality industry, it presents both opportunities and challenges (Lim *et al.*, 2023). While the integration of AI can drive operational efficiency and enhance service delivery, its adoption is not without hurdles. The next section explores the various motivations driving the adoption of AI in hospitality, as well as the barriers that may hinder its implementation, providing a comprehensive understanding of the factors influencing this technological shift.

Motivations towards adopting artificial intelligence in the hospitality industry

Zhang and Jin (2023) posit that there are several motivations for adopting AI in workplaces. In this regard, we followed Samara *et al.* (2020) classification that categorized the motivators as projection, production, promotion, and provision.

Generate forecasts. The first motivation is AI's ability to generate forecasts. These forecasts are crucial in supporting hospitality operators in making strategic business decisions and assisting individuals in making informed travel choices. Mariani *et al.* (2018) illustrated how a hybrid model using AI-generated big data could model tourists' behavior. Additionally, studies over the recent few years have confirmed that prediction of tourism demand using data from AI can be achieved through various methods, including fuzzy time series, spatial diffusion, and vector regression models (Dwivedi *et al.*, 2023; Khaliq *et al.*, 2022).

Reduce production costs. The second motivation is the ability of AI to reduce production costs to a higher quality. As highlighted in the literature, cost-cutting is the primary objective of hospitality operators adopting AI in their production process (Wulff and Finnestrand, 2023; Pan and Froese, 2023; Zhang and Jin, 2023). Within the hospitality industry (which relies on a multifaceted back-office environment), numerous tasks need to be harmonized, from housekeeping to guest services (Holmström, 2022). This challenge has been addressed using Internet of Things technology which combines seemingly isolated systems. The use of robotics in hospitality is already evident, with examples such as robotic information agents in Japanese hotels and robotic housekeepers and robots engaging in verbal interactions with tourists to provide news and hotel details and suggest tourism activities (Lu *et al.*, 2020). Since COVID-19, the concept of the "augmented self" has ballooned, showcasing the development of effective user interfaces through the utilization of virtual reality technology to replace on-site experience where guests can have an immersive 360 degrees of hotel rooms, facilities, and unique locations (Godovykh *et al.*, 2022).

Value-for-money proposals. The third motivation refers to AI having the ability to create value through the promotion of value-for-money proposals. An example is intelligent price management which can help hotels optimize pricing strategies and tailor them to different target markets (Talafubieke *et al.*, 2021). In other words, it enables businesses to capture consumer preferences, allowing for more targeted and effective marketing efforts. The utilization of AI in direct marketing campaigns further exemplifies the industry's recognition of the power of these technologies to enhance customer engagement and satisfaction (Oncioiu and Priescu, 2022).

Better service. The hotel's final possible motivation for adopting AI is to *provide better service* Tan *et al.* (2023a) demonstrated that AI technologies enhance guests' intention to visit the site physically. In another example, AI-driven recommender systems which provide personalized recommendations are also becoming important as part of the hotel guests' overall experience particularly during their pre-purchase experience (Dwivedi *et al.*, 2023; Gursoy *et al.*, 2023). Importantly, Tan *et al.* (2023b) also demonstrated that consumers must have trust in the hotel to have a positive consumer experience.

Barriers towards adopting artificial intelligence in the hospitality industry

Digital transformations across various sectors face resistance to AI adoption primarily from stakeholders who directly manage or use digital technologies. According to Paul *et al.* (2024), the substantial number of stakeholders across the tourism value chain who resist change include hotel employers, employees and customers, and their reasons appear to relate to infrastructure limitations and the high cost of implementing newer technologies (Zhang and Jin, 2023). The potential factors and the relevant influential mechanisms are discussed in subsequent paragraphs.

Technology integration. The first barrier relates to the integration of technology. Employers at older hotels often face problems integrating legacy technology infrastructures with more recent ones (Ismatullaev and Kim, 2024). A study by Uren and Edwards (2023) indicated that while it is common to have different systems for various functions (for example, reservations, billing, and room management tracking), having them housed within a system requires technical compatibility. These infrastructure limitations often compromise AI reliability, accuracy and assurance (Tang *et al.*, 2024).

