


Chapter 3

Optimizing Food Quality and Customer Service in Restaurants Through AI-Powered Monitoring Systems

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ABSTRACT

The restaurant world is fast and competitive with advancement in technology. Success in the business world heavily relies on customer happiness. Providing exceptional dining experiences to customers is no longer considered a luxury, but rather a necessity. Fortunately, the advent of AI has brought a wave of transformation in the restaurant industry. AI technology, restaurants can provide unmatched customer satisfaction. From personalized dining experiences to streamlining operations, AI is revolutionizing the industry by introducing innovative solutions in the competitive restaurant industry by enhancing food quality, kitchen efficiency, and customer service. AI ensures consistency, safety, and excellence in dining experiences through advanced algorithms and real-time data analytics. Exploring how AI-powered technologies streamline restaurant operations and elevate hospitality standards is the main focus of this study. Case studies include AI robots manage various services showcasing AI's potential to transform guest interactions and operational accuracy.

1. INTRODUCTION

Sustaining first-rate cuisine and customer service is crucial for success in the fiercely competitive restaurant business. Artificial intelligence (AI) is emerging as a revolutionary tool to improve operational efficiency and consumer happiness as eating experiences change with technological improvements. AI-

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powered monitoring technologies are transforming restaurant operations to oversee food quality better, run their kitchens, and provide exceptional customer service. These systems ensure uniformity, safety, and excellence in every facet of the dining experience by streamlining operations using sophisticated algorithms and real-time data analytics. Restaurants may attain a new level of accuracy for standard operating procedures (Sharma et al.2022 and Ford 2021). In the 290-room Fly Zoo Future hotel, owned by Chinese e-commerce giant Alibaba Group in Hangzhou, China, numerous services, including check-in, lighting control, and room service, are managed by AI robots. Meanwhile, Hilton Hotels has introduced a real robot named “Connie” at their Virginia location. Connie assists guests with check-in and provides recommendations on local attractions and activities. Positioned at the reception desk, this tiny robot evolves and improves through visitor interactions. Designed to offer concierge services to hotel guests, Connie is named after Conrad Hilton, a founder of the Hilton hotel chain. The robot results from collaboration between IBM, a leading information technology company, and Hilton Hotels (Altaş, 2022). Chatbot technology, involving options like chatbot concierge, virtual concierge, Bebot, and Eva, is becoming progressively appropriate in hotels. These instruments provide guests with quick access to evidence and automated communication, reducing the need to wait for staff responses. While key hotel chains such as Novotel, Marriott, Holiday Inn, and Hyatt have accepted chatbots, independent hotels often have confidence in more inexpensive human-operated messaging organizations. Chatbots can be amalgamated into various customer service controls, such as touchscreens in hotel lobbies, mobile apps, or tablets provided at check-in. They provide information about the hotel, nearby attractions, weather forecasts, and flight schedules. AI-enhanced chatbots can tailor rejoinders to guests' communication styles and inclinations, improving the guest experience and reducing staff workload. Moreover, chatbots facilitate hotels to gather data on guest performance to refine services and build brand loyalty (Dickinson, 2017). Though, they face encounters such as meeting compound requests and interpretation nuanced language, and the cost of implementation can be high, which often restrains their use to larger hotel companies (Dickinson, 2017; Lukanova & Ilieva, 2019).

Artificial Intelligence (AI) is reforming the background of purchaser service in the restaurant industry by recovering operational effectiveness and identifying customer occurrences. AI expertise, such as machine learning and extrapolative analytics, perform a significant role in optimizing processes like inventory management and demand formation. These progresses lead to reduced operational costs and better service stability (Sinha & Praveen, 2024; Murugeah, 2024). Furthermore, AI enables personalized relations by analyzing customer statistics to provide personalized menu recommendations and elevations, which in turn supports customer satisfaction and loyalty (Sinha & Praveen, 2024; Nebolisa et al., 2024).

However, the adoption of AI presents certain experiments. Research suggests that while AI enhances engagement, it may adversely affect customer loyalty compared to human communications, particularly during the COVID-19 pandemic (Supawat & Suttikun, 2024). This focal point is a complex dynamic where the productivity of AI must be weighed against the human touch that many customers continue to value. In particular, AI's integration into the restaurant sector is vital, promising improved service delivery while also making careful interest to customer preferences and experiences (Kyrnis, 2024; Chinenye et al., 2024). Technology is shoving various innovations in the promising smart hospitality sector (Buhalis & Leung, 2018; Law et al., 2014), transforming various developments within the industry (Liang-Pholsena, 2020; Tussyadiah, 2020a, 2020b; Samala, 2020; Paluch et al., 2020; Mihalic & Buhalis, 2013). As guests become progressively tech-savvy in their daily lives, hotels are also progressing through novel service delivery methods. Cobanoglu et al. (2011) have proved that technology substantially affects overall

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