

# Paying Lip Service?

## The Effects of Vocal Determinants on Perceived Service Quality

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### ABSTRACT

Literature has mainly analyzed the technical attributes of voice for enterprise technical applications, such as voice signature and speech recognition. This paper aims at identifying voice and speech attributes that reflect sentiment and affect (positively or negatively) customer satisfaction levels in voice interactions. The paper used method triangulation that utilizes multiple data sources to gain comprehensive understanding of the domain, including auditory observations, focus group interviews, customer survey, and a review of recent academic studies. The findings indicate that customer experience and satisfaction are influenced by the relative values of voice pitch between the CSR (customer service representative) and the customer. The major conclusion of the study suggests that voice fundamental pitch, speech rate, voice amplitude, and other communication parameters might deploy hidden power and affect service interaction's results. The study opens a new venue for research on social interaction adjustment from the CSR's perspective and from the customer's standpoint.

### KEYWORDS

Call Centers, Communication, Customer Satisfaction, Customer Service Representative, Vocal Attributes, Voice Chatbots, Voice Frequency, Voice Pitch, Voice-Based Interactions

### INTRODUCTION

In recent years, the application of academic models aiming at deciphering consumer behavior via psychological and neurological frames of reference has grown exponentially, both in advanced marketing research as well as studies conducted by retailers. This paper aims at examining the different aspects underlying customer behavior in voice-based service interactions. Further, the study identifies how these types of social interaction can be improved based on vocal properties and provides a model that assists in aligning the attributes of vocal interaction by Customer Service Representative (CSR) and the resulting customer satisfaction.

The links between enterprise information systems and voice sentiment technologies continuously evolve. Enterprise information systems have been traditionally orchestrating most of the business processes (BP) in the organization. Core applications, such as ERP and CRM, demonstrate very well how more efficiently the organization functions. As data turned more accessible and available for use, and data analytics tools became more effective and dominant (Yousfi et al., 2019; Leon et al., 2020), enterprise BPs can be consistently improved, so data-driven IT is a key factor in Business Processes Improvement (BPI) (Levykin and Chala, 2018). There is a direct positive correlation between advanced

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data analytics and designing BPIs (Cetindamar et al., 2021; Hallikas et al., 2021). Analytics-based BPI approaches include three stages: a) “What happened?”: Classic Business Intelligence (BI) monitoring dashboards demonstrate this stage. For example: how many customers churned last week? b) “What will happen?”: predictive analytics statistical tools such as Data Mining (DM) demonstrate this stage very well. For example: which customers are about to churn soon? c) “What to do next?” is a set of alternative actions and decisions in complex environment based on advanced data-driven algorithms that indicate what to do (Aydiner et al., 2019). Our research supports the third stage approach, where voice sentiment analysis is determined as a newly evolving knowledge domain that can help steering voice interactions optimally.

Current CRMs consistently extend themselves. For example, CRMs today can deploy text-based chatbots to correspond with potential customers to generate “leads” (customer details for sales purposes). The next generation is expected to utilize chatbots based on voice. In this case, the quality of voice response, which relies on speech recognition and voice sentiment analysis, will be crucial for better understanding of the customer’s feelings and state of mind. Moreover, Meta-Facebook, Google, Apple and Amazon have already deployed technologies of voice sentiment analysis in their core products and applications to add the important dimensions of customer’s voice, as described in our paper, in order to improve customer experience.

Further, voice sentiment is becoming one of the most important technologies implemented by enterprises worldwide, enabling them new capabilities that improve their organizational competitiveness and their interaction with customers. It started with basic CRM features, such as call center telephony and IVR. In recent years, it has been developed into the world of voice based personal assistants such as Amazon’s Alexa. The adoption of human-machine conversations accelerates with 40% of Internet users in the U.S. using voice assistants. The use of voice-based personal assistants is expected to reach 200 million users in 2023 (as reported by the industry research website <https://blog.hubspot.com/website/voice-search-optimization>). Thereupon, increasing number of firms adjust their websites to support voice-based input (speech to text) and output (text to speech). In this respect, voice analysis has become crucial in order to understand the context sentiment beyond the content itself. Following the technological advances, as well as any improvement in matching the “right” voice to a specific customer might improve customer satisfaction rate and conversion rates in sales and marketing as well as customer care support.

While prior literature has mainly analyzed the technical attributes of voice for enterprise technical applications, such as voice signature and speech recognition, this paper aims at identifying voice and speech attributes that reflect sentiment and affect (positively or negatively) customer satisfaction levels in voice interactions.

The research aims at identifying the match or mismatch between voice attributes of CSRs and customers and the resulting customer experience from those voice-based interactions. As voice sentiment analysis technologies and applications are utilized by a growing body of enterprises, the study can serve as a basis for further understanding of commercial voice interactions within the domain of call center services and beyond it.

Section 2 of the paper presents the literature review and research hypotheses. Section 3 elaborates the Methodology. Section 4 presents the results. Section 5 discusses the findings. Section 6 presents possible real-world implementation in a voice matching architecture for call centers. Finally, conclusions and research limitations are provided.

## REVIEW OF LITERATURE AND HYPOTHESES DEVELOPMENT

The functioning of call centers, their work processes and procedures were studied and broadly applied by multiple organizations who implemented the findings of these studies in practice via elements of caring, knowledge, methodology, accuracy, positivity, politeness, creativity, active listening, and others, to improve customer satisfaction (Fernández-Sabiote and Román 2016; Ilkhanizadeh and Karatepe

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