Skills gap and workforce resistance. The successful integration of AI into hotel operations requires employees to possess a specific proficiency and a positive attitude towards the change. Yet Li *et al.* (2024) found that employees working in certain luxury hotels in Greece exhibited highly emotional reactions to moves to introduce AI. Similarly, Zhang and Jin (2023) found that when employees had insufficient knowledge, the hotels lacked established norms, or customers' requests were complex, problems and challenges resulted. According to Ding (2022), employees tend to increase their resistance to technology when they face cognitive failure. In this regard, studies documented that training (Passalacqua *et al.*, 2024) and participatory leadership style (Yang *et al.*, 2024) are key strategies for increasing employees' resilience and reducing apprehension about AI adoption. Further studies, such as Tan *et al.* (2023a) demonstrated that not being able to address user resistance could directly impact productivity and efficiency and reduce technology adoption rates within the hospitality industry.

Implementation Cost. The high costs associated with AI adoption present a significant barrier in the hospitality sector. Many older or smaller establishments struggle to justify these initial financial commitments, which include purchasing or leasing AI systems, customizing them to meet specific operational needs, and ongoing maintenance. For example, Zhang and Jin (2023) found that independent hotels in rural areas were less likely to adopt AI due to the high costs, especially as they lack the substantial budgets available to larger, chain-operated hotels. Similarly, in a study on cost-related challenges, Osei *et al.* (2022) noted that many hotels allocate most of their budget to operational essentials, leaving little room for investment

in advanced technology. This inability to secure the necessary funds for AI solutions means that many hospitality businesses miss out on the potential productivity and guest satisfaction benefits AI could bring.

Data Privacy and Security. Integrating AI in hospitality requires extensive data usage, including guests' personal information, preferences, and purchasing behaviors, which heightens concerns around data privacy and security. This concern is not new. A study by Morosan and DeFranco (2016) indicated that hospitality managers feared potential data breaches due to the sector's frequent handling of sensitive data. Likewise, Dillon and Tan (2023) emphasized that a lack of robust cybersecurity frameworks leaves hotels, especially smaller businesses, vulnerable to data theft, fraud, and reputational damage. Furthermore, the challenge of adhering to specific regulations across different geographical locations added a layer of complexity in AI implementation. As Gursoy *et al.* (2023) concluded, hotels without well-defined data management practices often face reduced customer trust, thereby limiting the potential for AI adoption in the industry.

Perceived Impact on Guest Experience. The hospitality industry places a high value on personalized, human-centered service, leading to concerns about whether AI might detract from the traditional guest experience (Bulchand-Gidumal *et al.*, 2024). Some managers worry that AI technologies, such as automated check-in kiosks, chatbots, or robotic room service, may create an impersonal or overly mechanical atmosphere that doesn't align with guest expectations. For instance, Tan *et al.* (2024a) opined that luxury hotel guests preferred human interaction over AI-driven services, viewing the latter as less engaging and lacking the warmth typically associated with hospitality. Similarly, Budhwar *et al.* (2023) found that in family-owned hotels, owners resisted AI adoption, fearing that a reliance on technology could erode the personalized touch and connection with guests that their businesses were built upon. Guest preferences for authentic interactions can lead management to hesitate in implementing AI, especially if it risks diminishing the unique experiences that distinguish their properties from competitors.

Benefits of artificial intelligence on hospitality industry manpower

Operational benefits. One of AI's most significant positive influences on hospitality employees is automation. Through AI technologies, repetitive and time-consuming tasks from check-in and check-out procedures to reservation management have been automated, reducing the burden on employees and significantly streamlining operations (Zhang and Jin, 2023). Additionally, time is made available for value-adding to the tasks, offering more guest-centric services, and improving job satisfaction and guest experiences (Wulff and Finnestrand, 2023).

Employees benefits. Integrating AI into the industry has necessitated a focus on skills development. Hospitality employees are increasingly required to adapt to working alongside AI technologies. This demand for upskilling provides employees with opportunities to learn and work with cutting-edge technology, which can enhance their career prospects and job security (Pan and Froese, 2023). As AI evolves, these skills become increasingly valuable in the labor market. Furthermore, this shift toward a more technologically adept workforce can increase job satisfaction and engagement (Calisto and Sarkar, 2024). Employees proficient in AI technologies may feel more empowered and confident in their roles, leading to increased productivity and innovation (Dillon and Tan, 2023). Additionally, organizations that invest in their employees' development can foster a culture of continuous improvement and adaptability, which is crucial in the fast-paced hospitality industry.

