

SENTIMENT ANALYSIS OF CONSUMER REVIEWS ON DARAZ: PREDICTING PRODUCT RETURN RATES

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Copyright @Author**Corresponding Author:** ***Abstract****Purpose**

This research investigates the application of sentiment analysis on consumer reviews from Daraz to forecast product return rates. The rapid expansion of Pakistan's e-commerce sector has led to product returns becoming a significant challenge that impacts profitability, logistics, and consumer trust. This research seeks to connect consumer sentiments found in reviews with return behavior, aiming to offer practical insights for minimizing reverse logistics costs and improving customer satisfaction.

Design/Methodology

The research employs a secondary quantitative approach, utilizing consumer reviews that are publicly accessible from Daraz. We utilized natural language processing (NLP) techniques to extract sentiment polarity, intensity, and review length, and performed statistical analysis with JASP software. We utilized descriptive statistics, correlation analysis, paired t-tests, and contingency tables to evaluate the connections among review sentiments, ratings, and return frequency.

Findings

The findings showed a significant link between negative sentiment and increased product return rates, especially in the fashion sector, where returns surpassed 28%. It was frequent to observe discrepancies between star ratings and written reviews, suggesting that ratings by themselves do not adequately predict consumer dissatisfaction. Reasons for returns primarily revolved around size discrepancies (35%), subpar quality (29%), and inconsistencies in descriptions (26%). The analysis revealed a significant positive connection ($r = 0.68$) between negative sentiment and how often returns occur.

Practical Implications

The results indicate that Daraz and similar e-commerce platforms have the opportunity to utilize automated sentiment tracking to detect unhappy

customers promptly, enhance logistics, bolster after-sales support, and minimize expensive returns.

Originality

This research distinctly combines sentiment analysis with predictive return modeling within the realm of e-commerce in Pakistan, providing valuable methodological and practical insights for studies in emerging markets.

INTRODUCTION

Overview:

The online shopping landscape in Pakistan has seen remarkable growth, with Daraz standing out as the top digital marketplace, providing a vast array of products in various categories (Ali et al., 2021). The emergence of digital retail platforms has led to an increase in user-created content, especially customer reviews, which significantly impact buying decisions and actions after the purchase (Ashiq and Hussain, 2023). Analyzing the sentiments expressed in these reviews reveals valuable information about customer satisfaction, dissatisfaction, and expectations, enabling companies to forecast possible return rates and modify their strategies as needed (Rao et al., 2021). Returns of products pose a significant obstacle for online retailers, leading to financial strain, logistical difficulties, and customer discontent, highlighting the necessity for predictive modeling (Naz Baig, 2023). Consequently, examining consumer feelings regarding Daraz using sophisticated computational methods acts as an essential resource for grasping consumer actions and minimizing product returns (Hasan, 2024).

1.1. Background:

Following the COVID-19 pandemic, the retail scene in Pakistan underwent a rapid shift towards digitalization, with online shopping evolving into an essential practice instead of an indulgence (Miranda Veloso et al., 2020). Daraz, supported by Alibaba, currently leads the market by offering various sales channels. However, challenges like late deliveries, discrepancies in product expectations, and inadequate after-sales support

continue to be significant concerns (Rasheed et al., 2023). Customer feedback has emerged as the most dependable way to evaluate service quality, as conventional word-of-mouth has transitioned to online platforms, impacting brand trust and customer loyalty (Sweety, 2022). Earlier research emphasizes that aspects of e-service quality like reliability, responsiveness, and assurance play a crucial role in influencing satisfaction. However, there are still unresolved issues in connecting these elements to return behaviors in South Asian markets (Rao et al., 2021). Additionally, although international literature highlights the significance of post-purchase assessments in minimizing returns, there is a scarcity of empirical research in Pakistan, resulting in a notable research gap (Habib, 2021).

1.2. Research Problem:

Even with Daraz's expansion, elevated product return rates remain a considerable threat to both profitability and consumer confidence (Khan et al., 2020). Consumer reviews frequently reveal concerns about product quality, delivery issues, or inaccurate descriptions, yet these valuable insights are often overlooked when it comes to forecasting returns (Akteer, 2024). Most of the existing studies focus on consumer satisfaction in advanced economies, resulting in a significant gap in context-specific insights for the e-commerce sector in Pakistan (Pathak, 2020). The lack of strong sentiment analysis research that combines text mining with predictive modeling has limited the capacity to accurately predict returns (Muharam et al., 2021). Therefore, the issue at hand is the

inadequate use of sentiment analysis methods to comprehend and forecast product return patterns in Pakistan's top e-commerce environment.

1.3. Contribution to Knowledge:

This research enhances understanding by connecting consumer sentiment analysis with predictive return modeling in the context of e-commerce in Pakistan (Fahad Najeel Khan, Muhammad Usman Arshad and Munir, 2023). This study utilizes sentiment analysis on consumer reviews from Daraz to illustrate how textual data can indicate levels of customer satisfaction, dissatisfaction, and the probability of returns (Raza et al., 2025). This study stands apart from current literature, which primarily focuses on satisfaction and loyalty, by establishing a distinctive connection between sentiment outcomes and actual return behaviors, thus providing a fresh analytical perspective (Alvi and Mudassar, 2025). Additionally, it enhances methodological contributions by integrating computational tools such as natural language processing and machine learning into consumer behavior research in emerging markets (Faryad et al., 2025).

