Chapter 1: Hotels and Surveys

**Introduction**

The Hyatt Hotel Corporation was one of the six major hotel corporations that dominated the American hotel industry. Hotels like it heavily relied on survey responses from their customers to make improvements in their hospitality offerings. Every survey completed by customers presented an opportunity to improve; however, doing so required a painstaking amount of manual review from employees. Countless hours were spent reading through reviews, organizing the data, and creating action plans to resolve issues—often resulting in extended periods of inconsistency.

**Background**

Hospitality professionals working within large hotel chains observed the lengthy and often inefficient process required to translate survey feedback into tangible improvements. Despite the industry's commitment to customer satisfaction, the manual review and implementation cycle frequently led to delays in pragmatic change. Employees tasked with assessing guest reviews had to comb through vast amounts of unstructured text data, organize findings, and formulate response strategies—a process that could take weeks or even months before meaningful adjustments took effect. This inefficiency underscored the need for streamlined, data-driven solutions to enhance decision-making and responsiveness in the hospitality industry.

Customer feedback played a crucial role in shaping the guest experience within the hospitality industry. Hotels like The Hyatt Regency of Green Bay relied on survey responses to identify service gaps, refine operational strategies, and enhance customer satisfaction. However, the process of analyzing feedback remained overwhelmingly manual, requiring employees to sift through large volumes of unstructured text data to extract actionable insights. This approach was not only time-consuming but also prone to inconsistencies, leading to delayed responses and missed opportunities for meaningful improvements.

Furthermore, traditional feedback systems often failed to capture nuanced sentiment and emerging trends effectively. Without a streamlined approach to categorizing survey data, hotels struggled to prioritize issues and optimize their decision-making processes. As a result, guest concerns frequently went unaddressed, affecting both brand reputation and long-term loyalty. To mitigate these challenges, there emerged a growing need for AI-driven automation in customer feedback analysis. By integrating sentiment analysis, summarization, and fine-tuned chatbot responses, hotels could systematically process survey data, identify patterns, and generate actionable recommendations—enhancing efficiency and ensuring a more proactive hospitality experience.

**Statement of the Problem**

The traditional approach to customer feedback analysis in the hospitality industry was slow, inconsistent, and labor-intensive, preventing hotels from making timely and effective improvements. Employees were required to manually review vast amounts of unstructured survey data, delaying actionable insights and reducing operational efficiency. In addition, conventional methods struggled to capture nuanced sentiment or identify recurring themes, complicating efforts to prioritize concerns or respond effectively. Without an automated system capable of categorizing feedback by sentiment, summarizing common concerns, and generating AI-driven responses, hotels risked losing valuable opportunities to improve guest experiences and strengthen brand loyalty.

**Project Objectives**

This project aimed to modernize customer feedback analysis for the Hyatt Regency of Green Bay by implementing Natural Language Processing (NLP) and deep learning techniques. The dataset consisted of nine years of hotel survey responses, offering a wealth of historical insights into guest sentiment and recurring concerns. The primary objective was to develop a systematic approach that eliminated the inefficiencies of manual review while improving the accuracy and responsiveness of hotel operations.

**Significance of the Project**

To achieve this, the project established an automated pipeline for processing guest feedback. First, an NLP-based sentiment analysis model categorized customer comments according to sentiment, enabling hotel management to quickly identify positive, neutral, and negative experiences. This allowed staff to focus on the most critical issues affecting guest satisfaction.

Following sentiment classification, a text summarization algorithm was employed to extract common themes from survey responses, grouping them into recognizable categories such as service quality, cleanliness, booking experience, or staff interactions. This structured organization provided leadership with actionable insights that were immediately applicable to operational improvements.

The final phase of the project involved developing an AI-powered automated response system tailored to customer feedback. Traditional automated responses often lacked empathy, resulting in replies that felt generic, impersonal, or overly rigid. In contrast, this system was designed to learn from staff-edited responses, ensuring that its replies remained natural, thoughtful, and emotionally intelligent. Instead of generating robotic or dismissive messages, the AI was fine-tuned to recognize the nuances of customer sentiment and adapt its responses accordingly—striking a balance between understanding, reassurance, and prompt action. During the initial implementation, human oversight played a central role in training the system. Over time, the AI refined its approach, ultimately enabling autonomous responses that maintained warmth and sincerity while improving efficiency and guest satisfaction.

If the objectives of this project were achieved, the impact on the hospitality industry—particularly at Hyatt Regency of Green Bay—was expected to be substantial. Traditional survey analysis relied on labor-intensive manual reviews, which introduced inconsistency and delayed meaningful improvements to the guest experience. By implementing NLP and deep learning techniques, this project aimed to revolutionize customer feedback workflows, delivering faster, more accurate insights with far less operational strain.

Through sentiment analysis, hotels were able to more efficiently identify critical issues and prioritize concerns that most affected customer satisfaction. Summarization algorithms ensured that recurring themes were properly categorized, enabling leadership to make informed, data-driven decisions based on emerging trends rather than anecdotal evidence. The AI-powered response system, unlike conventional automated replies, generated thoughtful, context-aware messages that aligned with customer sentiment—restoring a sense of personalization to hospitality.

Beyond improving guest satisfaction, the project enhanced business efficiency by reducing manual workload, allowing staff to focus on strategic initiatives and high-value interactions. Over time, as the AI continued to learn from human feedback, the system progressed toward greater automation, ensuring sustained operational efficiency without compromising service quality. Ultimately, this initiative aimed to set a new industry standard, showing how AI-driven survey analysis could help hospitality businesses remain agile, responsive, and competitive in an increasingly data-centric world.

The broader impact of this project extended beyond efficiency gains and analytical insights. By streamlining survey processing and automating responses, hotel employees were freed from tedious data tasks—allowing them to focus on what truly mattered: caring for people so they could be their best. This guiding principle of the Hyatt Regency was preserved through the thoughtful integration of technology and human connection, ensuring that service remained warm, personal, and forward-thinking in an AI-enhanced hospitality landscape.

**Assumptions, Limitations, and Delimitations**

The project also had clear delimitations to maintain a focused scope centered on survey-based analysis. It did not incorporate customer insights from social media, online reviews, or direct verbal interactions—meaning that broader sentiment data beyond surveys remained outside the project’s boundaries. Furthermore, only written text responses were analyzed, excluding feedback that may have come from spoken language or non-verbal cues.

In addition, there may not have been enough data to maximize the AI model’s predictive accuracy. To improve performance and generalizability, future iterations of the system might require additional datasets drawn from supplemental sources. Lastly, the AI model was tailored specifically to meet the operational needs of the Hyatt Regency of Green Bay. As a result, it was not designed for universal application across all hospitality brands without further customization. These assumptions, limitations, and delimitations helped frame the project’s expectations, ensuring a realistic and effective approach to improving customer feedback analysis within the hotel industry.

**Conclusion**

This project was expected to generate operational efficiency in ways previously unattainable. The results of applying NLP and machine learning algorithms offered the potential for immediate action on a range of issues—some of which may not have been identifiable using manual processes alone. While the Hyatt Regency of Green Bay had already begun exploring data science initiatives, this project provided an opportunity to accelerate that progress by addressing several areas of long standing inefficiency and underdeveloped strategy.

By transforming how the hotel processed and responded to customer feedback, the project aimed to create a smarter, faster, and more empathetic service model. Its innovations not only aligned with the goals of modern hospitality but also positioned the Hyatt Regency to lead in adopting AI-driven solutions tailored to real-world operational needs.