Managerial benefits. The integration of AI into the hospitality industry offers significant managerial benefits. Managers can leverage AI to enhance decision-making processes through advanced data analytics (Zhang and Jin, 2023). AI systems can process vast amounts of data quickly and accurately, providing managers with real-time insights into operations, customer preferences, and market trends (Cheng *et al.*, 2023). This enables more informed and effective decision-making, helping managers to optimize resources, improve service delivery, and

identify new business opportunities. Additionally, AI can streamline administrative tasks such as scheduling, inventory management, and performance monitoring. By automating these routine tasks, managers can focus more on strategic planning and leadership activities (Budhwar *et al.*, 2023). AI also facilitates better team communication and coordination through tools like chatbots and automated messaging systems, ensuring that information is disseminated quickly and accurately across the organization.

Societal benefits. From a strategic perspective, the implementation of AI allows hospitality businesses to stay competitive in a rapidly evolving market (Zhang and Jin, 2023). AI can enhance customer relationship management by providing personalized experiences and services. For instance, AI-powered recommendation engines can suggest activities, dining options, and amenities tailored to individual guest preferences, increasing customer satisfaction and loyalty. As mentioned, AI enables hotels to adopt dynamic pricing strategies based on real-time demand and market conditions (Nannelli *et al.*, 2023). This flexibility helps maximize revenue and occupancy rates. AI also supports the development of innovative services and products, such as virtual reality tours and AI-driven concierge services, which can differentiate a hotel from its competitors and attract new customer segments.

Resources benefits. AI implementation can lead to significant resource benefits by optimizing the use of both human and material resources. Automating repetitive tasks, such as data entry and report generation reduces the workload on staff, allowing them to focus on more value-added activities like guest interaction and problem-solving (Budhwar *et al.*, 2023). This not only improves efficiency but also enhances employee satisfaction and retention. Additionally, AI can optimize inventory management and supply chain operations, reducing waste and ensuring that resources are utilized more efficiently. Predictive analytics can forecast demand for various services and products, enabling better planning and resource allocation. This optimization can lead to cost savings and improved financial performance for the organization (Sithambaram and Tajudeen, 2022).

Economical benefits. At an organizational level, adopting AI fosters a culture of innovation and continuous improvement. Organizations that embrace AI are perceived as forward-thinking and technologically advanced, which can enhance their reputation and attractiveness to both customers and potential employees (Kumar *et al.*, 2023). AI-driven insights can also inform organizational strategy and policy-making, ensuring the business remains agile and responsive to market changes (Basu *et al.*, 2022). Furthermore, AI can improve overall service quality by providing consistent and reliable support for various operational functions. This reliability can enhance the guest experience, increasing customer satisfaction and loyalty. Collecting and analyzing data from multiple touchpoints also allows organizations to monitor and improve their service delivery continuously (Faulconbridge *et al.*, 2023).

Methodology

Sampling strategy

The hotel industry has been chosen for this study to maintain a certain level of homogeneity since studies have shown that the adoption of AI differs across industries (Samara *et al.*, 2020). Following Sowa *et al.* (2021) and Xu and Wang (2019), we put in place measures to ensure validity of the collected data. First, we adopted purposeful sampling by identifying managers and senior managers who fit the criteria of (1) knowing the hotel chain's effort towards adopting AI and (2) being employed in a local home-grown hotel chain. Table 1 shows the summary of the respondents.

Data collection strategy

Using the grounded theory approach, we conducted in-depth interviews employing a semi-structured approach involving two interviewers. A semi-structured approach allows the

Table 1. Breakdown of respondents

Respondent number	Gender	Position	Responsibilities	Years in service in the company
1	Male	Manager	Concierge	Less than 1 year
2	Male	Manager	Facilities	6–10 years
3	Male	Manager	Operations	2–5 years
4	Male	Manager	Operations	6–10 years
5	Male	Manager	Guest service	More than 10 years
6	Female	Manager	Operations	More than 10 years
7	Female	Manager	Room division	More than 10 years
8	Female	Manager	Front office	More than 10 years
9	Female	Manager	Room division	More than 10 years
10	Female	Manager	Front office	Less than 1 year

Source(s): Authors' own work

incorporation of expert knowledge and experienced judgment into the findings. Both interviewers were extensively briefed on the study's goals and received training in conducting field interviews. In addition, they had prior experience researching, studying and practicing implementation in organizational change initiatives.