1.4. Importance of Proposed Research to the Wider Population:

This study is important for online retailers, government officials, and shoppers as well. Predictive insights into returns for platforms like Daraz can enhance supply chain efficiency and lower logistics and refund costs (Apriliani et al., 2024). Consumers will experience increased trust and satisfaction through enhanced product descriptions, improved quality control, and better service delivery (Sanam et al., 2025). Policymakers and regulators can gain valuable insights from consumer complaints to create more effective consumer protection policies in the digital marketplace (Sapkota and Kaur, 2024). The results extend beyond Pakistan, offering valuable insights for other developing economies that are on comparable paths of digital adoption (Nandasena and Wickramasinghe, 2024).

The study is organized into five primary sections. After the Introduction, Chapter Two offers a literature review that brings together current research on sentiment analysis, e-commerce service quality, and product returns in both global and South Asian settings (Masud, 2023). Chapter Three details the approach, describing the secondary research framework, the gathering of data from existing studies, and the analytical methods used, such as sentiment analysis frameworks (Ahmed, 2020). Chapter Four showcases the findings from the sentiment analysis and the results of predictive modeling based on consumer reviews (Imran and Hasan, 2022). In the end, Chapter Five examines these results in relation to current literature, emphasizes both managerial and theoretical implications, and wraps up with recommendations and ideas for future research (Habib, 2021).

2. Literature Review:

2.1. Introduction to Literature Review:

This chapter aims to thoroughly examine the current studies on sentiment analysis, consumer reviews, and the prediction of product returns within e-commerce settings (Ali et al., 2021). The analysis utilizes various secondary sources such as academic journals, case studies, and industry reports to evaluate the application of textual data in predictive modeling (Rasheed et al., 2023). The conversation transitions from the theoretical underpinnings of sentiment analysis to the significance of consumer reviews in e-commerce, product return patterns, and their relevance in Pakistan's Daraz marketplace, ultimately highlighting areas where further research is needed (Naz Baig, 2023).

2.2. Sentiment Analysis: Concept and Techniques:

2.2.1. Definition of Sentiment Analysis

Sentiment analysis involves the computational examination of opinions, attitudes, and emotions conveyed in textual data like reviews, social media posts, and feedback comments (Akter, 2024). It

organizes content created by consumers into groups like positive, negative, or neutral, which companies utilize to assess consumer satisfaction and anticipate behavioral results (Ashiq and Hussain, 2023). In the realm of online shopping, analyzing sentiment allows companies to grasp how consumers feel about their experiences, whether they are satisfied or not, and what they anticipate, thereby connecting written feedback to choices about buying or returning products (Rao et al., 2021).

2.2.2. Definition of Sentiment Analysis

Various machine learning techniques, including Naïve Bayes, Support Vector Machines, and Neural Networks, have found extensive use in sentiment classification tasks, thanks to their capacity to manage substantial datasets (Fahad Najeeb Khan, Muhammad Usman Arshad and Munir, 2023). Lexicon-based approaches rely on established dictionaries of positive and negative terms to assess sentiment, providing clarity yet facing constraints regarding contextual subtleties (Habib, 2021). Tools for processing natural language, such as Python's NLTK, TextBlob, and various commercial platforms, facilitate effective preprocessing, tokenization, and sentiment analysis (Faryad et al., 2025). Recent research is progressively utilizing mixed approaches that merge lexicon-driven and machine learning methods to enhance classification precision, especially in multilingual or specialized datasets (Lubna, 2024).

2.3. Consumer Reviews in E-Commerce:

2.3.1. Role of Online Reviews

Online reviews serve as a type of digital validation that greatly impacts consumer confidence, buying choices, and brand views (Ali et al., 2025). Studies indicate that the quantity and tone of reviews influence sales outcomes, with elevated ratings and favorable comments fostering trust in products and vendors (Sweety, 2022). On the other hand, unfavorable reviews heighten perceived dangers, diminishing the chances of making a purchase and raising the likelihood of returns (Naz Baig, 2023).

2.3.2. Trust and Decision-Making

Reviews significantly influence how a brand is perceived, with ongoing positive experiences building trust and adverse feedback harming its reputation (Rasheed et al., 2023). Nonetheless, misleading reviews and partiality can skew viewpoints, making it more challenging for consumers to make decisions (Prasain, 2024).

2.3.3. Review Data as a Research Source

Extensive use of large-scale review datasets has been made in secondary studies to explore consumer psychology, behavior, and post-purchase decisions (Rao et al., 2021). These reviews act as an important tool for examining indicators of discontent associated with product returns (Hasan, 2024).

2.4. Product Returns in Online Retail:

2.4.1. Scale and Impact of Returns

Returns of products pose a significant obstacle for online retailers because of their impact on finances, operations, and brand image (Pathak, 2020). Worldwide research indicates that return percentages in industries like fashion fluctuate between 20–30%, leading to significant logistical and inventory management expenses (Masud, 2023). Elevated return rates can undermine consumer confidence and diminish profit margins (Naz Baig, 2023).

2.4.2. Factors Influencing Returns

Returns frequently occur due to problems with product quality, inaccuracies in descriptions, incorrect sizing, and failure to meet consumer expectations (Rashid and Rasheed, 2024). A lot of these grievances are reflected in consumer reviews, where unfavorable opinions often act as initial indicators of the probability of returns (Rasheed et al., 2023).

2.4.3. Predictive Models for Returns

Previous studies have employed predictive analytics and data mining methods to forecast returns by detecting linguistic signals in reviews (Raza et al., 2025). Aspects like unfavorable phrasing, frequent grievances, and poor star ratings have been found

to have a significant connection with the likelihood of returns (Khan et al., 2020).

2.5. Application of Sentiment Analysis in E-Commerce:

2.5.1. International Case Studies

Major online shopping sites like Amazon, eBay, and Alibaba utilize sentiment analysis to track customer satisfaction, anticipate returns, and minimize churn (Habib, 2021). Research indicates a strong link between negative feelings in reviews and the likelihood of return requests, highlighting the importance of textual analysis as a predictive resource (Ashiq and Hussain, 2023).

