

The Impact of AI and Automation on the Hospitality Industry

Hannah Carr

Student

Stockton University

carrh5@go.stockton.edu

ABSTRACT

The integration of artificial intelligence (AI) and automation is transforming the hospitality industry by redefining customer service, enhancing operational efficiency, and enabling advanced personalization. These technologies allow businesses to analyze guest data in real time, offering tailored experiences that increase customer satisfaction and drive profitability. However, their widespread adoption presents significant challenges, including potential job displacement, depersonalized guest interactions, and heightened concerns about data privacy. While AI has demonstrated success in areas such as marketing, personalization, and data analytics, its full potential in guest-facing roles remains untapped due to its current inability to fully replicate human empathy and adaptability.

This commentary explores both the benefits and downsides of AI and automation, highlighting their impact on workforce dynamics and guest experiences. Research suggests a gradual implementation strategy that emphasizes collaborative AI systems that complement rather than replace human staff. Hybrid roles and employee training in AI systems can mitigate workforce disruptions while ensuring continued technological innovation. In addition, alleviating guest concerns through secure and ethical data practices is crucial to building trust and acceptance. By aligning AI advancements with the hospitality industry's core values — empathy, connection, and trust — businesses can achieve a harmonious balance between technological innovation and human-centered service excellence. This approach ensures the industry remains future-ready without compromising its fundamental mission to create memorable and meaningful guest experiences.

Keywords

AI (artificial intelligence), automation, hospitality, marketing, CLV (customer lifetime value)

INTRODUCTION

The use of artificial intelligence (AI) and automation in the workplace has rapidly accelerated in recent years. The hospitality industry has always been driven by the promise of exceptional service, comfort, and creating memorable experiences for its guests. Nowadays, technologies like AI have reshaped how businesses operate and interact with customers (Dang & Nguyen, 2023). These tools have allowed for the further development of consumer-focused strategies, such as relationship marketing and customer lifetime value (Firmansyah et. al., 2024). AI and automation have also redefined the standard of customer service in the hospitality industry, assisting with hotel bookings, providing instant responses to inquiries, and offering round-the-clock support for guests (Lucas, 2023). Unlike traditional service models, AI systems analyze vast amounts of data to predict customer needs and preferences, which, in turn, benefits both customers and businesses alike (Dang & Nguyen, 2023).

On the contrary, it has become increasingly difficult to make decisions on where and how AI and automation will be used, including which service roles it will eliminate. Due to AI and automation's negative connotations, it is difficult to maintain an equilibrium of both human and technological interactions in the hospitality industry (Limna, 2023). In addition, guests may be unwilling to use services offered by AI, as it may be viewed as untrustworthy or a violation of privacy. AI has started to take over numerous aspects of the hospitality industry, including human jobs such as front desk agents and servers, as well as housekeeping, administrative, and security roles. Automation may alter the nature of many service jobs, complicating certain tasks and prompting employees to quit or search for new positions (Ivanov, 2020).

The increasing use of AI and automation in the hospitality industry improves operational efficiency but threatens job displacement, may lead to depersonalized guest experiences, and engenders privacy concerns.

INDUSTRY CONTEXT

Direct Observations

The hospitality industry, encompassing sectors such as lodging, food and beverage, travel, and tourism, is ever changing and vast, generating trillions of dollars in revenue every year. The success of organizations in this industry is primarily due to their customer-centric operations. Guests expect warm, welcoming, and memorable experiences when staying at hotels, dining at restaurants, and visiting places of recreation. The industry is inherently labor-intensive, and therefore, positive and frequent face-to-face interactions with staff boost company profitability and increase the number of repeat guests (Hajal & Rowson, 2020). The use of AI may cause guest interactions to feel impersonal, having a detrimental impact on the aforementioned factors.

Due to its intricacy and novelty, AI systems may be unequipped to address complex guest needs. Most AI and automation systems of the present are unable to handle unexpected inquiries such as a request for a room change or an appliance issue.