With permission from the respondents, these interviews were audio-recorded and subsequently transcribed. Following recommendations from Turner *et al.* (2021), every interview began by highlighting the study's objectives and paying special attention to confidentiality clauses. We showed the list of questions to the interviewees to allow time for their consideration and to foster trust between the interviewers and the interviewees. Explicit consent was documented on the interviewees' agreement form. The interviews began with general questions about the interviewee's professional background, the hotel's character, and their target market. Interviewees were then encouraged to provide concrete examples of AI initiatives within their hotels, and these were thoroughly discussed and examined.

Ten managers in the hospitality sector, five women and five men, were interviewed. They held various job roles within the same hospitality chain. The interviews were conducted in English, given that this is Singapore's business language, over a two-month period and each interview lasted between one and two hours. All interviewees' responses focused on their real-world experiences with AI adoption within their hotels. The questions asked included "Why do you think AI adoption in your hotel is important/unimportant?", "Are there AI adoption efforts or initiatives in your area of work at the hotel?" and "Do you think the current AI effort in your hotel is sufficient? Can more be done? Any new ideas?"

Method of analysis

We employed thematic analysis, following the framework proposed by Turner *et al.* (2021) to analyze the data. NVivo 12 was used to assist in the coding and analysis processes. Our analysis was underpinned by the foundational principles of Industry 4.0, as defined by scholars such as Singh *et al.* (2021), Malik *et al.* (2021), Pillai *et al.* (2021). To further protect the integrity of the respondents' information, we replaced their names with a three-character unique code, with the first character represents the respondent's particular and further two characters representing the participant number. After that, two different researchers did the coding and cross-referencing, and the outcomes of the analysis were validated further by researchers of relevant expertise. Their input contributed to enhancing the accuracy and trustworthiness of the study. This approach has been used by Hsu and Tseng (2022).

Findings

Theme 1: AI implementation supported "Back-of-house" operations and increased efficiencies, team coordination and communications

Results showed that AI and automation help to save time, costs and human capital, and thereby enhance the efficiency of processes. Respondents indicated that AI is particularly beneficial for back-end activities and processes. The following were mentioned: centralized databases to store, share, update, and retrieve data and information among employees in various departments; chatbots to ask for things and services; automation systems to reduce repetitive processes; and the value of paperless for sustainability. Respondents indicated that productivity had increased, and time saved on repetitive tasks. This allowed staff to be more focused on critical issues encountered by guests. These benefits are highlighted by respondents R02, 03, 06 and 08.

> Back-end is all digitalized at the moment, such as how data is recorded, how invoices are submitted, everything is digital to speed up and [enhance the] accuracy of back end. It is paperless. (Respondent R02).

> In a typical web check-in situation, there will be one agent, and he will do all the work until you are done. Since customers want to do this (web check-in) on their own, we can make the lobby more 'loungy' and staff can get them seated and help with Wi-Fi and do their check-in, serve tea and engage in some small talk and move on to the next guest to help them do it (web check-in) themselves. So, at one point, one staff [member] can serve more than three customers at a time as the guests handle registration. This saves us manpower and time when guests check in themselves. (Respondent R03)

> There was a new implementation for self-registration kiosks, e-registration and passport scanners. The digitalization aims to reduce the processes for better productivity and more time for staff to focus on important matters such as engaging with guests. (Respondent R06)

> In the past, we needed to print the paper for the guests. However, with updates, it is too tedious and wasteful. Now, we partner with "SWIPE", which has a QR code where we can update the promotion back-end or upload EDM to scan the QR code. It helps connect with the restaurants/partners over different social media channels. In the past, my existing housekeepers had ten years' worth of files on what happened to the hotel. With technology, we can now move to the cloud. Now, when I engage with the housekeeper, one of them is 60 [years old] so she has the largest resistance. Now, it is easy for her to see benefits. (Respondent R08)