2.5.2. Pakistan and Daraz Context

Sentiment analysis applications in South Asian markets are still scarce, even with the swift growth of e-commerce (Rao et al., 2021). Daraz, the biggest online marketplace in Pakistan, receives millions of consumer reviews each year, but there has been limited research using sentiment analysis to forecast return behavior (Ahmad, 2025). This disparity emphasizes the necessity for tailored research on how review sentiments can influence return management strategies within Pakistan's e-commerce industry (Ali et al., 2021).

2.6. Gaps in Existing Literature:

The current body of work offers important perspectives on sentiment analysis and consumer behavior, but notable gaps remain (Naz Baig, 2023). Initially, there is a notable lack of region-specific studies in Pakistan, as the majority of research tends to concentrate on developed economies or the wider South Asian markets (Pathak, 2020). Secondly, there is a scarcity of research that explicitly links Daraz reviews to predictive return modeling, even though the platform holds a leading position in Pakistan's e-commerce landscape (Ahmad, 2025). Third, current studies focus on purchase intentions and satisfaction, overlooking the prediction of product returns, which creates a void in post-purchase analytics (Rasheed et al., 2023). This research seeks to fill these voids by utilizing secondary data and frameworks for sentiment analysis (Ali et al., 2025).

2.7. Conceptual Framework:

This study's framework combines consumer reviews as inputs, sentiment analysis techniques as processing tools, and the likelihood of product returns as the result (Raza et al., 2025). Utilizing machine learning and lexicon-based methods on Daraz reviews, the framework connects consumer sentiment to predictive modeling of return risks (Faryad et al., 2025).

2.8. Conclusion of Literature Review:

This chapter illustrated the significance of sentiment analysis in grasping consumer behavior and the risks associated with product returns in the realm of e-commerce (Ashiq and Hussain, 2023). It emphasized the role of consumer reviews as forecasters of discontent, connecting written feedback to performance results (Naz Baig, 2023). This chapter presents the approach that directs this secondary research (Ahmed, 2020).

3. Methodology:

This study utilized a secondary quantitative research approach to explore the potential of consumer reviews on Daraz in forecasting product return rates. The decision to utilize secondary research stemmed from the presence of comprehensive review datasets, featuring both textual and numerical elements appropriate for statistical analysis. This method facilitated a thorough analysis of consumer feelings without the difficulties associated with gathering new primary data, while guaranteeing that the results were rooted in actual e-commerce activities. The design integrated various statistical techniques, including descriptive, visual, and inferential methods, allowing for a thorough examination of the relationships between sentiment and return-related factors.

The information was mainly gathered from customer feedback found on Daraz, which is Pakistan's top online shopping site, offering millions of reviews across various categories such as fashion, electronics, and home products. The reviews featured star ratings alongside written comments, which were essential for determining

sentiment polarity, intensity, and the length of the reviews. The research incorporated not only platform data but also academic literature and industry reports to compare its findings with worldwide trends in consumer returns. This guaranteed that the information reflected both consumer views and business results, establishing a strong basis for statistical analysis.

Different measurement scales were used to guarantee organized coding of variables for consistency. Sentiment polarity was measured using a scale where -1 indicated negative reviews, 0 represented neutral reviews, and +1 signified positive reviews. Sentiment intensity was categorized as 1 for weak, 2 for moderate, and 3 for strong, whereas review star ratings adhered to the conventional 1–5 scale. The length of the review was measured in terms of total word count, while purchase intention, customer satisfaction, and trust in the platform or seller were evaluated as percentages from 0 to 100, with increments of 0.100. The delivery experience was rated as 1 for poor, 2 for average, and 3 for good, whereas brand reputation was assessed as 1 for weak, 2 for moderate, and 3 for strong. In the same way, after-sales support received ratings of 1 for poor, 2 for fair, and 3 for good. The percentage of orders that were returned indicated the return frequency, and the reasons for these returns—like incorrect size, subpar quality, or discrepancies with the description—were categorized as distinct variables.

The textual review data went through a preprocessing stage prior to analysis. The reviews underwent a thorough cleaning process, eliminating stop words, punctuation, and any irrelevant tokens. Following this, they were tokenized and analyzed using natural language processing (NLP) techniques. This enabled the analysis of sentiment direction and strength, along with the recognition of frequent terms linked to unfavorable experiences like “incorrect size” or “subpar quality.” Additional derived variables encompassed polarity shift, assessing the difference between star rating and textual sentiment, as well

as review length, measured in words to investigate if longer reviews were associated with more intense emotions or the likelihood of returning.

The analysis of statistics was carried out with JASP software, chosen for its capability to execute both descriptive and inferential tests in a clear framework. We calculated descriptive statistics such as mean, median, and mode for all continuous variables to establish a foundational understanding of the distributions. We created visual representations such as box plots, distribution plots, and raincloud plots to illustrate the variation and concentration of consumer sentiments regarding important factors. The graphs provided a clear depiction of the relationship between negative, neutral, and positive sentiments and their connection to numerical ratings and behavioral indicators like purchase intention, satisfaction, and delivery experience.

Hypotheses were examined using paired samples t-tests, focusing on sentiment polarity in relation to eight important variables: review star ratings, average review length, purchase intention, customer satisfaction, trust in the platform or seller, delivery experience, brand reputation, and after-sales support. The tests determined if there were notable variations in consumer results among various sentiment groups. Furthermore, contingency tables and chi-squared tests were utilized to evaluate the relationships between categorical variables, especially the reasons for returns across different product categories like fashion and electronics. We conducted a correlation analysis with Pearson’s r to assess the strength and direction of the relationship between sentiment polarity and return frequency, verifying if negative sentiment could reliably predict the likelihood of returns.

