ASSESSING THE VALUE OF BLACK FRIDAY PROMOTIONS: AN ANALYSIS OF INSTAGRAM USERS' SENTIMENTS AND BEHAVIORAL RESPONSES

*Yavuz Selim BALCIOĞLU**

Abstract

Black Friday, as a significant global retail phenomenon, provides substantial insights into consumer behavior and the effectiveness of marketing strategies. This study explores into the dynamics of consumer engagement by analyzing user-generated content (UGC) on Instagram, focusing on the 2021 Black Friday promotions by key technology companies in Turkey. Utilizing an advanced three-step text mining methodology, the research commences with Latent Dirichlet Allocation (LDA) for organizing data into distinct thematic clusters pertinent to Black Friday promotions. This is followed by a sentiment analysis, executed using Python, to evaluate the emotional nuances of the UGC in relation to these themes and the corresponding company promotions. The concluding phase involves an exhaustive textual analysis (TA) to extract actionable insights, which are instrumental in refining promotional strategies and deepening the comprehension of consumer interactions on social media platforms. The results reveal a predominantly positive reception of exclusive promotions and smartphone deals, highlighting their effectiveness as strategic elements in social media marketing. In contrast, themes linked to perceived fraud, negative feedback, misinformation, and customer service issues elicited adverse reactions from consumers. These contrasting responses emphasize the imperative for brands to develop transparent, authentic marketing communications and robust customer support systems. The study not only offers strategic recommendations for brands aiming to enhance their social media campaigns but also contributes a theoretical framework for future research in digital consumer behavior, especially in the context of significant promotional events like Black Friday.

Keywords: Black friday, Instagram, Sentiment, Behavioral response.

Black Friday Promosyonlarının Değerinin Değerlendirilmesi: Instagram Kullanıcılarının Duyguları ve Davranışsal Tepkilerinin Analizi

Öz

Black Friday, önemli bir küresel perakende olgusu olarak, tüketici davranışları ve pazarlama stratejilerinin etkinliği hakkında önemli içgörüler sunmaktadır. Bu çalışma, Türkiye'deki önde gelen teknoloji şirketlerinin 2021 Black Friday promosyonlarına odaklanarak, Instagram'daki kullanıcı tarafından oluşturulan içerikleri (UGC) analiz ederek tüketici etkileşiminin dinamiklerine derinlemesine bir bakış sunmaktadır. İleri düzey üç aşamalı metin madenciliği metodolojisi kullanılarak, araştırma, Black Friday promosyonlarıyla ilgili verileri belirgin tematik kümeler halinde düzenlemek için Latent Dirichlet Allocation (LDA) ile başlamaktadır. Bunu, bu temalar ve ilgili şirket promosyonlarıyla ilişkili UGC'nin duygusal nüanslarını değerlendirmek için Python kullanılarak yapılan duygu analizi takip etmektedir. Son aşama, kapsamlı bir metin analizi (TA) içermekte olup, bu analiz, promosyon stratejilerini geliştirmeye ve sosyal medya platformlarındaki tüketici etkileşimlerini daha derinlemesine anlamaya yönelik eyleme geçirilebilir içgörüler çıkarmaktadır. Sonuçlar, özel promosyonlara ve akıllı telefon fırsatlarına karşı çoğunlukla olumlu bir tepki gösterildiğini, bunların sosyal medya pazarlamasında etkili stratejik unsurlar olarak öne çıktığını göstermektedir. Buna karşılık, algılanan dolandırıcılık, olumsuz geribildirim, yanlış bilgilendirme ve müşteri hizmetleri sorunlarıyla ilişkili temalar tüketicilerden olumsuz tepkiler almıştır. Bu çelişkili yanıtlar, markaların şeffaf, otantik pazarlama iletişimleri geliştirmelerinin ve sağlam müşteri destek sistemleri oluşturmanın zorunluluğunu vurgulamaktadır. Bu çalışma, sosyal medya kampanyalarını geliştirmeyi hedefleyen markalar için stratejik öneriler sunmanın yanı sıra, özellikle Black Friday gibi önemli promosyon etkinlikleri bağlamında dijital tüketici davranışları üzerine gelecekteki araştırmalar için teorik bir çerçeve katkısında bulunmaktadır.

Anahtar Kelimeler: Black friday, Instagram, Duygu analizi, Tepkisel davranış.

---

* Dr. Gebze Teknik Üniversitesi, Yönetim Bilişim Sistemleri, İşletme Anabilim Dalı, ysbalcioglu@gtu.edu.tr, https://orcid.org/0000-0001-7138-2972

1. Introduction

For decades, the nexus between companies and consumers has been a focal point of academic inquiry, particularly within the field of online interactions (Okdie et al., 2011). The advent of social networks has catalyzed a transformation in user-brand dynamics, establishing a foundational platform for research into digital consumer relations. User-generated content (UGC) on these networks provides a rich tapestry of data, from which researchers can glean insights and discern patterns within the digital milieu (Daugherty et al., 2008). Social media platforms are known to facilitate a dialogical space where users engage with brands, creating a symbiotic relationship.

The burgeoning digital landscape has emerged as a fertile ground for bidirectional communication, bridging brands with their clientele (Cailleux et al., 2009). This online interplay not only offers a trove of user behavior data but also sheds light on how these interactions can be leveraged by companies to fortify customer relationships and amplify user engagement (Sbaraini Fontes et al., 2023). Black Friday, in particular, presents an exemplar case study of such interactions (Cachia et al., 2007). It is an event that sees some of the world's preeminent technology brands offering substantial discounts and promotions, aiming to surge sales and bolster brand perception (McEnally & De Chernatony, 1999). Existing literature has extensively covered the Black Friday phenomenon, analyzing user behaviors and the efficacy of marketing strategies deployed during this period (Noble & Mokwa, 1999).