Theme 2: AI implementation may not support "Front-of-house" functions and may not benefit less IT-savvy leisure hotel guests, but frequent or loyal repeat hotel guests may find these more convenient

Despite the push for digitalization in the hotel's front office through initiatives such as self-check-in kiosk machines, currency exchange machines, digital displays in the lobby, and digital keys, our respondents shared that AI implementation may not fully support "front-of-house" functions. This can particularly impact less IT-savvy leisure hotel guests who might find these technologies challenging. However, frequent or loyal repeat guests may find these initiatives more convenient and beneficial. For instance, the hotel's approach to making self-check-in more experiential through "ambassadorship," where employees provide step-by-step guidance, aims to bridge this gap. AI initiatives can include attentive and thoughtful service training for employees which would offer significant benefits such as higher guest satisfaction, expedited processes with pre-arrival check-in, enhanced check-in experiences, and a digital concierge providing helpful information about the surroundings. Additionally, digitalizing data synchronization via passport scanning improves service accuracy and efficiency, enhancing the hotel's image. These advantages are highlighted by respondents R03, R08, and R06, indicating that while AI can support front office functions, its benefits are more pronounced for tech-savvy, frequent guests.

> The digital displays and currency exchange machines are great tools, but we've observed that older guests or those unfamiliar with technology often need extra help. This can be challenging, especially when the lobby is busy and short-staffed. (Respondent 03)

> Our "ambassadorship" program, where we guide guests through the self-check-in process, has effectively eased the transition to digital check-ins. However, many guests are still unaware of this service, requiring us to offer assistance proactively. (Respondent 06)
>
> We've noticed that frequent guests appreciate the self-check-in kiosks for convenience, but many leisure travellers find them intimidating. It often falls on us to provide additional assistance, which can slow down the process during busy times. (Respondent 08)

Theme 3: the hotel business is still a service business that requires face-to-face interaction that may not be easily removed or replaced

Our respondents indicated that implementing AI in the hotel industry could not and should not result in a complete replacement of the human element, given the nature of the work. The respondents agreed that even though AI could generate various benefits and advantages in the workplace, human intimacy and interactions between staff and guests in the hospitality industry must not be neglected. In other words, while AI may create the novelty and "wow" experience, it is not sustainable as a sole strategy. Hotel guests value most highly human interaction, services, and experience, and this is instrumental in their choice of hotel.

> For arrival experience, we still need people. For anything related to check-in, we still need a warm body. When they enter the room, you can apply technology to give them experience in their rooms. In front of the house, we still need people. Human interaction. (Respondent R09)
>
> Digital means are just to support us (with QR code/ IPTV/ Namecards) and are here to enhance delivery but not replace. The person behind the screen still delivers the guests' experience. Technology is out there for those who want to adopt it, but the human element is there to stay. Whether 10–20 years, technology can never replace or replicate it. There are still mechanics behind digitalization that require staff to reach out to the guests and connect with them to find out how they are. Human elements are still required to execute such connections. (Respondent R02).
>
> It is important in a way but not 100%. Digitalization does not always do away with the human touch from the service line. We can't do without it (human touch) if everything is automated. We greatly emphasize our RAWs (random actions of wonders) and encourage our staff to do it. If you check in the guests, guests have a slight cough, and you realize it, later purchase some Strepsils [throat lozenges used to relieve discomfort caused by mouth and throat infections] and write a note. We train our staff to be very attentive to guests' needs. (Respondent R03)
>
> Maybe the older generation prefers human touch more. For example, I have a couple of senior Australian guests who prefer the human touch more than writing emails. They prefer calling in and spending [on]the international call. I have guests calling in the wee hours to talk to us, and they will make reservations. I believe people will like more human touch than just robots. (Respondent R04)
>
> It is a nice touch to have (robot), . . . it creates novelty and wow-factor . . . maybe the first time, second time guests are impressed but subsequent returning guests, I doubt it is because of the robot but more the service- the human element. (Respondent R05)
>
> Hotels with too much [adoption]of technology lost touch with guests. With more robotics, we will lose the touch of service. (Respondent R08)

Theme 4: there are varied impacts of AI on different hotel market segments

Hotels with AI initiatives may have different influences on different market segments. Our respondents showed that young generations of customers who are more technology- and IT-savvy and more willing to spend are more attracted by new digitalized initiatives in their hotel choice. Corporate travellers who are more focused on convenience, ease, services, and budget, however, may consider AI initiatives as secondary considerations in their hotel choice.

