

Chapter 10

Using Intelligent Text Analysis of Online Reviews to Determine the Main Factors of Restaurant Value Propositions

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ABSTRACT

This chapter discusses the sentiment classification of text messages containing customer reviews of an online restaurant service system using machine-learning methods, in particular text mining and multivariate text sentiment analysis. The study determines the structure of value proposition factors based on online restaurant reviews on TripAdvisor, collecting information on consumer preferences and the restaurant services in St. Petersburg (Russia) quality assessment and examines the influence of service format and reviews tonality on ratings restaurants factors. The service format context is proposed as the main attribute influencing the formation of the restaurant business value proposition and of relevance for online reviews. The results showed the key factors in the study of the sentiment were cuisine and dishes, reviews and ratings, and targeted search. MANOVA analysis represented that for special offers and features, reviews and ratings, factors and quantitative star ratings influenced the negative and positive sentiment of online reviews significantly.

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INTRODUCTION

Nowadays, according to the increasing availability and popularity of e-commerce, social media, information portals, and media service platforms to gauge the opinions of restaurant consumers, online restaurant reviews are emerging as a new market phenomenon that plays an increasingly important role in value proposition decisions (Sheng et al., 2017; Ordanini & Pasini, 2008). Online reviews provide consumers with a wealth of information about service and product quality, which can reduce their uncertainty about ordering through restaurant systems. These reviews have a significant impact on restaurant service sales. With the ease of accessibility of mobile technology, online access through media service platforms to the experiences of consumers is accelerating and replacing more traditional forms of company brand assessment. The most popular online review platforms include sources such as Afisha Restaurants, Restoclub, TripAdvisor, Allcafe, and Restoring. The large volume of online restaurant reviews is also an indispensable resource for restaurants. Companies can analyze their customer experiences of service and food quality in more detail and in a timely manner, and understand potential growth points in relationship marketing and business modeling, whether there is a need to improve customer loyalty through online interaction, delivery systems, quality of service, or the menu, to determine the structure of significant factors in the value proposition.

The period of the pandemic served as a strong motivating aspect for the restructuring of commercial business and forced the transition to an online business format, and building and / or optimizing e-commerce systems and the delivery service, in a large number of commercial enterprises in the service sector, including the restaurant industry. With this in mind, it is important to understand what drives customers to come back or not to a restaurant, what motivates them to recommend a restaurant to their friends and family or not, what brand image is, and what factors create value for customers. In this regard, it is possible to track the growing popularity and importance of analytics for online restaurant service reviews, and the amount of relevant research using text mining and machine learning tools. A review of previous research related to online restaurant reviews published in academic research has shown an emerging reliance on Internet resources as sources of information for decision-making about restaurant products (e.g. Vásquez & Chik, 2015; Kaviya et al., 2017; Berezina et al., 2019), which heightens the need for more research on online restaurant reviews. It is important for a restaurant management system to use the information available from online customer reviews to better understand the needs of the target audience and improve the efficiency of the business. However, the online environment generates so much information that it can be difficult for managers to collect it all and analyze it manually. For this reason, this article uses text mining methods and systems that allow to extract meaningful patterns from large amounts of text information and demonstrate a possible way to process the data using machine learning (e.g. Hossain et al., 2017; Gogolev & Ozhegov, 2019; English & Fleischman, 2019; Ramos et al., 2020). The current study uses online customer testimonials, which are external evaluations of the restaurant business as part of e-commerce, a strong indicator of service quality. Detailed ratings provide more information about consumer preferences than individual overall ratings, and allow the timely modification of the restaurant's value proposition to increase the competitiveness of the service provided (Jannach et al., 2014). Multivariate analysis of the sentiment of the text allows to capture the subjectivity of online customer reviews in terms of semantic orientation associated with the constituents of the text.

In theory, identifying structured information from a free-form review text is difficult and time-consuming, so research on the main attributes of online restaurant reviews is rare. The field of research focused on understanding how factors specific to consumer inquiries in restaurants, as described in

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