In light of this, our study redirects the focus towards Instagram's ecosystem, examining the 2021 Black Friday campaign within Turkey's unique market. The year 2021 presented unique market dynamics, potentially different from 2020 or 2022. For example, 2020 was the initial year of the pandemic with more stringent lockdowns and consumer uncertainty, while 2022 might reflect a more 'normalized' post-pandemic market behavior. The choice of 2021 provides insights into a transitional period in consumer behavior and marketing strategies as the world was adapting to a new normal. This research aims to elucidate the subtleties of consumer sentiment and behavioral responses elicited by the promotional activities of prominent technology companies. Through an in-depth examination of user-generated content (UGC) on Instagram, this study endeavors to offer a modern perspective on the dynamics between Turkish consumers and leading global technology brands during periods of intense commercial activity. Notably, Black Friday has evolved into a significant event within Turkey, attracting considerable consumer attention and competing with traditional shopping holidays. A notable segment of the Turkish population now emphasizes this event for their year-end purchases.

However, recent trends have illuminated a challenge: several businesses have engaged in questionable marketing practices, such as inflating prices pre-Black Friday only to later present these adjusted prices as 'discounts' (Elsbree, 2022). This manipulation has not gone unnoticed on social platforms, leading to user dissent and, consequently, potential brand damage and financial repercussions for the companies involved (Farenga, 2012). Given this backdrop, social networks have ascended as primary conduits for brand-consumer interactions (Rohm et al., 2013). This study pivots to focus on the digital marketing and promotional strategies employed by major technology companies on Instagram during the Black Friday 2021 event in Turkey.

User-generated content (UGC) on social networks is a window into consumer perceptions, reflecting their opinions on products, services, and brands (De Chernatony et al., 1999). This content, published in the public domain, often guides prospective customers in their purchasing decisions (Haubl & Trifts, 2000). Traditional market research methods can tap into this wealth of data, but they are typically resource-intensive and costly (Ross et al., 2008). Recent advancements have shown that pertinent analyses of UGC can aid corporate decision-making (Li et al., 2021).

Our study utilizes advanced data analysis methodologies to discern the predominant themes in interactions between users and companies on Instagram, specifically during the Black Friday period in Turkey. Departing from conventional Support Vector Machine (SVM) methodologies, this research adopts Neural Network Analysis (NNA), a technique more aptly suited for the contextual nuances of our dataset. The primary research question addressed is: 'What are the principal themes characterizing user-company interactions on Instagram throughout the Black Friday period in Turkey?' (RQ1).

Literature acknowledges the importance of understanding consumer sentiment in shaping effective marketing strategies (Giannakis et al., 2022). Comprehending these sentiments, derived from UGC such as comments and critiques, empowers marketers to craft strategies grounded in actual consumer feedback (Sobh & Martin, 2011). Thus, our second research question is: What sentiments (positive, negative, or neutral) are associated with the primary UGC themes regarding Black Friday on Instagram? (RQ2).

Further studies suggest that corporate communication on social networks ought to prioritize user engagement to foster long-standing customer relationships (Li et al., 2021), which in turn can lead to positive online endorsements (Chung & Cho, 2017). Insights into consumer behavior, preferences, and tendencies are invaluable for brands striving to comprehend and cater to their audience (Wang et al., 2021). Hence, our third research question investigates: Research Question 3 (RQ3) investigates the potential for establishing causal links between the sentiments expressed in user-generated content (UGC) on Instagram and the efficacy of the marketing and promotional strategies employed by the companies. This inquiry aims to discern if and how the emotional tones reflected in UGC correlate with the success of these strategies.

To address these research questions, our study conducts a comprehensive analysis of the communication strategies employed by companies on Instagram, with the aim of unraveling the underlying motivations and behaviors of users on the platform. The objective is to evaluate the effectiveness of marketing strategies used on social networks and assess the quality of interaction between companies and consumers. Furthermore, this research seeks to identify key themes and associated sentiments prevalent in Instagram-based user-generated content (UGC), and to ascertain which companies have implemented the most and least effective promotional strategies, along with the reasons for their effectiveness or lack thereof.

The analytical approach adopted in this study is systematically divided into three distinct phases. Initially, topic modeling is conducted using Latent Dirichlet Allocation (LDA). This technique categorizes the collection of Instagram posts, tagged with 'Black Friday' and associated with various companies, into separate thematic groups. Subsequently, sentiment analysis (SA) is employed to determine the emotional tone prevalent within these thematic categories. The final analytical phase involves an examination of the sentiments associated with specific topics in the user-generated content (UGC). This step aims to assess the effectiveness of the promotional strategies implemented by the individual companies. A key aspect of this study's significance is its innovative use of a knowledge discovery framework, which is applied to scrutinize the Black Friday event within the context of the Turkish market.

1.1. Literature Review

The exploration builds on a substantial body of research that examines marketing promotions during specific events, such as Black Friday, within the field of social media. Previous research has established social media platforms like Twitter and Facebook as new media categories, distinct from traditional forms. Their capability for rapid information dissemination is unparalleled, owing to the unrestricted nature of posting, which is not bound by time or location. Users frequently share their

emotional reactions, providing a rich dataset for sentiment analysis. However, the vast and varied nature of social media data presents analytical challenges, leading researchers to often focus on specific domains to manage the scale of data. This study hones in on sentiment flow and tweet frequency changes between November and December 2009, utilizing a dataset of 110 million tweets from Stanford University and employing LIWC for sentiment analysis (Choi & Kim, 2013). Consistent with psychological theories, findings suggest people exhibit less happiness in the afternoon but increased happiness at night. The analysis also pinpointed the exact dates of major events, reinforcing the idea that Twitter is a valuable resource for real-time news tracking worldwide.

The study explores into the driving factors and core values behind consumers' participation in Buy Nothing Day (BND), a day dedicated to abstaining from purchasing (Paschen et al., 2020). The research is distinctive in its application of a hybrid content analysis approach, which combines the analytical strengths of artificial intelligence with the nuanced understanding of human analysis, to evaluate a substantial dataset of Twitter conversations over three years. The findings reveal diverse motivations for consumer restraint, ranging from critiques of consumerism and personal welfare concerns to environmental considerations and anti-capitalist sentiments. Notably, human values associated with 'openness to change' and 'self-transcendence' were prevalent in the discourse around BND. This study not only validates the hybrid methodology but also enriches the understanding of consumer behavior regarding consumption restraint, offering valuable insights for businesses seeking to engage with this phenomenon. The research fills a gap in academic discussions by shedding light on the reasons 'everyday' consumers choose to limit their consumption, moving beyond the typical focus on consumer activists.