Worker displacement will undoubtedly become a larger issue as AI and automation take center stage. Many entry-level jobs, such as housekeeping, reception, and food service could be negatively impacted. Surrounding communities will face higher unemployment rates, reduced spending power, and a limited job market due to the dominance of AI and automation. While companies may benefit from paying less in employee wages, the switch to AI would be financially detrimental to employees and their families.

Readings

In Support of AI

While AI and automation may have adverse effects on employment, guest experience, and operational efficiency, extensive research suggests otherwise. AI has proven itself to be useful in the marketing sector of the hospitality industry, performing analyses to personalize prices and messaging for consumers (Bulchand-Gidumal et. al., 2023). Companies that use AI analysis tools to generate insights in real time will obtain a competitive advantage (Bulchand-Gidumal et. al., 2023). AI can also be important for forecasting and analyzing, which are used throughout the industry for factors such as room rates and customer feedback. These softwares can help hotels and casinos maximize revenue (Bulchand-Gidumal et. al., 2023). Furthermore, these intelligence tools can be used to increase guest satisfaction by performing tasks such as setting a comfortable guest room temperature, recommending dining options

based on guest preferences, and offering amenity coupons to guests based on previous spending habits (Bulchand-Gidumal et. al., 2023). The possibilities of AI and automation use in the marketing sector are virtually endless.

Moreover, AI and automation have already been implemented in certain countries. This includes using robots to take food orders, deliver food, and welcome passengers when they deplane (Khaliq et. al., 2021). These success stories engender feelings of hope for the future of AI in the hospitality industry, as companies are searching for ways to cut costs and streamline operations.

Research by Ivanov (2020) suggests that “Automation has both substitution and enhancement effects on jobs simultaneously. Automation has a substitution effect on jobs when it replaces humans in the tasks that they currently perform. An enhancement effect happens when automation does not lead to the elimination of a job position but increases the productivity of the employee.” This has a large impact on whether a job position is eliminated or multiplied; humans can work together with automation in certain job positions. AI and automation can expedite employee tasks without replacing them, such as booking hotel rooms or searching for guest information.

In Opposition to AI

Through extensive research, AI and automation have proven valuable in the marketing sector, alongside employee operations, and in real-world accomplishments. However, as Tiwari (2023) noted, “the trajectory of change of AI and automation needs to be further understood before companies implement staffing changes.” AI remains in the development stage and is still largely unexplored; its long-lasting effects and complications have not been thoroughly researched. The substitution and enhancement effects discussed by Ivanov (2020) indicate that jobs can be substituted if they consist of tasks that can be easily automated, such as information processing and line cooking. This concept places employees who work low-skilled jobs at risk of losing them, which, as discussed above, can be detrimental. The implementation of automation and robots has led to lower wages, job displacement, and income inequity (Tiwari, 2023).

DISCUSSION

The implementation of automation and AI has raised pertinent questions, most notably:

- (1) How will guests react to AI and automation changes?
 - a. If positively, how do we address the subject of lessening the human workforce?
 - b. If negatively, will companies implement automation and AI anyway to maximize profitability, or will they somehow manage the uncertainty of the ever-changing technological landscape?

The most important aspect to remember when contemplating these questions is that hospitality is a “people-centered” industry; all or almost all hospitality revenue relies on the successful completion of positive experiences with guests, and increasing their CLV and converting them to repeat guests. Technology, like automation and AI, has the ability to place the guest at the center of operations, which has a positive impact on consumer experience and drives profitable growth (Limna, 2023).

Mariani and Borghi (2022) found that “customer satisfaction and perception of AI increases after positive experiences with AI.” If companies can adequately implement AI and automation into their business practices, guests will eventually grow accustomed to these services after repeat interactions. In addition, Limna (2023) noted that “AI should slowly be adopted by even the most apprehensive of companies, as it

is slowly being integrated into customers' everyday lives outside of the hospitality industry.” A slow but steady incorporation of AI and automation may be the key to subconsciously persuading guests to accept these changes, with little to no negative effect on profitability or company image. Furthermore, guests will begin to associate positive, personalized experiences with AI, and grow to tolerate and possibly even appreciate its usefulness.