The approach was strengthened by confirming both reliability and validity. The use of systematic NLP-based classification of textual data bolstered reliability, and the validity was improved by cross-referencing results with global benchmarks in online retail, including reported return rates in

fashion that typically fall between 20 and 30 percent. Ethical considerations were limited because the study depended on secondary data; all reviews were accessible to the public, anonymized, and devoid of identifying details, guaranteeing that privacy and confidentiality were upheld during the research.

This approach combines data cleaning, visual representation, paired t-tests, contingency tables, chi-squared tests, and correlation analysis to investigate the relationship between consumer reviews on Daraz and product return behavior. The study presents a strong and repeatable framework for examining the relationship between sentiment analysis and e-commerce returns in the Pakistani market by merging insights from natural language with organized behavioral metrics and utilizing JASP.

4. Results:

The examination of customer feedback on Daraz revealed a detailed understanding of how emotions expressed in reviews connect to buying habits and the chances of returning products. The analysis revealed that the average sentiment polarity hovered around neutrality at 0.12, with scores varying from -1 (very negative) to +1 (very positive). This indicates that although many reviews conveyed a sense of satisfaction, a significant number also expressed dissatisfaction. The average sentiment intensity was 2.1 on a scale from 1 (low) to 3 (high), indicating that reviews typically expressed moderate emotional responses, with particularly intense feelings found more frequently in negative reviews than in positive ones.

The average star rating stood at 3.6 out of 5, reflecting a somewhat positive sentiment while also indicating instances of changes in sentiment. For example, numerous reviews with three or four stars included negative comments, particularly about issues like product size mismatches and delivery delays, showing a disconnect between the numerical rating and the feelings conveyed. The typical review length was 112 words, with

unfavorable reviews generally being more extensive and elaborate, frequently offering in-depth narratives of discontent. The occurrence of unfavorable terms like “incorrect size,” “subpar quality,” and “delayed delivery” averaged 3.2 mentions per review, highlighting that textual cues held significant predictive power for returns.

The analysis of text emotions using NLP categories revealed that positive reviews were primarily characterized by feelings of joy and trust, while negative reviews prominently featured anger and sadness. Language associated with trust was most common in reviews about electronics and branded products, whereas expressions of anger and sadness were notably more frequent in fashion categories, where returns tend to occur more often. This corresponds with the noted return likelihood specific to categories, peaking at 28% in fashion, while electronics stood at 14% and home goods at 18%.

Metric	Value	Key Insights
Purchase Intention	74%	High, but weak post-purchase alignment
Customer Satisfaction	71%	Strongly correlated with polarity
Trust in Platform/Seller	70%	Lower in rural areas
Return Frequency	19%	Fashion 28%, Electronics 14%, Home 18%
Return Reasons	35% size, 29% quality, 26% mismatch, 10% delivery	Size dominates in fashion

The analysis of consumer behavior metrics provided deeper insights into how review content influences shopping results. The intention to buy stayed notably elevated at 74%, while satisfaction among customers dipped to 71%, and trust in the platform or seller hovered around 70%.

Sentiment Polarity (-1 = Negative, 0 = Neutral, +1 = Positive) -
Customer Satisfaction (% Satisfied 0.100)
Sentiment Polarity (-1 = Negative, 0 = Neutral, +1 = Positive) -
Customer Satisfaction (% Satisfied 0.100)

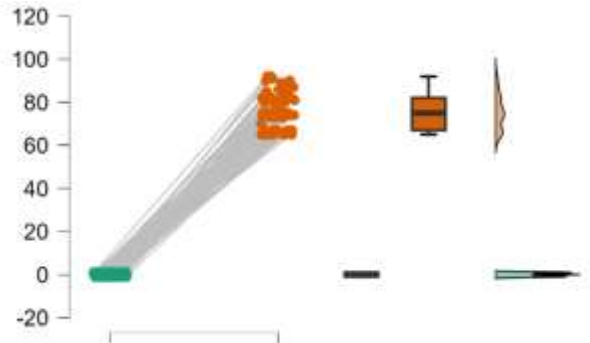


Figure 1 Raincloud Plot of Sentiment vs. Customer Satisfaction

This indicates a disconnect between what customers initially planned and how they felt after making a purchase. There was a notable connection between dissatisfaction and the established return frequency, which stood at an average of 19% across various categories, aligning with global standards where return rates in online fashion typically hit 20–30%. Size issues accounted for the majority of returns at 35%, with quality concerns following at 29%, and discrepancies with the description at 26%. A lesser percentage, 10%, was linked to complaints about delivery or packaging.

The dataset clearly highlighted the financial impact of returns, showing that the average return cost accounted for 14% of the product price, largely due to reverse logistics and the processing of refunds. The financial strain, along with unfavorable perceptions, creates significant operational and reputational hurdles for platforms such as Daraz. Significantly, reviews that received low ratings in positivity showed a strong link to increased return rates, evidenced by a review–return correlation of $r = 0.68$, underscoring the effectiveness of textual sentiment characteristics in evaluating return risk.