> The revenue-generating customers are in their late 20s or millennials. They are peaking at their salary and earning more revenue, so they are more willing to spend, so that is one factor to consider -our

> customers' spending power and what age group they come from and professions. Certain guests prefer using check-in kiosks, and corporate travellers on and off business trips most likely do not talk to people. Just get their job done, get the keys quickly, settle down in the room and get ready for work the next day. They don't want to talk to people. Maybe it's a factor to consider. Depends on what the guest values. (Respondent R04)

> Our younger guests, especially tech-savvy, are drawn to our new digital features like the self-check-in kiosks and digital keys. They seem to appreciate the convenience and are more willing to spend on these modern experiences. However, our corporate travellers prioritize convenience, efficient service, and budget. For them, while AI features are nice to have, they're not the main factor in choosing our hotel. (Respondent R10)

Theme 5: AI implementation may result in positioning a hotel to be more up to date, attracting younger job seekers

Integrating AI technologies within hotels has also significantly impacted the hotel's appeal to potential employees. Our findings indicate that AI implementation positions a hotel as a modern and forward-thinking workplace, which is particularly attractive to younger job seekers. These individuals, who are often more tech-savvy and open to innovative work environments, view hotels with advanced digital initiatives as desirable workplaces.

> It makes a lot of difference for staff. When you join a hotel [with AI initiatives and digitalization], you will feel everything is updated based on the market information. It is all digitalized. It is easier to perform your job and concentrate on more important matters. (Respondent R06)

Theme 6: piloting AI initiatives in one property before group-level deployment

Our research indicates strong support for piloting AI initiatives in a single property before expanding them across the entire hotel group. Our respondents agreed that this approach is prudent and effective way to manage the complexities and potential risks. Such piloting reduces the risk of widespread disruptions and ensures a smoother transition for staff and guests when the initiatives are rolled out group wide. Respondents R01, R02 and R03 further explained these points.

> Before implementing something, they go on a trial service to evaluate if the team can adapt, then evaluate to see if this system is worth the investment. The group sees the potential of using the system before and after our trial period to evaluate suitability. We are developing local hospitality. We want to do the best for our employees and organization by observing first, and then we will go into these necessary platforms if needed. (Respondent R01)

> If there is a new technology, we have a team to analyse whether it is timely and how to proceed. The keyword is to see how to anticipate the suitability and timing, see if it has potential or has a demand, research more about it, and implement it. This is the Company style. (Respondent R02)

Discussion

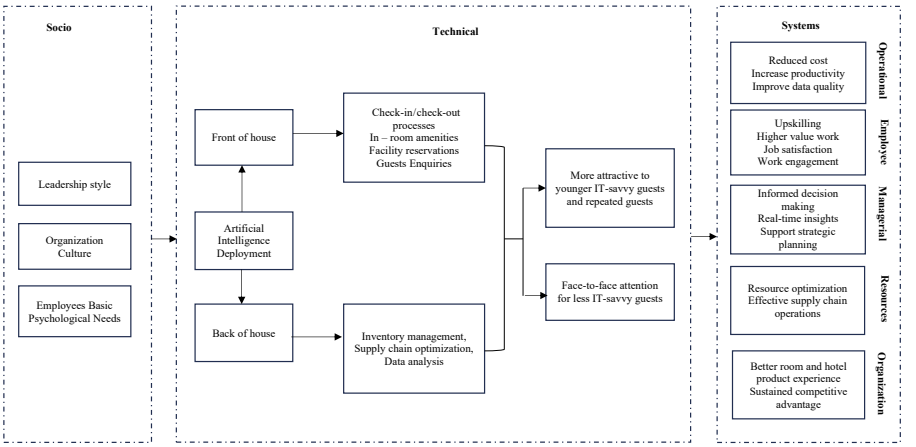
The findings show that AI usage in the hospitality industry is distinct from other industries. For instance, Sithambaram and Tajudeen (2022) found that AI is widely utilized in human resource activities, from recruitment to performance management. Yet in the hospitality industry, AI deployment primarily resides within back-office operations. While there is a growing trend towards integrating AI into customer-facing roles, as seen in chatbots for customer service and AI-powered concierge services, the primary focus remains on enhancing operational efficiency behind the scenes (Zhang and Jin, 2023). Such a cautious approach is not surprising as there is, as discussed earlier, a higher value placed on personal interaction and the human touch in delivering exceptional guest experiences (Li *et al.*, 2024). As Gursoy *et al.*

(2023) argue, the unique nature of hospitality services often requires a level of empathy, intuition, and personalized service that AI currently struggles to replicate.