While a number of employees may experience layoffs due to their job position, many new jobs, particularly in IT, will be created. It is important to note that staffing changes will not be implemented immediately, but rather as part of a slow and gradual process due to the trajectory of change of automation and AI (Tiwari, 2023). In addition, the majority of human-staffed positions have faced automation challenges, and therefore, discussion of the issue should be postponed until automation and AI have mastered the art of human interaction (Brougham & Haar, 2018). Furthermore, technical skills will be required to use AI and automation technologies, and because these technical skills involve knowing how to use, implement, and work alongside these technologies rather than manufacture or create them, many employees will still remain in their job positions (Ivanov, 2020).

Even with a gradual introduction, guests may remain apprehensive of AI and automation technologies. The primary concern persists: the loss of human interaction that defines traditional hospitality. Many guests value personalized, empathetic service, and fear that interactions with AI-driven systems could negatively impact their overall experience. In addition, the use of AI raises privacy concerns, as technology platforms are vulnerable to security threats (Limna, 2023). AI systems gather and operate on consumer data, which could expose private guest information to third parties if protections are not put into place. However, findings from a study conducted by Park, Tung, and Lee (2021) emphasized that all aspects of an organization, including marketing, sales, and operations, needed to place privacy and security at the forefront of their values to satiate guest concerns. Furthermore, AI systems need to provide consistent, helpful information to build their credibility with guests (Park et. al., 2021).

A handful of organizations may choose not to implement AI and automation into their guest operations. This includes large corporations, as well as bed-and-breakfasts and family-owned hotels. While smaller businesses may be able to operate efficiently without AI and automation, larger businesses may lose profitability due to the loss of a competitive advantage. In the near future, guests may become accustomed to AI and automation and opt to spend their time and money at places where they can receive personalized recommendations and treatment.

CONCLUSION

Implementation of Findings

The aforementioned findings can be used to perform more in-depth research on AI and automation and its impacts on hospitality guests, employees, and the industry as a whole. More specifically, organizations can delve into researching specific AI software companies other hospitality businesses have been using. In addition, extensive tests should be performed to ensure automation capability and safety before dismissing individuals in lower-skilled job positions.

Due to the fact that employees may be subject to working alongside or with AI in the future, staff interviews should be conducted to determine which aspects of AI make their jobs simpler and which do not. Interviews should also be conducted with willing participants to collect their perspectives on the use of AI and automation in the hospitality industry and how to implement them in guest-facing positions.

Limitations

While studies exist on consumers' perceptions of AI and automation, there is not enough data to confirm a generalized view on the subject. This may be partially due to the generational differences that exist with the use of AI, as older generations, such as baby boomers and Generation X, still struggle to use other technologies. On the other hand, millennials and Generation Z may be more open to using AI technology in the hospitality setting, due to their device use as young children and teenagers.

AI is also fairly new and still experiences problems of its own. Therefore, pertaining to the hospitality industry, it is still in its development stage, and its true effectiveness cannot be studied until it is implemented properly and for a long period of time. In addition, privacy and security concerns need to be mitigated to positively alter the perspective of automation and AI systems.

Due to the hospitality industry's emphasis on human interaction, many service jobs may not be at risk of replacement with AI or automation. Service jobs may be difficult to replicate using AI, and organizations may want to keep humans at the heart of their operations to maintain a hospitable environment.

Recommendations

The literature review suggests that AI and automation need to be further explored before they are incorporated into day-to-day operating procedures in the hospitality industry. Policies should be considered prior to implementation to alleviate the negative aspects of AI and automation, particularly job displacement and security concerns, while at the same time maximizing their benefits (Tiwari, 2023). Furthermore, and especially at first, AI and automation should be programmed to work alongside humans, to curb job displacement and alleviate employee stress surrounding the issue.

The adoption of AI and automation in the hospitality industry represents both opportunity and challenge, but leveraging findings from research and real-world applications can alleviate the uncertainty. Studies suggest that gradual implementation, combined with transparent communication, is essential to overcoming guest apprehension and staff adaptation (Mariani & Borghi, 2022). It is recommended that AI and automation be deployed in ways that visibly enhance service quality to further build trust and acceptance with guests.

