

ESG Issues in Tokopedia Complaints on MediaKonsumen: Links Between Product-Ethics Complaints and Non-Financial Costs

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Abstract

This study investigates whether Environmental (E), Social (S), and Governance (G) issues in Tokopedia-related consumer complaints on MediaKonsumen.com are linked to public engagement and non-financial cost proxies. Using a Python-based pipeline in Google Colab, we scraped and processed 780 complaint entries from December 2021 to September 2025. Data cleaning included date normalization, comment count extraction, text merging, and lowercasing. Complaints were classified into E/S/G sub-indices using a keyword and regex dictionary, and flags were assigned for return/waste, legal/regulatory, and boycott/reputation risks. Analyses combined post-level statistics with monthly trend aggregation and visualizations. Results show H1 supported: social-related posts receive the highest engagement (mean comments = 27.28 for $\text{esg_S}>0$ vs 22.02 for $\text{esg_S}=0$). Among coded posts, average engagement was $S=27.28$, $G=19.36$, and $E=10.00$. H2 is not supported: legal-threat signals are rare (0.00% for $\text{esg_G}>0$ vs 0.27% for $\text{esg_G}=0$). H3 shows weak evidence: the correlation between monthly mean E and the share of return/waste flags is $r=0.19$. Overall, social issues drive the strongest public response, highlighting the reputational value of improving customer protection, transparency, and service ethics. Limited legal-threat cues suggest a need for clearer governance and dispute resolution, while weak environmental links to returns indicate opportunities for sustainability education and eco-friendly return policies.

Keywords: ESG; Consumer_complaints; Engagement; Non-financial_costs

1. Introduction

Electronic commerce in Indonesia has developed rapidly over the past decade and has fundamentally transformed the way consumers discover, purchase, and file complaints about products and services. Indonesia is currently one of the largest e-commerce markets in Southeast Asia. The national e-commerce transaction value was estimated to exceed IDR 700 trillion in 2024 and is projected to continue growing in line with internet penetration, which has surpassed 77% of the population, as well as the increasing adoption of mobile devices. [1]. The trends of mobile commerce and social commerce have expanded market access for small and medium-sized enterprises (SMEs) but have also increased the complexity of supply chains, delivery processes, and after-sales services. The multi-merchant business model, in which platforms act merely as facilitators between independent sellers and buyers, creates opportunities for growth while simultaneously posing significant challenges for quality management and customer satisfaction. Recurring issues include inconsistent product quality, varying packaging standards, slow return processes, and disputes between sellers and buyers. This complexity introduces non-financial cost risks for platforms: an increase in product returns or waste that raises logistics expenses, public complaints that damage reputation, and potential litigation from consumers or regulators in the event of perceived serious violations. Micro-level data in the form of online consumer complaints play a strategic role because they capture real user experiences. Complaints not only document technical problems but also present emotional narratives, visual evidence such as screenshots of conversations, order numbers, and supporting documents. Such information often emerges faster than formal indicators recorded in corporate

reports, making it an early signal for detecting Environment, Social, and Governance (ESG) risks and non-financial costs in real time. [2].

Tokopedia is one of the central players in Indonesia's e-commerce ecosystem. Founded in 2009, Tokopedia has grown into a giant marketplace platform that connects more than 12 million sellers and hundreds of millions of products across the archipelago. The platform not only provides a digital storefront but also supports payment services, logistics, and digital products, making it a comprehensive ecosystem for online merchants. Tokopedia's dominant position has been further strengthened by mergers with several regional technology companies and the entry of major investors such as TikTok, which has drawn regulatory attention to potential monopoly risks. [3]. Tokopedia differs from other marketplaces by adopting a pure multi-merchant model. Unlike some competitors that combine this approach with direct retail operations, Tokopedia functions entirely as a facilitator of transactions. Consequently, variations in product quality and customer experience depend heavily on thousands of independent sellers. This structure amplifies heterogeneity in packaging standards, delivery speed, return policies, and dispute resolution processes. Platforms with such a model tend to face a higher and more diverse volume of customer complaints compared to those with direct retail operations, as the platform's control over product and service quality is limited.

