

# Chapter 1


## The AI Connection: Transforming Customer Engagement Through Robotics

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### ABSTRACT

*This study examines the intricate relationship between perceived usefulness of AI-powered robotics and customer satisfaction, employing a robust methodological framework to unravel the multifaceted dynamics underpinning this interaction, utilizing a meticulously designed survey instrument to capture subjective perceptions through validated Likert-scale measures and analyzing the data via advanced statistical techniques, including correlation and regression modeling, complemented*

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*by rigorous diagnostic evaluations to ensure statistical validity and robustness, revealing a significant positive association between the constructs, with perceived usefulness emerging as a pivotal predictor of satisfaction, while residual analyses confirm adherence to regression assumptions, thereby substantiating the reliability of the findings; the results underscore the centrality of technological utility in driving consumer satisfaction, yet highlight the nuanced variability in responses.*

## **INTRODUCTION**

The advent of artificial intelligence (AI) has ushered in a transformative era across diverse sectors, with customer service emerging as a pivotal domain for the integration of AI-powered technologies (Aguiar-Costa et al., 2022). These systems, ranging from chatbots to humanoid robotics, are increasingly being deployed to enhance efficiency, streamline interactions, and deliver personalized experiences. However, the integration of such technologies raises critical questions about their perceived utility and their ability to meet or exceed customer expectations in an environment traditionally reliant on human engagement (Oktavia & Arifin, 2024). The perception of usefulness, a construct rooted in the theoretical frameworks of technology acceptance, plays an instrumental role in shaping users' attitudes and behavioral intentions toward these systems (Alqasa, 2023). In this context, the concept of customer satisfaction serves as a critical metric to evaluate the success of AI-powered robotics, reflecting the extent to which these technologies align with consumer expectations and contribute to a positive overall experience (Hu et al., 2024).

Despite the rapid proliferation of AI systems in customer service, their adoption is not without challenges. While these technologies promise unparalleled consistency and scalability, their impersonal nature often introduces a disconnect that may hinder customer satisfaction (Brill et al., 2019). The effectiveness of AI-powered robotics, therefore, hinges on their perceived usefulness, which encompasses their ability to address customer needs effectively, deliver accurate responses, and provide value in ways that are both intuitive and accessible. Understanding the interplay between perceived usefulness and customer satisfaction is crucial for businesses seeking to optimize their investment in AI technologies and design systems that resonate with users (Yella & Suganyadevi, 2024). Moreover, as the competitive landscape intensifies, organizations are under increasing pressure to balance technological innovation with human-centric service elements to meet diverse customer expectations (Zhang et al., 2024).

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