The findings support Abulibdeh *et al.* (2024) in their contention that leadership is a key ingredient in the successful adoption and integration of AI technologies within an organization, importantly because leadership and organizational culture are critical in influencing an employee's psychological empowerment, attitudes, perceptions, and behaviors (Arun and Kahraman Gedik, 2020). Tan (2023) highlighted that effective leadership can inspire confidence and provide a clear vision, helping employees understand the benefits of strategies such as adopting AI. Similarly, our findings demonstrate that a supportive organizational culture fosters an environment where employees feel valued, heard, and motivated to engage with new technologies (Li *et al.*, 2024). When employees perceive that their leaders are committed to their development and that the organizational culture supports innovation and continuous learning, they are more likely to embrace AI adoption with a positive outlook.

Our results show that hotel AI initiatives influence different market segments in different ways. As highlighted in studies such as Torres *et al.* (2015), a guest's value perception seems to be a subjective evaluation based on a combination of factors including the quality of services and amenities, guest experience, and expectations. According to Pillai *et al.* (2021), a customer's value perception of a hotel refers to how guests assess the overall worth and benefit they receive in exchange for the cost of staying at the hotel. In other words, expectations of the services would be different depending on the type of hotel that guests are staying in. Younger, tech-savvy customers are significantly more attracted to hotels with advanced AI features. These customers value digital innovations such as automated check-ins, innovative room features, and personalized services, viewing them as essential factors in their hotel choices. Their willingness to spend on these technologies suggests that hotels emphasizing AI capabilities can effectively capture this market segment. Conversely, corporate travellers prioritize convenience, service quality, and budget over technological advancements. For this group, AI initiatives are secondary considerations. While they may appreciate AI enhancing efficiency—such as expedited check-ins or improved data security—these features are not primary determinants in hotel selection. Corporate travellers focus more on reliable service and cost-effectiveness.

Following the above, Figure 1 illustrates how AI is used in the hospitality industry, highlighting the different areas where AI is implemented within the hospitality industry. It shows that the primary focus is on back-office operations such as inventory management,



Source(s): Authors' own work

Figure 1. AI deployment strategic framework in local homegrown hotel chain

supply chain optimization, and data analysis, contrasting with AI's limited yet growing application in customer-facing roles like chatbots and AI-powered concierge services. Additionally, it reflects the varied impact of AI initiatives on different market segments, emphasizing the preferences of younger, tech-savvy customers for innovative AI features and the practical needs of corporate travellers for convenience and efficiency.

Conclusion

The findings of this study underscore the distinct trajectory of AI adoption in the hospitality industry of a local homegrown hotel. Unlike industries where AI has become deeply embedded in human resource functions such as recruitment and performance evaluation, our findings show that the hospitality industry has primarily leveraged AI for back-office operations. This emphasis on operational efficiency rather than customer-facing roles reflects the sector's unique dependency on human interaction in delivering quality guest experiences. While AI-driven customer service elements, such as chatbots and AI-powered concierge services, are gaining traction, their role remains complementary rather than supplementary.

This is further shown where our results reveal that the impact of AI varies across different market segments, especially luxury travellers would like to have prioritized and personalized service quality over automation. These insights suggest that hotels should adopt differentiated AI strategies tailored to their target clientele, balancing technological advancements with customer expectations. This cautious approach aligns with existing research such as (Calisto and Sarkar, 2024) emphasizing the value of empathy, intuition, and personalized service in hospitality, elements that AI has yet to fully replicate.