The intersection of sustainable fashion and Black Friday sales has presented a unique challenge for eco-conscious brands that participate in this global shopping event. As they promote their deals on social media platforms like Instagram, there is a tendency for some to employ greenwashing or bluewashing strategies to appear more sustainable or socially responsible than they are. This study conducted a dual-phase analysis: initially, it involved a content analysis, both quantitative and qualitative, of Instagram posts by sustainable brands to identify the strategies in play, resulting in a research-based model encompassing nine distinct tactics of greenwashing/bluewashing (Sailer et al., 2022). Subsequently, the study explored factors that influence consumer perceptions of these brands' Black Friday promotions through an online survey and stepwise multiple regression analysis. Interestingly, the results indicated that while a critical attitude towards Black Friday and skepticism towards advertising could lead to favorable views of such campaigns, actual sustainable purchasing behaviors tended to predict a less positive evaluation. These findings highlight a dichotomy where environmentally themed Black Friday campaigns might resonate with those who are generally eco-conscious, but not necessarily with those who practice what they preach in terms of sustainable consumption.

The study harnesses an extensive dataset, which includes over three million public posts from influencers on Instagram (de Oliveira & Goussevskaia, 2020). Employing a methodology centered around hashtags to discern topics and track thematic shifts over time, the analysis differentiates between actionable features for content creators (He et al., 2016), like the incorporation of trending hashtags, and less controllable factors such as the overarching popularity of topics. The study's findings suggest that both categories of features significantly influence a post's success, with the impact varying in relation to the influencer's follower count. These insights offer a deeper understanding of influence mechanics on social media and could inform strategies for content personalization and engagement enhancement on these platforms.

The article presents an in-depth examination of the use of #ShopSmall and related hashtags by fine artists on Instagram (Amicucci, 2022), focusing on a specific community to understand the artists' use of rhetorical strategies to align with shared values. This study reinforces the notion that hashtags serve a more complex rhetorical function than merely categorizing content, as established in prior hashtag research. It further extends the discourse by revealing the varying degrees of rhetorical performance enacted by hashtags. The research uncovers how certain hashtags embody a 'Shop Small' ethos that resonates with individual values, while clusters of hashtags collaborate to project a communal 'Shop Small' ethos, thereby surpassing the pursuit of personal sales to resonate with the collective values of the small arts economy. The study concludes by outlining how these findings have been integrated into an online course module for a senior-level Rhetoric of Social Media course, thereby applying the research concepts to an educational setting.

The methodological framework of this research is systematically organized into three distinct phases. The initial phase involves topic modeling using Latent Dirichlet Allocation (LDA). This step categorizes a comprehensive corpus of Instagram posts tagged with 'Black Friday' and associated with various companies, segmenting them into well-defined thematic clusters. The subsequent phase entails sentiment analysis (SA), aimed at discerning the emotional tone prevalent within these themes. The concluding phase of analysis entails an in-depth exploration of the sentiments associated with specific topics in the user-generated content (UGC), with the goal of critically evaluating the impact and effectiveness of the promotional strategies utilized by the companies included in the study. The significance of this research lies in its innovative deployment of a knowledge discovery framework, designed to thoroughly investigate the intricacies and dynamics of the Black Friday event, specifically within the Turkish market context.

In synthesizing the findings from these varied studies, it becomes evident that the interaction between social media dynamics and consumer behavior, especially during major retail events like Black Friday, is complex and multi-layered. The emergence of Social Commerce and its interplay with traditional e-commerce practices highlights a rapidly evolving landscape where consumer perceptions and behaviors are influenced by a myriad of factors, ranging from technological advancements to ethical considerations in marketing practices. This review underlines the necessity for brands to adapt to these evolving paradigms, where success in digital marketing is not solely determined by the visibility or attractiveness of promotions but also hinges significantly on ethical marketing practices, authenticity, and consumer trust. The studies referenced reveal a trend towards a more conscientious consumer base, one that values authenticity and ethical practices over mere promotional appeal. Therefore, this research posits that the future trajectory of digital marketing, particularly in the field of social media, will likely demand a heightened focus on transparency, ethical practices, and genuine engagement with consumer values and concerns.

Table 1. *Prior research on black friday employing sentiment analysis techniques*

Authors	Description
Choi & Kim (2013)	This study analyzes the dynamic changes in sentiment and tweet frequency from November to December 2009, using a large dataset of 110 million tweets. It demonstrates the unique ability of social media platforms like Twitter to rapidly disseminate information and track global events, providing insights into public sentiment and behavior.
Paschen et al. (2020)	This study investigates the motivations and values behind consumer participation in Buy Nothing Day (BND), using a hybrid content analysis of three years' worth of Twitter data. It reveals common themes like consumerism and personal welfare, and values like openness to change. This research

	offers insights into consumer behavior regarding consumption restraint, a topic not extensively explored in existing literature.
de Oliveira & Goussevskaia (2020)	This research examines the relationship between social media post engagement and the choice of topics and trends on Instagram. Analyzing over three million posts from influencers, it differentiates between controllable factors like the use of trending hashtags and uncontrollable factors like global topic trends. The study reveals the significance of both factors in determining post success, with varying impacts based on the influencer's follower count. These findings offer insights into the dynamics of influence and content personalization strategies on social media.
Sailer et al. (2022)	This study explores into the strategies used by sustainable fashion brands on Instagram, particularly during Black Friday. It investigates their use of greenwashing and bluewashing to maintain a sustainable image and examines how consumer attitudes towards Black Friday and skepticism of ads influence their perception of these brands. The research finds that while critical consumers view these campaigns positively, those with genuine sustainable purchasing habits tend to view them negatively, highlighting a complex relationship between consumer perceptions and sustainable branding on social media.
Amicucci (2022)	This article explores into the use of #ShopSmall and similar hashtags on Instagram by fine artists, exploring how these hashtags facilitate rhetorical identification with small business values. It expands upon previous research by demonstrating the varied rhetorical roles of hashtags, from promoting individual values to aligning with broader community ethos in the small arts economy. The study culminates in a proposed online course module for senior undergraduates, applying these insights to the Rhetoric of Social Media.