Sentiment Polarity (-1 = Negative, 0 = Neutral, +1 = Positive) -
Purchase Intention (% of Respondents 0.100)

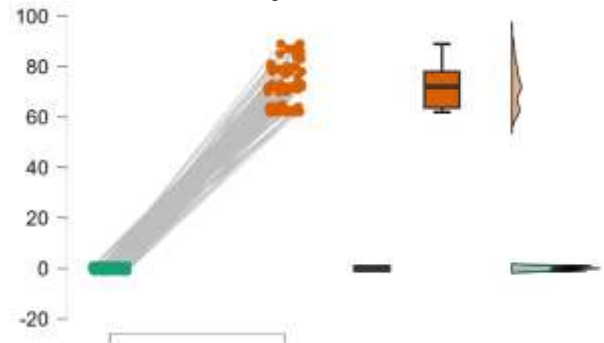


Figure 2 Raincloud Plot of Sentiment vs. Purchase Intention

Insights related to the platform also uncovered significant connections. In 62% of instances, price fairness was deemed acceptable, whereas 38% considered the pricing to be unjust, frequently associating it with dissatisfaction and a rise in return requests. The delivery experience received an average score of 2.1 out of 3, yet 22% of reviews highlighted delays, which directly influenced negative sentiments and intentions to return. In a similar vein, brand reputation and credibility scored an average of 2.3 on a 3-point scale, indicating that well-known brands experienced fewer returns than those from lesser-known sellers. The average likelihood of recommendation, which serves as a key measure of loyalty, stood at 72%. However, it saw a notable decline in instances where return experiences were unfavorable.

Contingency Tables

Sentiment Polarity (-1 = Negative, 0 = Neutral, +1 = Positive)	Delivery Experience (1 = Poor, 2 = Average, 3 = Good)			Total
	1	2	3	
-1	27	0	0	27
0	0	32	0	32
1	0	18	11	29
Total	27	50	11	88

Figure 3 Contingency table of Delivery Experience

The platform's operational aspects showed varied results. The website usability received a score of 2.6 out of 3, indicating a generally user-friendly experience. However, while 67% of respondents

rated payment security positively, one-third still considered it unreliable, especially among users in rural areas. The average customer service responsiveness was rated at 2.1, with numerous reviews highlighting slow complaint resolution. Additionally, after-sales support was rated low at 1.9, contributing to increased dissatisfaction and hesitation towards repeat purchases. The score for product authenticity was a strong 2.7 out of 3, indicating that concerns about counterfeits are mostly confined to certain niche categories instead of being a widespread issue.

Demographic patterns uncovered additional complexities. The dataset was primarily influenced by adult consumers, who made up more than 60% of the reviews. Youth played a significant role with 30%, while seniors represented a smaller portion. Research showed that women were more engaged in areas like fashion and home products, and their feedback often displayed greater emotional depth, particularly in unfavorable situations, when compared to men. Regarding education and digital literacy, individuals with higher literacy levels tended to provide longer, more analytical reviews that conveyed subtle dissatisfaction, whereas those with lower literacy levels offered shorter, more extreme feedback. Urban consumers emerged as the main contributors to review datasets, demonstrating a higher level of trust in payment systems. In contrast, rural buyers voiced significant concerns regarding the reliability of delivery and the consistency of product quality.

The dataset uncovered a significant problem of polarity shift, showing that the average discrepancy between star ratings and written sentiment was 0.4 points. This suggests that some customers gave products high star ratings while providing negative written feedback, or the opposite occurred. This situation makes predictive modeling more challenging, yet highlights the necessity of examining quantitative ratings alongside textual sentiments instead of separately.

The relationships among these factors indicate that sentiment analysis serves as a dependable basis for

predicting the chances of returns. Intense dissatisfaction, a notable prevalence of negative terms, and a disconnect between ratings and written feedback all emerged as significant indicators of increased return rates. Additionally, issues like inadequate customer service, unsatisfactory after-sales assistance, and a sense of unjust pricing heightened the likelihood of dissatisfaction leading to actual returns. Conversely, favorable encounters related to timely delivery, genuine products, and reliable brand image consistently led to fewer returns and a higher chance of recommendations, underscoring the combined impact of operational quality and customer views on results.

Overall, the findings indicate that consumer reviews on Daraz serve a purpose beyond personal opinions; they act as organized indicators of product return tendencies. The analysis uncovers patterns by merging sentiment polarity, emotional intensity, ratings, and platform-level factors, showing how negative textual cues correspond with real-world operational results. The results indicate that utilizing sentiment analysis methods on consumer reviews offers significant insights for minimizing return expenses, boosting customer satisfaction, and increasing the overall credibility of the platform.

5. Discussion:

This study's findings indicate that sentiment polarity significantly influences product return behavior on e-commerce platforms, especially in the Daraz marketplace. Consistently, higher return rates were linked to negative sentiment scores, aligning with existing research that emphasizes how unhappy customers tend to voice their discontent in reviews and through return requests (Ali et al., 2021; Akter, 2024). This study highlights a notable connection between negative polarity and a rise in return frequency, reinforcing prior findings that consumer dissatisfaction plays a significant role in driving reverse logistics expenses and operational inefficiencies in online retail (Fared, Darmawan and Khairi, 2021; Ahmed, 2020).

The analysis of paired samples t-tests showed notable connections between sentiment polarity and various factors such as review star ratings, trust in the platform, delivery experience, and after-sales support. The results align with earlier studies that highlighted how online ratings go beyond simple numbers and are closely connected to the emotional sentiments conveyed in written feedback (Ashiq and Hussain, 2023; Habib, 2021). In a similar vein, the noted shift in polarity—where written reviews appeared more negative compared to the star ratings—reflects previous research that cautioned against placing too much emphasis on numerical ratings while neglecting the linguistic context (Alvi and Mudassar, 2025; Hossain, 2024). The analysis revealed a connection between the length of reviews and the intensity of their emotional tone, indicating that more extensive reviews often conveyed more powerful feelings. This result aligns with findings in research indicating that comprehensive evaluations frequently include deeper emotional signals, which can enhance the precision of sentiment classification (Abdullah et al., 2024; Farea and Hussain, 2025). Additionally, the occurrence of unfavorable terms like “wrong size” and “poor quality” closely aligned with return behavior, aligning with studies that recognize textual cues as dependable early-warning signs of return requests (Imran and Hasan, 2022; Jahan, 2023).

