



Exploring Customer Insights Through Online Review Analytics: Understanding Service Quality in Vietnam's Drug Retail Sector


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ABSTRACT

The rapid expansion of digital platforms has transformed how customers share service experiences, generating large volumes of online feedback that can be used to evaluate service quality in the retail pharmacy sector. This study applied computational linguistic techniques to analyze customer opinions and assess service performance in Vietnam's pharmaceutical retail industry. Using Python-based natural language processing and sentiment analysis, 11,938 customer reviews were collected from the top five drugstore chains and classified into positive, negative, and neutral sentiments. Aspect-based sentiment analysis was then employed to identify key service quality dimensions, including staff professionalism, product availability, pricing, consultation quality, and store environment. Results indicated that customer opinions were mainly positive, highlighting staff friendliness, cleanliness, and reliability, while negative sentiments were often related to waiting times and limited product availability. These findings support data-driven decision-making and service improvements in pharmacy retail.

KEYWORDS

Online Review Analytics, NLP, Python, Sentiment Analysis, Customer Insights, Vietnam, Drug Stores

INTRODUCTION

The global pharmacy market is experiencing significant expansion, driven by demographic shifts, evolving consumer behavior, and technological innovations (Hole et al., 2021; Naderian et al., 2024). Recent industry estimates indicate that the broader pharmacy-and-healthcare stores segment was valued at approximately \$1.33 trillion in 2024 and is expected to grow to around \$1.43 trillion in 2025. The role of pharmacies is evolving beyond simply dispensing medications. Many stores are expanding into wellness services, immunization, chronic-disease management, and digital health

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integration. Moreover, the shift towards online and omnichannel pharmacy services is accelerating, and traditional brick-and-mortar stores are increasingly complemented by e-pharmacy platforms, home-delivery models, and digitally enabled engagement (Ahalawat et al., 2024; Almeman, 2024; Hole et al., 2021).

In today's era of rapid economic growth, private pharmacies in Vietnam have proliferated, offering consumers an overwhelming variety of medicines and health products (Nguyen et al., 2023). With hundreds of thousands of drug types available, customers increasingly base their purchasing decisions not only on product variety but also on service quality and staff attitude. The rise of large pharmacy chains has transformed Vietnam's retail pharmaceutical landscape, providing consumers with more reliable options and standardized quality (Nguyen & Dinh, 2023). The market's potential remains immense, driven by an aging population, heightened post-pandemic health awareness, and environmental pollution factors. The nonprescription segment, favored for its convenience and profitability, continues to attract investment. Vietnam's pharmacy retail sector has demonstrated consistent growth (Nguyen-Khanh et al., 2024).

The analysis of online reviews provides valuable customer insights that help brands improve their performance and align with evolving consumer preferences (Ahalawat et al., 2024; Thu et al., 2021). Previous studies have demonstrated that online feedback influences customers' decision-making processes and contributes to brand image (Ahalawat et al., 2024; Annamalai et al., 2024). In emerging markets such as Vietnam, online reviews represent an untapped source of data that can inform strategic decisions and enhance competitiveness in the global landscape (Thu et al., 2021). With Vietnam's rapid development in the pharmacy retail sector, using digital feedback to understand how customers perceive experiences is increasingly important for sustaining growth and ensuring service excellence (Nguyen-Khanh et al., 2024).

Sentiment analysis and aspect-based sentiment analysis play increasingly vital roles in understanding consumer perceptions and satisfaction across various service industries, including healthcare and pharmacy (Annamalai et al., 2024; Mishra et al., 2024; Pradeep & UmaRani, 2024). In the drug retail sector, online reviews and patient feedback contain rich emotional and experiential information that can support better decision-making, enhance service quality, and improve trust between customers and pharmacists. Recent advances in natural language processing (NLP) have significantly enhanced the accuracy and interpretability of sentiment detection in the medical and pharmaceutical domains (Ahalawat et al., 2024; Durga et al., 2024; Min, 2019; Rathor et al., 2023; Saad et al., 2021).

Although service quality has long been recognized as a critical determinant of customer satisfaction and business performance in the retail pharmacy sector, most existing studies have relied on traditional survey-based approaches such as SERVQUAL or customer satisfaction questionnaires (Nguyen & Dinh, 2023). These methods, while useful, are often limited by small sample sizes, subjective biases, and high data collection costs. In contrast, online customer reviews offer a rich and continuously updated source of data reflecting genuine customer experiences. However, the application of sentiment analysis and text mining techniques to evaluate service quality in the pharmaceutical retail context, particularly in the Vietnamese drug retail market, remains limited (Nguyen & Dinh, 2023; Nguyen et al., 2023). Existing research has primarily focused on hospitality, e-commerce, and healthcare services, with little attention to the unique characteristics of drug stores, including the dual roles of pharmacists as healthcare providers and retail staff. Moreover, few studies have integrated aspect-based sentiment analysis, which captures fine-grained insights, into specific service attributes such as staff professionalism, consultation quality, and medication availability. This gap highlights the need for data-driven approaches that combine NLP and sentiment analysis to comprehensively understand and enhance service quality in Vietnam's drug retail industry.

The primary objective of this study was to examine and evaluate the service quality of Vietnam's drug retail sector through the analysis of online customer reviews using sentiment analysis techniques. Grounded in service quality theory, this study conceptualized customer perceptions of pharmacy

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