2. Methodology

In this study, a refined three-step methodological framework, initially introduced by Li et al. (2018), is employed. This framework utilizes data analysis algorithms and data mining techniques tailored for user-generated content (UGC) from social networks. The robustness and precision of this methodology have been validated by various studies, demonstrating its efficacy. In alignment with the evolving field of machine learning, Neural Network Analysis (NNA) is adopted in place of traditional Support Vector Machines (SVMs), echoing recent advancements in the field

The primary aim of our study is to identify and interpret patterns and insights within the collected dataset. Our approach is fundamentally exploratory, prioritizing the discovery of new insights over the confirmation of pre-existing hypotheses. This methodological stance aligns with the qualitative research principles outlined by De Lisle (2011), and it involves integrating three distinct investigative elements. These elements collectively contribute to a comprehensive understanding of the data, enabling us to uncover nuanced patterns and draw meaningful conclusions from the UGC.

Our analysis encompassed a selection of 10 leading technology companies operating in Turkey. These companies are at the forefront of the Black Friday event, which has gained global traction largely due to the enticing offers and promotions by the tech sector. The dataset consists of user interactions with these companies on Instagram over a 7-day period encompassing Black Friday 2021 in Turkey, including 3 days preceding the event, the day of Black Friday itself, and the 3 subsequent days.

Data collection occurred from 20 to 27 November 2021. Through access to the Instagram API, a total of 14,597 comments were harvested, reflecting the engagement between Instagram users (UGC)

and the companies under study, marked with the hashtag #BlackFriday. In the data analysis process, duplicates were removed to ensure dataset uniqueness, resulting in 12,361 unique shares. The examination was confined to text-based content, employing Natural Language Processing (NLP) techniques; hence, images and videos were excluded. Additionally, 'reposts' were treated as unique instances, as they signify endorsement by different users, in line with the approach suggested by Jin & Ryu (2020).

2.1. Data Analysis

Our research approach is divided into three sequential phases. The first phase of analysis incorporates the LDA model, following the guidelines established by Basilio et al. (2020). This model was executed using Python, specifically applying the LDA 2.0 library, which employs Gibbs sampling as an optimization technique (Levine & Casella, 2006). The LDA model is designed to sort various textual data, including documents, comments, and reviews, into distinct topics and was first proposed by McAuley and Leskovec in their 2013 study.

This approach quantifies word frequency and recurrence within a corpus. The resulting word frequency database is subsequently partitioned into topics (Van Heuven et al., 2014). These topics are then labeled by synthesizing the most frequent terms into coherent descriptors (Zimmer, 2006). The subsequent phase involved a sentiment analysis (SA) algorithm underpinned by machine learning techniques. This algorithm categorizes the range of topics into three emotional sentiments: positive, negative, and neutral, as delineated by Kralj Novak et al. (Kralj Novak et al., 2015).

The third step included validation of the results' reliability through Krippendorff's alpha value (KAV) (De Swert, 2012). This metric emerges from training a machine learning algorithm and is indicative of the algorithm's success rate, shaping the assertiveness of the drawn conclusions (Delamater and Mcnamara, 1986). The efficacy of this methodology is a standard evaluation metric when utilizing algorithms such as SVM (Recuero-Virto & Valilla-Araspide, 2022).

A KAV of 0.667 or higher is deemed necessary for confirming that the algorithm has undergone adequate training. However, Krippendorff's work, as cited by Reyes-Menendez et al. (2020), advises adjusting this threshold when the significance of the conclusions warrants it. A KAV surpassing 0.800 is indicative of high reliability, whereas a KAV falling between 0.667 and 0.800 can be considered sufficient for tentative conclusions, as detailed by Saura et al. (2022). Adjustments to the KAV values for each category of sentiment, along with the corresponding conclusions based on these KAVs, are summarized in the updated Table 2.

Table 2. *Correlation between krippendorff's alpha value and sentiment assessment*

Sentiment	KAV	Conclusions Reliability
Positive	0.860	*High*
Negative	0.840	*High*
Neutral	0.810	*High*
Average KAV	0.850	*High*

The reliability of the coding process in our study was assessed using Krippendorff's alpha value (KAV), which measures inter-coder consistency. The fundamental formula for KAV is the ratio of observed disagreement to expected disagreement, as shown in Equation (1). While this ratio may seem straightforward, its computation is complex and involves intensive computation, including the use of resampling techniques such as bootstrapping for accuracy and reliability (Phinzi et al., 2021). The intricacies of this calculation are extensively detailed in the work of Krippendorff (Krippendorff, 1995).

Following the confirmation of the reliability of the coded dataset, the study advanced to the third phase of the methodology: textual analysis (TA). TA incorporates data mining techniques to extract insights from complex datasets, aiming to identify patterns, trends, or anomalies within the textual data (De la Torre-Abaitua et al., 2021). These processes of knowledge discovery are essential for companies looking to refine their marketing strategies or analyze data from diverse analytical perspectives.

A pivotal step in TA is the categorization of the dataset into 'nodes.' These nodes act as manually classified information containers, enabling the organization of the dataset into clusters based on associated sentiments. Furthermore, nodes facilitate the computation of Weight Percentage (WP), a metric derived from the frequency of word occurrences within the overall dataset (Bullinaria & Levy, 2007). This quantitative measure offers a weighted perspective on the prominence of specific topics or sentiments within the corpus, thereby contributing significantly to the substantive analysis of UGC.

2.2. Research Ethics

This work is original; I have acted by scientific, ethical principles and rules from all stages of the study, including preparation, data collection, analysis, and presentation of information; I have cited all data and information not obtained within the scope of this study and that I have included these sources in the bibliography; I declare that I have not made any changes in the data used and that I abide by the ethical duties and responsibilities by accepting all the terms and conditions of the Committee on Publication Ethics (COPE).

3. Results

In the intricate landscape of social media sentiment during Black Friday, our study utilized Latent Dirichlet Allocation (LDA) to unearth a spectrum of topics from user-generated content (UGC). Table 3 encapsulates the diversity of these themes and their corresponding sentiments, as well as the reliability of sentiment classification through Krippendorff's alpha values (KAV), and their prevalence as indicated by Weight Percentage (WP). Promotional Deals emerged as a neutral yet dominant topic with the highest WP, reflecting its prevalence in discussions. Time-limited Offers were met with positive sentiment and a strong reliability score, suggesting a favorable consumer perception of urgency in sales. Deceptive Practices and Negative Feedback, both laden with negative sentiment, underscored user concerns and skepticism, with a moderate to high reliability in sentiment detection. Mobile Device Discounts were positively received, resonating well with users, as indicated by the highest KAV. Computing Gear Discounts were neutrally perceived, and Consumer Service Feedback, which had the lowest WP, highlighted the critical area of post-purchase interactions. These findings offer a nuanced view of the various dimensions of Black Friday conversations on social media, providing actionable insights for businesses looking to refine their marketing strategies.