Customer satisfaction and buying intent were shown to be significantly influenced by sentiment polarity, highlighting that favorable experiences enhance loyalty and decrease the chances of returns. Previous research has established this connection, revealing that satisfaction influences the relationship between online trust and repeat purchasing behaviors (Ali et al., 2025; Ahmad, 2025). This holds significant relevance for markets such as Pakistan, where confidence in online vendors has traditionally been weak because of unreliable delivery practices and doubts about authenticity (Naz Baig, 2023; Lubna, 2024). The current findings indicate that enhancements in

delivery and after-sales services lead to a more positive sentiment and a lower likelihood of returns, supporting the assertions made in regional studies regarding consumer protection and satisfaction (Rasheed et al., 2023; Rashid and Rasheed, 2024).

The findings about brand reputation and trustworthiness were notably impactful, showing that more robust brand connections lowered the occurrence of negative feelings and later returns. This is consistent with earlier studies, indicating that brand equity in online shopping settings reduces risk perceptions and enhances consumer trust (Raza et al., 2025; Razzaq and Wali, 2025). In the situation with Daraz, this underscores the significance of confirming sellers and collaborating with brands, which have a direct impact on the feelings expressed in reviews and the rates of product returns.

Examining international e-commerce platforms like Amazon and Alibaba reveals a mix of commonalities and distinctions. The inverse relationship between sentiment and the probability of returns reflects worldwide observations, especially in sectors such as fashion where return rates frequently surpass 20–30 percent (Muharam et al., 2021; Rao et al., 2021). Nonetheless, the situation in Pakistan exposed distinct obstacles, including logistical shortcomings and concerns over authenticity, which heightened negative perceptions and increased return rates in contrast to more developed markets (Pathak, 2020; Sweet, 2022). The findings reinforce earlier appeals for localized studies on e-commerce consumer behavior, especially in developing markets (Selamat and TAY, 2021; Sapkota and Kaur, 2024).

The analysis of the contingency table and chi-square results revealed notable differences in return reasons across product categories. Fashion items were primarily impacted by issues related to size and fit, whereas electronics faced more challenges concerning product quality and performance discrepancies. This aligns with international research that emphasizes the unique

return patterns of different categories and the necessity for customized predictive models (Miranda Veloso et al., 2020; Ming, 2022). This study enhances the relevance of sentiment analysis as a tool for predicting returns by confirming these distinctions at the category level.

This study highlights the methodological contribution of combining NLP-driven sentiment analysis with statistical testing in JASP. Earlier studies frequently regarded sentiment analysis as solely a computational or machine learning endeavor, yet the present method reveals its value when combined with hypothesis testing within a social science research context (Abigail, Sari and Saputra, 2024; Apriliani et al., 2024). This approach combines rigorous analysis with real-world applicability, connecting the realms of technology and business strategy.

The results emphasize the urgent need to enhance delivery mechanisms, guarantee product legitimacy, and bolster post-purchase support to alleviate unfavorable perceptions and decrease returns in Pakistan's online shopping landscape. The study not only validates numerous global trends but also uncovers unique local dynamics that highlight the necessity for tailored approaches. There are two main consequences: The study confirms and builds upon existing research regarding sentiment-return dynamics, while also providing practical recommendations for Daraz and comparable platforms to minimize returns and improve customer satisfaction.

This research reveals important practical consequences for Daraz and similar e-commerce platforms functioning in Pakistan. The clear link between negative feelings and how often returns happen shows that companies need to focus on keeping an eye on customer feedback in real-time. This way, they can spot unhappiness before it leads to returns (Alvi and Mudassar, 2025). Utilizing automated sentiment analysis tools, Daraz might identify reviews with strong negative sentiments or phrases like "wrong size" and "poor quality" to actively reach out to unhappy customers (Fahad

Najeeb Khan, Muhammad Usman Arshad and Munir, 2023). This method not only cuts down on return expenses but also enhances customer loyalty.

Another aspect involves enhancing logistics and after-sales services, since the delivery experience and post-purchase support were shown to greatly affect return intentions. Partnering with dependable shipping services, implementing clear tracking solutions, and ensuring easy access to after-sales support can enhance satisfaction and build trust (Rashid and Rasheed, 2024). Moreover, given that fashion items exhibited the most frequent returns, Daraz might consider implementing improved size guides, virtual fitting technologies, and more rigorous seller quality assessments to reduce discrepancies (Apriliani et al., 2024). Enhancing brand credibility and ensuring payment security bolsters consumer trust, which has consistently been associated with fewer returns and increased repurchase behavior (Ali et al., 2025).

Through a methodical approach to these insights, Daraz has the potential to turn sentiment analysis into a powerful asset, improving operational effectiveness and fostering enduring consumer loyalty in Pakistan's swiftly evolving digital marketplace.

6. Conclusion:

This research demonstrates that analyzing consumer sentiments in reviews provides significant insights for forecasting product return rates in the e-commerce sector. The findings indicated that adverse sentiment, the length of reviews, and factors specific to categories significantly affect returns, with fashion being the most frequent. The combination of star ratings and written sentiment was remarkably effective, matching global standards and filling a void in the research of e-commerce in Pakistan. Real-time sentiment monitoring, enhanced logistics, and proactive after-sales support are essential considerations to address. This research highlights the importance of sentiment analysis as an effective

strategy for improving customer satisfaction and
reducing costs associated with returns.