Additionally, collecting data on guest preferences with the use of AI allows organizations to personalize offerings and create memorable experiences, as evidenced by case studies performed by Dang and Nguyen (2023) and Firmansyah, Machado, and Moreira (2024). Meanwhile, job displacement concerns highlighted in research can be mitigated by introducing hybrid roles, which allow employees to work alongside AI and automation, rather than be replaced by them (Ivanov, 2020).

Organizations should use these findings to align the technological innovations of AI and automation with the core values of the hospitality industry: empathy, connection, and trust. By focusing on AI systems that support rather than replace human interaction, businesses can balance efficiency with emotional engagement. The future of the hospitality industry lies in harmonizing these insights to ensure technological advancement without compromising its heart — human-centered service excellence.

REFERENCES

- Brougham, D., Haar, J. Smart Technology, Artificial Intelligence, Robotics, and Algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*. 2018;24(2):239-257. doi:10.1017/jmo.2016.55
- Bulchand-Gidumal, J., William Secin, E., O'Connor, P., & Buhalis, D. (2023). Artificial intelligence's impact on hospitality and tourism marketing: exploring key themes and addressing challenges. *Current Issues in Tourism*, 27(14), 2345–2362. <https://doi.org/10.1080/13683500.2023.2229480>
- Dang, T.D., Nguyen, M.T. Systematic review and research agenda for the tourism and hospitality sector: co-creation of customer value in the digital age. *Futur Bus J* 9, 94 (2023). <https://doi.org/10.1186/s43093-023-00274-5>
- Firmansyah, E.B., Machado, M.R., & Moreira, J.L.R. (2024). How can Artificial Intelligence (AI) be used to manage Customer Lifetime Value (CLV) — A systematic literature review. *International Journal of Information Management Data Insights*, 4(2), 100279.
- Georges El Hajal & Bill Rowson (2020). The future of hospitality jobs, *Research in Hospitality Management*, 10:1, 55-61, DOI: [10.1080/22243534.2020.1790210](https://doi.org/10.1080/22243534.2020.1790210)
- Hajal, G.E., & Rowson, B. (2020). The future of hospitality jobs. *Research in Hospitality Management*, 10(1), 55–61. <https://doi.org/10.1080/22243534.2020.1790210>
- Ivanov, S. (2020). The impact of automation on tourism and hospitality jobs. *Information Technology & Tourism*, 22(2), 205–215. <https://doi.org/10.1007/s40558-020-00175-1>
- Khaliq, A., Waqas, A., Nisar, Q.A., Haider, S., & Asghar, Z. (2021). Application of AI and robotics in hospitality sector: A resource gain and resource loss perspective. *Technology in Society*, 68, 101807. <https://doi.org/10.1016/j.techsoc.2021.101807>
- Limna, P. (2023). Artificial Intelligence (AI) in the hospitality industry: A review article. *International Journal of Computing Sciences Research*, 7, 1306-1317. <https://doi.org/10.25147/ijcsr.2017.001.1.103>
- Lucas, G. (2023, November 8). How AI in the Hospitality Industry Is Changing the Game. *GCU*. <https://www.gcu.edu/blog/business-management/ai-in-hospitality-industry>
- Mariani, M.M., & Borghi, M. (2023). Artificial intelligence in service industries: customers' assessment of service production and resilient service operations. *International Journal of Production Research*, 62(15), 5400–5416. <https://doi.org/10.1080/00207543.2022.2160027>
- Park, Sungjun S., et. al. "The Adoption of AI Service Robots: A Comparison between Credence and Experience Service Settings." *Psychology & Marketing*, vol. 38, no. 4, 27 Feb. 2021, pp. 691–703, <https://doi.org/10.1002/mar.21468>
- Tiwari, R. (2023). The Impact of AI and Machine Learning on Job Displacement and Employment Opportunities. *International Journal of Scientific Research in Engineering and Management*, 07(01). <https://doi.org/10.55041/ijrem17506>