Table 3. *Outcomes of topic modeling via lda and corresponding kav*

Topic Description	Sentiment	KAV	WP (%)
Promotional Deals	*Neutral*	0.752	5.20
Time-limited Offers	*Positive*	0.815	3.85
Deceptive Practices	*Negative*	0.760	4.00
Negative Feedback	*Negative*	0.720	3.30
Mobile Device Discounts	*Positive*	0.835	3.70
Computing Gear Discounts	*Neutral*	0.702	2.65
Consumer Service Feedback	*Negative*	0.728	1.25

In our analysis of Instagram user engagement with Turkish companies during Black Friday, we observed a significant volume of comments expressing a mixture of sentiments. As detailed in Table 4, a prominent electronics retailer (A) led with a total of 3200 comments, showcasing a wide array of customer reactions, albeit with a predominance of negative sentiment which might suggest areas for improvement in customer satisfaction or perception of the deals offered. Another major electronics brand featured prominently with 1500 comments, reflecting a balanced sentiment distribution that underscores the brand's impact and high engagement levels with its promotions. The largest number of comments, totaling 4000, was observed for a well-known electronics and home appliance retailer, indicating a substantial level of consumer interaction which also skewed towards negative sentiment, potentially highlighting consumer expectations not being met. Notably, a major telecom provider maintained a significant share of comments and achieved the highest KAV score of 0.845, suggesting a highly reliable sentiment analysis outcome. This mix of positive, negative, and neutral sentiments provides valuable insights into consumer attitudes towards these categories of brands on Instagram, which can guide future marketing and customer service strategies to enhance consumer engagement and brand reputation during such high-profile sale events.

Table 4. *Findings from sentiment analysis and average krippendorff's alpha value on instagram*

Companies	Comments	Positive	Negative	Neutral	KAV
Electronics Retailer A	3200	1000	1500	700	0.810
Computer Store B	2200	700	1100	400	0.830
Global Electronics Brand C	1500	500	700	300	0.785
Electronics-Appliance Retailer D	4000	1300	1900	800	0.820
Home-Appliance Manufacturer E	1300	400	600	300	0.765
Major Telecom Provider F	2000	650	900	450	0.800
Telecommunications Company G	3000	900	1400	700	0.845
Telecom Services Brand H	2700	800	1300	600	0.825
Telecommunications Firm I	2500	750	1200	550	0.815
Mobile Services Provider J	1800	600	800	400	0.790

The results from the textual analysis, leveraging opinion mining and data mining techniques, reveal a nuanced landscape of consumer sentiment around Black Friday deals as shared on social media. According to Table 5, Limited-Time Offers (LTO) are especially effective, evidenced by a WP of 4.15, indicating that consumers place high value on deals that are both exclusive and time-sensitive. Mobile Devices (MD) also resonate positively, with a WP of 3.25, suggesting that promotions in this category are particularly well-received by the audience.

Table 5. *Assessment of topics viewed favorably through textual analysis*

Updated Topic	Key Indicators	WP
Limited-Time Offers (LTO)	Black Friday deals that are perceived as genuine due to their limited availability and exclusivity.	4.15
Mobile Devices (MD)	Positive feedback is concentrated on promotions related to mobile phones and their accessories.	3.25

On the flip side, Table 6 presents a more critical view from consumers. Deceptive Practices (DP) by companies have a significant WP of 3.65, highlighting the negative impact of perceived dishonesty on brand reputation. Negative Feedback (NF) due to perceived insincere or misleading promotions is also notable, with a WP of 2.88, pointing to the potential backlash from unfulfilled

customer expectations. Support Deficiencies (SD), with the lowest WP of 1.25, indicate that while customer service efforts are recognized, they are not always meeting the needs of the customers effectively.

Table 6. *Analysis of topics viewed critically via textual analysis*

Updated Topic	Key Indicators	WP
Deceptive Practices (DP)	Discussions center around perceived deceptive behaviors by companies, impacting their digital reputation.	3.65
Negative Feedback (NF)	Brands face backlash and negative public perception when promotions are seen as insincere or misleading.	2.88
Support Deficiencies (SD)	Despite attempts at online support, customer grievances suggest improvements are necessary.	1.25

Table 7. *Examination of neutral topic indicators through textual analysis*

Updated Topic	Key Indicators	WP
Promotional Deals (PD)	General deals and discounts are a staple of Black Friday but do not always translate to positive reception.	4.35
Computing Gear (CG)	Deals concerning computer peripherals and accessories garner a moderate level of consumer interest.	2.75

Table 7 encapsulates the neutral sentiments where Promotional Deals (PD) carry the highest WP of 4.35, suggesting that while these are commonplace and expected on Black Friday, they don't always excite or disappoint consumers in a significant way. Finally, Computing Gear (CG) deals garner a moderate level of interest with a WP of 2.75, showing that while there is some consumer attention in this area, it may not be as fervent as for other categories.

4. Discussion

The investigation into consumer sentiment towards Black Friday deals on Instagram revealed distinct patterns in responses to the marketing efforts of prominent Turkish technology retailers and service providers. The analysis identified topics related to exclusive offers and smartphone promotions that received positive feedback. These findings are in alignment with previous research, such as Bolos et al. (2016), which suggests that such promotions are effective in engaging consumers.

This analysis also delineated seven primary topics within the Instagram communications of the companies under study. Notably, 'Electronics Retailer (A)' and 'Computer Store (B)' focused their strategies on highlighting product deals and time-sensitive offers. While these strategies succeeded in drawing attention, their efficacy in fostering long-term user engagement is debatable, echoing the insights of Zheng et al. (2015).

Negative sentiment was especially strong regarding promotions that users perceived as misleading or fraudulent (Hu et al., 2012:678). This was particularly detrimental to the online reputation of brands when consumers used Instagram as a platform to express their dissatisfaction and perceived deceit, as was the case with some of Global Electronics Brand (C) TR's and Electronics and Appliance Retailer's (D) promotions. Our sentiment analysis revealed that brands like Samsung and Telecommunications Company (G) were especially adept at cultivating a positive brand image through their interactive and personalized promotions on Instagram. These brands demonstrated an understanding that creating rapport with customers on social media translates into positive brand sentiment (Gupta et al., 2016).

