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Understanding User Engagement With Gemini Through Sentiment Analysis and Concept Mapping

Ahmet Alkan Çelik
Faculty of Economics and Administrative Sciences, Dogus University, İstanbul, Turkey

Yavuz Selim Balcıoğlu
https://orcid.org/0000-0001-7138-2972
Management Information System, Dogus University, Turkey

Erkut Altındağ
Faculty of Economics and Administrative Sciences, Dogus University, İstanbul, Turkey

ABSTRACT

Gemini, an advanced artificial intelligence tool, has generated significant interest because of its complex capabilities and versatility. Notwithstanding its worldwide acclaim, several nations, particularly Turkey, have exhibited reluctance to implement Gemini domestically. This article aims to investigate the public discourse regarding Gemini in Turkey, assess the factors contributing to its limited acceptance, and provide insights into the future of artificial intelligence globally. The authors utilize the latent dirichlet allocation topic modeling algorithm to examine 35,974 social media posts and comments from Turkish users regarding Gemini. The results indicate that negative attitudes prevail over positive and neutral sentiments. Furthermore, the authors observe two notable peaks in Gemini's focus from March to May 2024. The principal terms signifying public interest and concern are "innovation," "enterprise," and "advancement." The analysis reveals three principal topics in the discourse: societal influence, technical advancement, and educational applications.

KEYWORDS

Artificial Intelligence-Generated Content (AIGC), Diffusion of Innovations Theory, Public Sentiment Analysis, Technology Adoption, Social Media Engagement

INTRODUCTION

Artificial intelligence (AI) and AI-generated content (AIGC) have become major global focal points in recent years. These technologies have the potential to revolutionize various sectors by increasing productivity, accelerating access to information, and solving complex problems (Basyoni & Qadir, 2023; Cao et al., 2023; Zifan & Haiyan, 2023). However, the adoption and acceptance of these innovative tools vary across different countries. Gemini, an advanced AI tool, has garnered significant interest in many sectors but has seen limited acceptance in countries like Turkey. This study aims to explore the attitudes of Turkish users toward Gemini and investigate the factors contributing to its limited acceptance. By analyzing user comments on social media platforms, we seek to understand the technological and social factors that shape public sentiment toward Gemini. Everett Rogers' diffusion of innovations theory (DOI) provides an important framework for understanding how

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technologies spread within societies and the factors that accelerate or hinder this diffusion (Rogers, 2003). Rogers identified five key factors influencing the adoption of innovations: relative advantage, compatibility, complexity, trialability, and observability. These factors are critical in understanding the limited acceptance of Gemini in Turkey. Specifically, complexity and compatibility are central to the challenges faced by the public in adopting AI technologies. This study explores how societal and technological impacts manifest in user attitudes, with a focus on whether these key factors of DOI are reflected in public discourse. The central research question of this study is, "What factors contribute to the limited acceptance of Gemini in Turkey?" Through an analysis of social media comments, we will explore public concerns and interests in light of the factors identified in DOI, shedding light on the obstacles preventing broader adoption. This study aims to contribute to the field by offering insights into the processes of AI adoption in emerging economies like Turkey. By identifying the barriers to AI acceptance, we hope to provide actionable recommendations for policymakers and stakeholders to encourage broader use of such technologies. The significance of AIGC and the social acceptance processes that accompany its deployment extend beyond a purely technological focus; they also encompass societal, cultural, and ethical dimensions. This research aims to enrich the existing literature by providing a deeper understanding of the societal impacts of AI technologies, offering valuable insights for future studies. Moreover, the findings will offer strategic recommendations for increasing the social acceptance of AI technologies, specifically in the context of developing countries. Through comparative analysis, this study will also position Turkey's potential and challenges within the global landscape of AI technology adoption. AIGC and technologies should be understood from both a technological and societal perspective. This study's findings will contribute to the literature on the societal impacts of AI, offering insights into how these technologies can gain wider acceptance and providing strategies for future research and policy recommendations.

LITERATURE REVIEW

DOI

DOI, developed by Everett Rogers in 1962 (Rogers & Cartano, 1962), explains how, why, and at what rate new ideas and technologies spread across cultures. According to this theory, innovations are communicated over time among members of a social system. Five key factors influence the adoption of an innovation. The first factor is relative advantage, which refers to the perceived improvement or benefit the innovation provides over the existing solution. The second is compatibility, which indicates how consistent the innovation is with the values, experiences, and needs of potential adopters. Complexity represents the perceived difficulty of understanding and using the innovation, while trialability refers to the extent to which the innovation can be tested on a limited basis. Finally, observability relates to how visible the results of the innovation are to others. Additionally, DOI categorizes adopters into five groups based on their readiness to accept new technologies: innovators, early adopters, early majority, late majority, and laggards. These categories represent different levels of willingness to embrace innovations (Rogers, 2003). DOI has been extensively applied in diverse fields, including technology adoption. Similarly, Jeyaraj et al. (2006) conducted a meta-analysis of IT innovation adoption, emphasizing the role of organizational and environmental predictors. These applications highlight DOI's flexibility in explaining both individual and collective adoption behaviors, making it a foundational framework in innovation research. This extensive research demonstrates DOI's enduring relevance in analyzing technological, organizational, and social innovations. In recent applications, Dearing and Cox (2018) highlighted the relevance of DOI in health care, noting how innovations like Project ECHO spread through networks of professionals. They examined how communication channels shape diffusion, while Greve (2011) looked at the barriers to rapid adoption. DOI remains a foundational model for understanding technological diffusion across various disciplines. DOI emphasizes the adoption process of new ideas and innovations across a social system, which in this case, can be the introduction of audit and sustainability committees as governance mechanisms