These characteristics make Tokopedia an ideal case study for examining consumer complaints and their implications for non-financial costs. Another reason for selecting Tokopedia is the abundance of publicly available data. Tokopedia is among the most frequently mentioned brands on online consumer complaint channels, particularly MediaKonsumen. The large number of documented cases provides a solid empirical foundation for conducting longitudinal and comparative analyses across ESG (Environmental, Social, and Governance) dimensions. Furthermore, Tokopedia's dominant position in the domestic market makes the findings of this research highly relevant for regulators, policymakers, and industry stakeholders seeking to understand the impact of public complaints on the operational performance and reputation of e-commerce platforms..

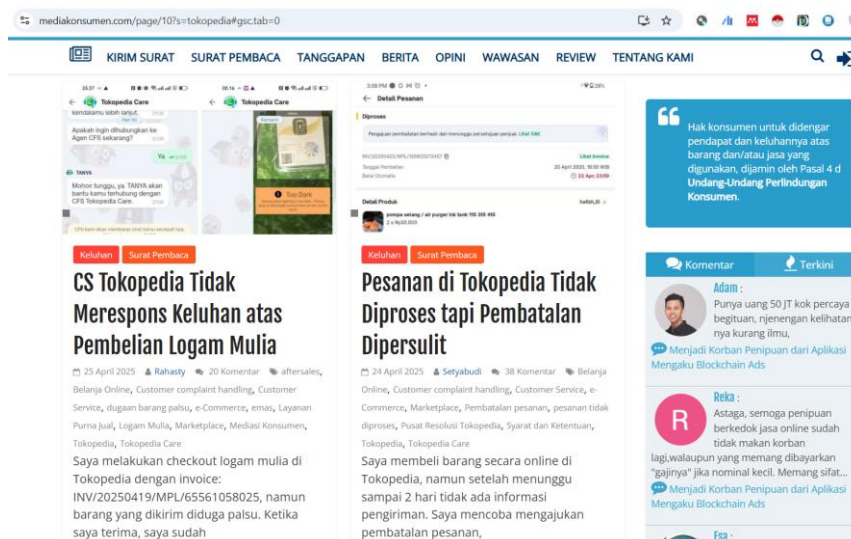


Figure 1. Tampilan MediaKonsumen dan Keluhan Pelanggan
Source : MediaKonsumen.com

MediaKonsumen is an independent platform that has long served as a primary channel for Indonesian consumers to voice complaints about products and services. The site publishes detailed case reports, often accompanied by supporting evidence such as screenshots of conversations, order numbers, product photos, and official company responses. Unlike internal customer service channels, MediaKonsumen is open and public, allowing each case to be read and widely shared by other internet users. This characteristic makes MediaKonsumen not merely a complaint forum but also an issue amplification space through electronic word-of-mouth (e-WOM) mechanisms. Uploaded complaints can be reshared, discussed in other forums, and trigger public sentiment that affects brand reputation. Many companies in Indonesia monitor MediaKonsumen as an indicator of their online reputation because the platform holds high credibility and is frequently referenced by mainstream media and other consumers. For researchers, MediaKonsumen provides a rich and well-structured micro-level data source. Each complaint entry includes the date, involved parties' identities, problem chronology, and company responses. Such data are highly suitable for quantitative analysis using Natural Language Processing (NLP), as they contain natural text, numerical evidence (e.g., order numbers, comment counts), and allow for topic labeling such as ESG dimensions and non-financial cost indicators..