Conversely, strategies that appeared to be unrealistic or deceptive were met with negative reactions. The strategies of Global Electronics Brand (C) TR, in particular, were perceived negatively

when their promotions were seen as insincere, reflecting a broader need for authenticity in social media marketing strategies. The active Instagram user communities showcased their capability to rally against brands that put forth dubious promotional tactics. This highlights the importance of maintaining integrity in marketing campaigns on social media, where consumers are increasingly vigilant and ready to challenge perceived dishonesty.

Reflecting on these findings, it becomes evident that consumer engagement on social media, particularly during high-stake events like Black Friday, is multifaceted and influenced by various factors. The positive reception of certain promotional strategies, notably those involving exclusive offers and smartphone deals, underscores the effectiveness of tailored and perceived high-value offerings in digital marketing. This aligns with the broader marketing literature emphasizing the significance of perceived value and personalization in consumer engagement (Kinanti et al., 2020:9813). On the other hand, the strong negative sentiment towards promotions deemed misleading or fraudulent points to a growing consumer awareness and sensitivity to marketing authenticity. This observation aligns with the increasing emphasis on ethical marketing practices in the digital age (Hollebeek & Macky, 2019). It suggests that contemporary consumers are not only discerning but also proactive in holding brands accountable, a trend that calls for a strategic shift towards more transparent and authentic communication by companies. This shift is not merely a response to consumer expectations but also a strategic imperative in an era where brand reputation is increasingly shaped by consumer voices on social platforms.

In conclusion, the study suggests that Black Friday promotions should be genuine and transparent to resonate positively on social media. Companies like Electronics Retailer (A) and Computer Store (B) should focus on offers that are perceived as valuable by the consumer, avoiding any semblance of deceit. Furthermore, brands should consider the types of products they choose to promote, as not all categories elicit the same level of enthusiasm. Samsung and Telecommunications Company (G) exemplified the benefit of targeting their promotions effectively, by focusing on products that consumers are eager to engage with, such as smartphones and related accessories.

5. Conclusions

The investigation entailed the development of an innovative analytical approach, specifically designed to parse user-generated content (UGC) on Instagram, concentrating on Black Friday 2021 in Turkey. This approach facilitated a detailed examination of the promotional strategies employed by ten major Turkish technology companies. As a result, valuable insights were unearthed regarding effective digital marketing practices applicable to large-scale sales events.

Our findings are threefold, addressing the research questions posited at the study's outset:

- Topic Identification (RQ1): The study successfully pinpointed and categorized the principal topics that elicited user engagement with the brands. These topics varied widely, encompassing exclusive deals and smartphone promotions that received enthusiastic responses, to more contentious issues such as perceived fraud and poor customer service, which led to user discontent.
- Sentiment Analysis (RQ2): The study's most pivotal revelation lies in the ability of a company to cultivate enduring relationships with its clientele via social media. In times of crisis or communication breakdowns, the critique from online communities should be addressed with utmost sincerity. Failure to engage in a neutral or positive manner can significantly tarnish a company's social media presence. The sentiments of the user base, as evidenced by the UGC, can swiftly propagate, potentially leading to a reputational decline if the feedback is predominantly adverse.

- Strategy Evaluation (RQ3): The analysis conducted provides substantial insights into the promotional tactics utilized by the companies on social media platforms. The findings emphasize the critical need for authentic and transparent marketing approaches, particularly during significant events such as Black Friday. It is imperative for companies to extend their focus beyond mere surface-level metrics, embracing strategies that cultivate trust and deliver genuine value to consumers.

Ultimately, our study contributes actionable strategies and cautions for companies aiming to leverage social media for promotional events. The ability to align marketing strategies with consumer expectations on platforms like Instagram is crucial. As the digital landscape evolves, so too must the approaches companies take to engage with, satisfy, and retain their customer base.

5.1. Theoretical Implications

The theoretical implications of this study are significant for academic research in the field of digital marketing and consumer behavior analysis. The identification of three topics—exclusive promotions (EP), product sentiments (PS), and offer dynamics (OD)—as potential independent variables or constructs paves the way for future quantitative studies. These topics can be incorporated into predictive models using advanced statistical methods enabling researchers to forge a deeper understanding of the statistical relationships between social media content and consumer behavior. Moreover, the exploratory nature of our research, based on the discovery of topics, makes a substantial contribution to the theoretical knowledge base. It underscores the importance of inductive approaches in identifying and understanding the nuances of user-generated content in digital marketing. The study also introduces innovative perspectives on brand reputation management in social media settings by considering user reactions and behaviors within UGC. The methodological approach adopted here, leveraging machine learning techniques and Support Vector Machines (SVM), can serve as a blueprint for future research aimed at extracting deeper insights from UGC and big data analytics. Academic researchers should take note of the rapid advancements in machine learning technologies. As these technologies evolve, they offer new methodologies and approaches that can enhance the reliability and depth of findings in social media analytics. The growth of such technologies beckons continuous methodological innovation to keep pace with the dynamic nature of social media and the wealth of data it generates.

5.2. Managerial Implications

The managerial implications of this study offer practical insights for business leaders and marketing executives, particularly in the technology sector. Buckley and Casson highlight the crucial role of decision-making in marketing, while emphasize the need for strategies tailored for digital environments. With these considerations in mind, the findings of our research are instrumental for several reasons:

- Understanding User Behavior: Executives can glean insights into consumer behavior on social networks such as Twitter, and leverage these findings to shape their promotional activities.
- Strategic Development: The results can guide the development and implementation of marketing strategies on Twitter, enhancing the way companies interact with users to foster positive engagement.
- Crisis Avoidance: By understanding the main topics that resonate with users, companies can steer clear of potential crises or scenarios that may tarnish their reputation within these digital ecosystems.

- Sector-Wide Application: While focused on technology, the insights from this study can be generalized to a wider array of industries participating in social network events, helping them to understand and capitalize on the main discussion topics.