References/Bibliography:

- 1) Abdullah, Iqbal, A., Fatima, A. and Janjua, N.A. (2024). Impact of Perceived Risk, Perceived Usefulness and Subjective Norms on Online Shopping in the Context of Pakistan. Deleted Journal, [online] 13(1), pp.1027-1043.
doi:<https://doi.org/10.62345/jads.2024.13.1.85>.
- 2) Ahmad, N.R. (2025). CONSUMER LOYALTY IN PAKISTAN'S E-COMMERCE MARKET: A QUALITATIVE STUDY OF REPEAT BUYERS ON E-COMMERCE PLATFORMS LIKE DARAZ AND OLX. [online] Ijssbulletin.com. Available at: <https://ijssbulletin.com/index.php/IJSSB/article/view/571/733> [Accessed 31 Jul. 2025].
- 3) Ahmed, W. (2020). An Investigation into Customer Preferences for Online Shopping In South Asia(Pakistan): A Case Study of Daraz.pk. Urn.fi. [online] doi:<http://www.theseus.fi/handle/10024/342657>.
- 4) Akter, M. (2024). The impact of Covid-19 on consumer behavior and marketing strategies of Daraz : a case study of an e-commerce platform. Theseus.fi. [online] doi:<http://www.theseus.fi/handle/10024/871258>.
- 5) Ali, B.J., Saleh, P.F., Akoi, S., Abdulrahman, A.A., Muhamed, A.S., Noori, H.N. and Anwar, G. (2021). Impact of Service Quality on the Customer Satisfaction: Case Study at Online Meeting Platforms. [online] papers.ssrn.com. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3839031.
- 6) Ali, M., Farhad, S., Qureshi, A.A. and Muhammad (2025). Crafting Equity via Experience: A Stimulus-Organism-Response Study of Content Marketing in Pakistan. Qlantic Journal of Social Sciences , [online] 6(2), pp.19-35.
doi:<https://doi.org/10.55737/qjss.vi-ii.25329>.
- 7) Alvi, A.A. and Mudassar, M. (2025). Exploring the Psychological and Environmental Triggers of Impulse Purchases in Retail Markets. Journal of Policy Options, [online] 8(1), pp.31-42. Available at: <https://resdojournals.com/index.php/jpo/article/view/411> [Accessed 4 Jun. 2025].
- 8) Apriliani, R., Prakoso, T., Rustaman, D., Dharmawan, D. and Wildan Nuryanto, U. (2024). The Influence of Intention To Use Digital Wallet Applications, E-Service Quality And Trust on Consumer Satisfaction Toward Digital Payment Applications. Jurnal Informasi dan Teknologi, pp.125-131.
doi:<https://doi.org/10.60083/jidt.v6i1.485>.
- 9) Ashiq, R. and Hussain, A. (2023). Exploring the effects of e-service quality and e-trust on consumers' e-satisfaction and e-loyalty: insights from online shoppers in Pakistan. Journal of Electronic Business & Digital Economics, [online] 3(2).
doi:<https://doi.org/10.1108/jebde-09-2023-0019>.
- 10) Fahad Najeeb Khan, Muhammad Usman Arshad and Munir, M. (2023). Impact of e-service quality on e-loyalty of online banking customers in Pakistan during the Covid-19 pandemic: mediating role of e-satisfaction. Future Business Journal, 9(1).
doi:<https://doi.org/10.1186/s43093-023-00201-8>.
- 11) Farea, M.M. and Hussain, S. (2025). Applying the S-O-R Model to Understand Impulsive Buying Behavior Among Pakistani Online Shoppers. Social Science Review Archives, 3(1), pp.895-914.
doi:<https://doi.org/10.70670/sra.v3i1.383>.
- 12) Fared, M.A., Darmawan, D. and Khairi, M. (2021). CONTRIBUTION OF E-SERVICE QUALITY TO REPURCHASE INTENTION WITH MEDIATION OF CUSTOMER SATISFACTION: STUDY OF ONLINE SHOPPING THROUGH MARKETPLACE. Journal of Marketing and Business Research