In sum, as AI technology continues to evolve, the hospitality industry must strike a balance between operational efficiency and the human-centric nature of its services. While back-office AI applications remain dominant, gradual expansion into customer-facing roles is inevitable. However, careful implementation is necessary to ensure that the personal touch that defines hospitality experiences remain. Leadership will play a pivotal role in shaping this transition, ensuring that employees are adequately prepared and that AI adoption aligns with organizational values.

Theoretical implications

Although there are several published works on AI deployment in the hospitality industry, not many have focused on local homegrown hotel chains. In this regard, this study contributes to the existing literature in several ways. First, this is the first work that uses an interdisciplinary lens in developing a holistic model that better captures the intersection of AI and hospitality. Using the socio-technical systems framework as the overarching theory, our model can account for unique variables such as the nuances involved in AI adoption and the differential impact on various hospitality segments, leading to a more holistic understanding of AI's role in tourism and hospitality. At the same time, our model incorporates different AI-driven customer behaviors, which can provide insights into how different customer groups perceive and value AI features. At the same time, the model can help identify each segment's specific needs and preferences, guiding the design of tailored AI solutions that enhance customer satisfaction and loyalty.

Managerial implications

Practically, leaders in the hospitality industry should continue to exercise leadership that fosters an organizational culture that promotes empowerment, efficacy, relatedness, and continuous learning. While the findings of this study are rooted in the context of a homegrown Singaporean hotel chain, the insights into AI adoption and its impact on employee and customer experiences may hold relevance for other industries and regions. For instance,

sectors such as retail or healthcare that similarly emphasize customer interaction and operational efficiency could benefit from adopting a socio-technical systems approach to AI integration. However, the cultural and organizational differences across industries necessitate further investigation to tailor AI strategies effectively. In this regard, a key strategy is to develop training programs that enhance employees' understanding and acceptance of AI technologies. Additionally, clear communication about the benefits of AI and its role in enhancing job roles can further build trust and reduce resistance to change. By prioritizing leadership and culture, organizations can create an environment where AI is viewed positively, leading to smoother implementation and greater overall effectiveness. At the same time, our model demonstrates that hospitality managers should implement AI technologies strategically to cater to different guest segments. For example, AI-driven check-in/check-out processes, in-room amenities, and facility reservations can be prioritized for younger, tech-savvy guests while high levels of personal interaction and face-to-face attention should continue to be provided for less IT-savvy guests. This differentiated approach can help maximize guest satisfaction by aligning AI applications with the preferences and expectations of various customer groups. It is an example of customization and personalization of service.

Research limitations

The small and narrow sample used in this study limits the generalizability of its findings. Besides, using a mono-research approach prevents the capturing of more nuanced findings on employees' perception of AI implementation. Similarly, the study primarily examined existing AI applications without exploring the potential of emerging technologies. This limitation underscores the need for research into advanced technologies like machine learning, natural language processing, and robotics to understand their future implications. Finally, the study acknowledged variations in customer preferences but lacked in-depth analysis of how AI could be tailored for different market segments. This limitation points to the need for advanced segmentation techniques to personalize services and enhance customer loyalty.

Future research directions

Future research should employ much larger and more diverse samples, including different geographic locations, types of hospitality establishments (e.g. boutique hotels, large international chains), and various cultural contexts. Combining both qualitative and quantitative research techniques can provide richer insights. Qualitative methods such as interviews and focus groups can explore employee and customer perceptions in-depth. In contrast, quantitative methods, such as surveys and statistical analysis, can measure the extent and impact of AI adoption across a broader sample.

Additionally, future research should explore strategies for helping employees adapt to AI technologies, including training programs, leadership approaches, and changes in organizational culture. Understanding the effectiveness of these strategies can help organizations facilitate smoother transitions and greater employee engagement with AI. Developing robust ethical frameworks for AI adoption in the hospitality industry is essential. Future research should focus on creating guidelines that address data privacy, transparency, and the ethical use of AI, ensuring technology enhances rather than undermines trust.

Investigating how AI can be tailored to different customer segments to enhance personalization and satisfaction is crucial. Future research should explore advanced customer segmentation techniques using AI and examine how personalized AI-driven services impact customer loyalty and overall experience. As AI technologies continually evolve, future research should explore the potential impacts of emerging AI technologies such as machine learning, natural language processing, and robotics on the hospitality industry. Understanding these technologies and their implications can help organizations stay ahead in a competitive landscape.

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