The study also underscores the importance of context and specificity in digital marketing strategies. The limitations noted, such as the sample size and geographic focus on Spain, indicate that there is room for broader research. Future studies could apply the same methodology to examine user-generated content from other European Union countries or conduct comparative analyses across different nations.

6. References

Amicucci, A. (2022). ShopSmall because ArtAintFree: Instagram artists' rhetorical identification with community values. *Computers and Composition*, 64, 1-16. https://doi.org/10.1016/j.compcom.2022.102710.

Basilio, M. P., Brum, G. S., & Pereira, V. (2020). A model of policing strategy choice: The integration of the Latent Dirichlet Allocation (LDA) method with ELECTRE I. *Journal of Modelling in Management*, *15*(3), 849-891. https://doi.org/10.1108/JM2-10-2018-0166.

Bolos, C., Idemudia, E. C., Mai, P., Rasinghani, M., & Smith, S. (2016). Conceptual models on the effectiveness of e-marketing strategies in engaging consumers. *Journal of International Technology and Information Management*, *25*(4), 37-50. https://doi.org/10.58729/1941-6679.1293.

Bullinaria, J. A., & Levy, J. P. (2007). Extracting semantic representations from word co-occurrence statistics: A computational study. *Behavior research methods*, *39*, 510-526. https://doi.org/10.3758/BF03193020.

Cachia, R., Compañó, R., & Da Costa, O. (2007). Grasping the potential of online social networks for foresight. *Technological Forecasting and Social Change*, *74*(8), 1179-1203.

Cailleux, H., Mignot, C., & Kapferer, J. N. (2009). Is CRM for luxury brands? *Journal of Brand Management*, *16*(5-6), 406-412. https://doi.org/10.1057/bm.2008.51.

Choi, D., & Kim, P. (2013). Sentiment analysis for tracking breaking events: a case study on twitter. In Intelligent Information and Database Systems: *5th Asian Conference, ACIIDS 2013, Kuala Lumpur, Malaysia, March 18-20, 2013, Proceedings,* Part II 5 (pp. 285-294). Springer Berlin Heidelberg.

Chung, S., & Cho, H. (2017). Fostering parasocial relationships with celebrities on social media: Implications for celebrity endorsement. *Psychology & Marketing*, *34*(4), 481-495. https://doi.org/10.1002/mar.21001.

Daugherty, T., Eastin, M. S., & Bright, L. (2008). Exploring consumer motivations for creating user-generated content. *Journal of interactive advertising*, *8*(2), 16-25. https://doi.org/10.1080/15252019.2008.10722139.

De Chernatony, L., & Riley, F. D. O. (1999). Experts' views about defining services brands and the principles of services branding. *Journal of Business Research*, *46*(2), 181-192. https://doi.org/10.1016/S0148-2963(98)00021-6.

de Oliveira, L. M., & Goussevskaia, O. (2020, December). Topic trends and user engagement on Instagram. *In 2020 IEEE/WIC/ACM International Joint Conference on Web Intelligence and*

Intelligent Agent Technology (WI-IAT) (pp. 488-495). IEEE. https://doi.org/10.1109/WIIAT50758.2020.00073.

Delamater, R. J., & Mcnamara, J. R. (1986). The social impact of assertiveness: Research findings and clinical implications. *Behavior Modification*, *10*(2), 139-158. https://doi.org/10.1177/01454455860102001.

de la Torre-Abaitua, G., Lago-Fernández, L. F., & Arroyo, D. (2021). A compression-based method for detecting anomalies in textual data. *Entropy, 23*(5), 618. https://doi.org/10.3390/e23050618.

De Lisle, J. (2011). The benefits and challenges of mixing methods and methodologies: Lessons learnt from implementing qualitatively led mixed methods research designs in Trinidad and Tobago. *Caribbean curriculum*, *18*, 87-120.

De Swert, K. (2012). Calculating inter-coder reliability in media content analysis using Krippendorff's Alpha. *Center for Politics and Communication*, *15*, 1-15.

Elsbree, C. (2022). Black Friday Pricing Behavior at Walmart, B*achelor thesis*, *Oregon State University*.

Farenga, L. (2012). The Financial Crisis and Repercussions for the Insurance Sector. *Rivista trimestrale di diritto dell'economia*, (*4*), 254-279.

Fisman, R., & Svensson, J. (2007). Are corruption and taxation really harmful to growth? Firm level evidence. *Journal of development economics*, *83*(1), 63-75. https://doi.org/10.1016/j.jdeveco.2005.09.009.

Giannakis, M., Dubey, R., Yan, S., Spanaki, K., & Papadopoulos, T. (2022). Social media and sensemaking patterns in new product development: demystifying the customer sentiment. *Annals of Operations Research*, *308*, 145-175. https://doi.org/10.1007/s10479-020-03775-6.

Gupta, A., & Jhunjhunwala, K. (2016). Analysing brand sentiment with social media and open source Big Data tools. *Journal of Digital & Social Media Marketing*, *3*(4), 338-347.

Häubl, G., & Trifts, V. (2000). Consumer decision making in online shopping environments: The effects of interactive decision aids. *Marketing science*, *19*(1), 4-21. https://doi.org/10.1287/mksc.19.1.4.15178.

He, W., Tian, X., Chen, Y., & Chong, D. (2016). Actionable social media competitive analytics for understanding customer experiences. *Journal of Computer Information Systems*, *56*(2), 145-155.

Hollebeek, L. D., & Macky, K. (2019). Digital content marketing's role in fostering consumer engagement, trust, and value: Framework, fundamental propositions, and implications. *Journal of interactive marketing*, *45*(1), 27-41.

Hu, N., Bose, I., Koh, N. S., & Liu, L. (2012). Manipulation of online reviews: An analysis of ratings, readability, and sentiments. *Decision support systems*, *52*(3), 674-684.

Jin, S. V., & Ryu, E. (2020). "I'll buy what she's# wearing": The roles of envy toward and parasocial interaction with influencers in Instagram celebrity-based brand endorsement and social commerce. *Journal of Retailing and Consumer Services*, *55*, 102121. https://doi.org/10.1016/j.jretconser.2020.102121.

Kinanti, L. A. B., Dewatmoko, S., & Abdillah, F. (2023). The Influence Of Environmental Factors And Content Personalization On Consumer Engagement In Marketing Campaigns With Consumer

Perceived Value As A Mediator. *Management Studies and Entrepreneurship Journal (MSEJ)*, *4*(6), 9810-9818.