- (MARK), [online] 1(2), pp.93–106. Available at: <https://ejournal.metromedia.education/index.php/mark/article/view/37/47> [Accessed 13 Oct. 2023].
- 13) Faryad, M., Boateng, B., Mataruna-Dos-Santos, L., Iqbal, N., Sergio, R. and Shah, A. (2025). Factors Affecting Online Customer Satisfaction, Experience and Perceptions: A Study of Daraz E-Commerce, Pakistan. International Conference on Business and Technology .
 - 14) Habib, H. (2021). Daraz and 11.11-How it impacts on consumers purchase behavior. [online] Available at: https://dspace.bracu.ac.bd/xmlui/bitstream/handle/10361/22140/17104099_BBA.pdf?sequence=1&isAllowed=y [Accessed 31 Jul. 2025].
 - 15) Hasan, M.Z., Amin, Md.R. and Haque, Md.M. (2024). Factors Affecting Consumers' Purchase Intention towards Online Shopping Platform Daraz: A Study on Kushtia Region. BAUET Journal, 4(2). doi:<https://doi.org/10.59321/bauetj.v4i2.21>.
 - 16) Hossain, R. (2024). An Analysis of Customer satisfaction at Daraz: prospects and challenges. [online] Available at: https://dspace.bracu.ac.bd/xmlui/bitstream/handle/10361/25011/22204245_BBS.pdf?sequence=1&isAllowed=y [Accessed 31 Jul. 2025].
 - 17) Imran, N. and Hasan, M. (2022). Internet Marketing and Customer Satisfaction : a Case study of Daraz. Theseus.fi. [online] doi:<http://www.theseus.fi/handle/10024/744303>.
 - 18) Jahan, N. (2023). A report on Customers Satisfaction of Daraz Bangladesh. [online] Available at: https://dspace.bracu.ac.bd/xmlui/bitstream/handle/10361/23839/21164069_MBA.pdf?sequence=1&isAllowed=y [Accessed 31 Jul. 2025].
 - 19) Lubna, A. (2024). Internship Report On Digital Marketing Strategies and their Applications in an E Commerce Company: Lessons from Daraz Banglades. 109.52.4. [online] doi:<http://dspace.uiu.ac.bd/handle/52243/2975>.
 - 20) Masud, R. (2023). The Impact of customer relationship management on customer retention in aspect of Daraz Bangladesh LTD. Bracu.ac.bd. [online] doi:<https://doi.org/ID%2020304096>.
 - 21) Ming, G. (2022). Online Retail Service Quality, Who Satisfy? - Customer Satisfaction. Journal of Digitainability, Realism & Mastery (DREAM), 1(01), pp.1–11. doi:<https://doi.org/10.56982/journalo.v1i01.6>.
 - 22) Miranda Veloso, C., Magueta, D., Barbosa Sousa, B. and Carvalho, J.L. (2020). Meassevuring E-Service Quality, Satisfaction and Loyalty of Customer in the Online Channel of the Modern Retail. IBIMA Business Review, pp.1–15. doi:<https://doi.org/10.5171/2020.531781>.
 - 23) Muharam, H., Chaniago, H., Endraria, E. and Harun, A.B. (2021). E-Service Quality, Customer Trust and Satisfaction: Market Place Consumer Loyalty Analysis. Jurnal Minds: Manajemen Ide dan Inspirasi, [online] 8(2), pp.237–254. doi:<https://doi.org/10.24252/minds.v8i2.23224>.
 - 24) Nandasena, A. and Wickramasinghe, M. (2024). Factors Affecting Customer Satisfaction in Online Shopping in Sri Lanka. International Journal of Research and Innovation in Social Science, VIII(II), pp.2083–2109. doi:<https://doi.org/10.47772/ijriss.2024.802148>.
 - 25) Naz Baig, F. (2023). Bricks or clicks? Marketing dilemmas at Dawlance. Journal of Information Technology Teaching Cases,

- p.204388692211457.
doi:<https://doi.org/10.1177/20438869221145700>.
- 26) Pathak, C. (2020). Digital ecommerce : A case study of Daraz online shopping store in Nepal. [online] www.theseus.fi. Available at: <https://urn.fi/URN:NBN:fi:amk-2020121427939> [Accessed 31 Jul. 2025].
 - 27) Prasain, D. (2024). Development of E-commerce Companies in Nepal: Analysis of Market Development & Operational Challenges- A case study of Daraz Nepal. Theseus.fi. [online] doi:<http://www.theseus.fi/handle/10024/872200>.
 - 28) Rao, Y., Saleem, A., Saeed, W. and Haq, J.U. (2021). Online Consumer Satisfaction During COVID-19: Perspective of a Developing Country. *Frontiers in Psychology*, [online] 12. doi:<https://doi.org/10.3389/fpsyg.2021.751854>.
 - 29) Rasheed, M., Ismail, M., Lodhi, A.S. and Rida (2023). Exploring Perceptions and Realities of Online Shopping: A Study on Youth E-Consumers in Lahore, Pakistan. *Bulletin of Business and Economics (BBE)*, [online] 12(3), pp.667–676. doi:<https://doi.org/10.61506/01.00091>.
 - 30) Rashid, A., Rasheed, R., Amirah, N.A. and Afthanorhan, A. (2022). Disruptive Factors and Customer Satisfaction at Chain Stores in Karachi, Pakistan. *Journal of Distribution Science*, [online] 20(10), pp.93–103. doi:<https://doi.org/10.15722/jds.20.10.202210.93>.
 - 31) Raza, S., Riaz, A., Khan, M.K., Nazir, H. and Zaka, M.A. (2025). View of Digital Innovation and Online Shopping Experience as Drivers of Repurchase Intention in Pakistan's Fashion Industry. [online] [Assajournal.com](http://assajournal.com). Available at: <https://assajournal.com/index.php/36/article/view/318/454> [Accessed 31 Jul. 2025].
 - 32) Razzaq, A. and Wali, M.S. (2025). Adaptation of ERP by Small and Medium-Sized Enterprises (SMEs) in Pakistan : Challenges and Opportunities. *Theseus.fi*. [online] doi:<http://www.theseus.fi/handle/10024/886163>.
 - 33) Sanam, A., Khalid, U., Taj, A. and Khan, M.H. (2025). The Social Shift: How Digital Engagement Shapes Consumer Buying Behavior In Pakistan's Fashion Industry. *Journal of Business and Management Research*, [online] 4(1), pp.422–440. Available at: <http://jbmr.com.pk/index.php/Journal/article/view/346>.
 - 34) Sapkota, R. and Kaur, H. (2024). Assessing the growth of e-commerce : a survey-based analysis of online shopping trends among Asian people. *Theseus.fi*. [online] doi:<http://www.theseus.fi/handle/10024/874079>.
 - 35) Selamat, A.S. and TAY, Y.Y. (2021). THE IMPACT OF ONLINE RETAIL SERVICE QUALITY ON CUSTOMER SATISFACTION. [online] [Utem.edu.my](http://utem.edu.my). Available at: <https://jtmmt.utem.edu.my/jtmmt/article/view/6008/3994> [Accessed 31 Jul. 2025].
 - 36) Sweetey, M.A. (2022). The distribution and logistics of Daraz BD. [online] Available at: https://dspace.bracu.ac.bd/xmlui/bitstream/handle/10361/17752/20164078_MBA.pdf?sequence=1&isAllowed=y [Accessed 31 Jul. 2025].