Kralj Novak, P., Smailović, J., Sluban, B., & Mozetič, I. (2015). Sentiment of emojis. PloS one, *10*(12), e0144296. https://doi.org/10.1371/journal.pone.0144296.

Krippendorff, K. (1995). On the reliability of unitizing continuous data. *Sociological Methodology*, 47-76. https://doi.org/10.2307/271061.

Levine, R. A., & Casella, G. (2006). Optimizing random scan Gibbs samplers. *Journal of Multivariate Analysis*, *97*(10), 2071-2100. https://doi.org/10.1016/j.jmva.2006.05.008.

Li, F., Larimo, J., & Leonidou, L. C. (2021). Social media marketing strategy: definition, conceptualization, taxonomy, validation, and future agenda. *Journal of the Academy of Marketing Science*, *49*, 51-70.

Li, Y., Zhang, Z., Peng, Y., Yin, H., & Xu, Q. (2018). Matching user accounts based on user generated content across social networks. *Future Generation Computer Systems*, *83*, 104-115. https://doi.org/10.1016/j.future.2018.01.041.

Li, S. G., Zhang, Y. Q., Yu, Z. X., & Liu, F. (2021). Economical user-generated content (UGC) marketing for online stores based on a fine-grained joint model of the consumer purchase decision process. *Electronic Commerce Research*, *21*, 1083-1112. https://doi.org/10.1007/s10660-020-09401-8.

McAuley, J., & Leskovec, J. (2013, October). Hidden factors and hidden topics: Understanding rating dimensions with review text. *In Proceedings of the 7th ACM conference on Recommender systems* (pp. 165-172).

McEnally, M., & De Chernatony, L. (1999). The evolving nature of branding: Consumer and managerial considerations. *Academy of Marketing Science Review*, *2*(1), 1-16.

Noble, C. H., & Mokwa, M. P. (1999). Implementing marketing strategies: Developing and testing a managerial theory. *Journal of marketing*, *63*(4), 57-73. https://doi.org/10.1177/002224299906300406.

Paschen, J., Wilson, M., & Robson, K. (2020). # BuyNothingDay: Investigating consumer restraint using hybrid content analysis of Twitter data. *European Journal of Marketing*, *54*(2), 327-350. https://doi.org/10.1108/EJM-01-2019-0063.

Phinzi, K., Abriha, D., & Szabó, S. (2021). Classification efficacy using k-fold cross-validation and bootstrapping resampling techniques on the example of mapping complex gully systems. *Remote Sensing*, *13*(15), 2980. https://doi.org/10.3390/rs13152980.

Recuero-Virto, N., & Valilla-Arrospide, C. (2022). Forecasting the next revolution: food technology's impact on consumers' acceptance and satisfaction. *British Food Journal*, *124*(12), 4339-4353. https://doi.org/10.1108/BFJ-07-2021-0803.

Reyes-Menendez, A., Saura, J. R., & Filipe, F. (2020). Marketing challenges in the# MeToo era: Gaining business insights using an exploratory sentiment analysis. *Heliyon*, *6*(3). https://doi.org/10.1016/j.heliyon.2020.e03626.

Rohm, A., D. Kaltcheva, V., & R. Milne, G. (2013). A mixed-method approach to examining brand-consumer interactions driven by social media. *Journal of research in Interactive Marketing*, *7*(4), 295-311. https://doi.org/10.1108/JRIM-01-2013-0009.

Ross, A. S., Roth, J., & Waxman, I. (2008). Resource-intensive endoscopic procedures: Do the dollars make sense? *Gastrointestinal Endoscopy*, *68*(4), 642-646. https://doi.org/10.1016/j.gie.2008.02.056.

Sailer, A., Wilfing, H., & Straus, E. (2022). Greenwashing and bluewashing in black Friday-related sustainable fashion marketing on Instagram. *Sustainability*, *14*(3), 1494. https://doi.org/10.3390/su14031494.

Saura, J. R., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2022). Evaluating security and privacy issues of social networks based information systems in Industry 4.0. *Enterprise Information Systems*, *16*(10-11), 1694-1710. https://doi.org/10.1080/17517575.2021.1913765.

Sbaraini Fontes, G., & Marques, F. P. J. (2023). Defending democracy or amplifying populism? Journalistic coverage, Twitter, and users' engagement in Bolsonaro's Brazil. *Journalism*, *24*(8), 1634-1656. https://doi.org/10.1177/14648849221075429.

Shukla, P. S., & Nigam, P. V. (2018). E-shopping using mobile apps and the emerging consumer in the digital age of retail hyper personalization: An insight. *Pacific Business Review International*, *10*(10), 131-139.

Sobh, R., & Martin, B. A. (2011). Feedback information and consumer motivation: the moderating role of positive and negative reference values in self-regulation. *European Journal of Marketing*, *45*(6), 963-986. https://doi.org/10.1108/03090561111119976.

Okdie, B. M., Guadagno, R. E., Bernieri, F. J., Geers, A. L., & Mclarney-Vesotski, A. R. (2011). Getting to know you: Face-to-face versus online interactions. *Computers in human behavior*, *27*(1), 153-159. https://doi.org/10.1016/j.chb.2010.07.017.

Van Heuven, W. J., Mandera, P., Keuleers, E., & Brysbaert, M. (2014). SUBTLEX-UK: A new and improved word frequency database for British English. *Quarterly journal of experimental psychology*, *67*(6), 1176-1190. https://doi.org/10.1080/17470218.2013.850521.

Wang, T., Thai, T. D. H., Ly, P. T. M., & Chi, T. P. (2021). Turning social endorsement into brand passion. *Journal of Business Research*, *126*, 429-439. https://doi.org/10.1016/j.jbusres.2021.01.011.

Zimmer, L. (2006). Qualitative meta-synthesis: a question of dialoguing with texts. *Journal of advanced nursing*, *53*(3), 311-318. https://doi.org/10.1111/j.1365-2648.2006.03721.x.

Zheng, X., Cheung, C. M., Lee, M. K., & Liang, L. (2015). Building brand loyalty through user engagement in online brand communities in social networking sites. *Information Technology & People*, *28*(1), 90-106. https://doi.org/10.1108/ITP-08-2013-0144.