The concept of Environmental, Social, and Governance (ESG) has become an important framework for evaluating a company's non-financial performance. The environmental dimension covers issues of sustainability and ecological impact; the social dimension emphasizes consumer protection, product safety, and community relations; while the governance dimension relates to transparency, risk management, and regulatory compliance. Research indicates that companies with strong ESG performance can reduce reputational risk and enhance long-term value [4]. However, the impact of ESG is not homogeneous, underscoring that a focus on material issues specific to a given industry is more relevant for predicting financial and reputational outcomes than adopting a generic ESG approach [5]. For example, in the context of e-commerce platforms, social issues such as transaction security, consumer protection, and fair refund practices may be far more critical than environmental concerns. Traditional ESG research often relies on corporate reports and aggregated financial data, which are delayed and fail to capture micro-level signals from online consumer complaints. In contrast, consumer complaints often reflect product issues, user safety concerns, or operational governance problems much earlier factors that directly influence non-financial costs. Meanwhile, the literature on electronic word-of-mouth (e-WOM) highlights the power of social networks in amplifying negative consumer experiences. Former customers wield strong influence in spreading complaints because they are perceived as credible by their social networks. The intensity and reach of e-WOM are strongly shaped by user motivations, the size of their social networks, and the way messages are framed [6]. Public complaints that contain ESG-related issues tend to have a significant reputational impact because they involve consumers' values and trust in the company. In the context of Tokopedia, complaints highlighting social issues such as seller fraud, refund failures, or dangerous products have been shown to generate the highest average engagement. Based on complaint data about Tokopedia on MediaKonsumen.com from 2021 to 2025, there were 700 posts consisting of consumer complaints and company responses regarding Tokopedia's services. [7].

Although the literature on corporate sustainability and electronic word-of-mouth (e-WOM) has grown rapidly over the past decade, several research gaps remain insufficiently addressed. First, very few studies have directly linked ESG signals at the level of public complaints to proxies of non-financial operational costs relevant to marketplace platform managers, such as product return frequency (which increases logistics expenses), litigation escalation (which creates legal burdens), and public engagement intensity (which reflects reputational risk). Second, comparative research examining the influence of different ESG dimensions particularly Environmental (E), Social (S), and Governance (G) on engagement and non-financial cost indicators is still rarely conducted using real, publicly available, and detailed complaint data. Third, the application of transparent rule-based analytical approaches combined with multi-year longitudinal data remains limited, despite its potential to develop early-warning systems that can be directly utilized by platform managers.

The availability of rich public complaint data on the MediaKonsumen platform creates an important opportunity to address these research gaps. Between December 2021 and September 2025, a total of 780 complaint entries explicitly mentioning Tokopedia were identified. These data record detailed problem contexts, supporting evidence (such as screenshots and order numbers), as well as the number of comments, which can serve as an indicator of public engagement. Preliminary analysis shows that the social (S) dimension for example, complaints about product safety, seller ethics, or refund failures tends to trigger higher public engagement compared to the environmental (E) or governance (G) dimensions. Conversely, explicit legal threat indications are relatively rare, although they are often associated with complaints mentioning governance issues. Such insights are crucial for platform management to understand reputational vulnerabilities and operational cost drivers, enabling more accurate prioritization of risk mitigation efforts. Based on this context and the identified research gaps, this study is designed to address three main research questions: How do Social (S) issues including complaints about product safety, seller ethics, or product conformity affect the level of public engagement, as measured by the number of comments on Tokopedia consumer complaints on MediaKonsumen? Do Governance (G) issues such as fraud, hidden terms, or non-transparent policies more frequently lead to indications of reporting intent or legal threats compared to complaints that do not contain G-related issues? Is there a relationship between Environmental (E) issues such as packaging, waste, or damaged products and the frequency of product returns or damages, which may reflect non-financial costs for the platform?.

2. Methodology

This study employs a text-based quantitative approach to evaluate the relationship between Environmental, Social, and Governance (ESG) issues in Tokopedia consumer complaints and both public engagement and potential non-financial costs. Data were collected through web scraping from MediaKonsumen.com, an independent platform that hosts consumer complaints and public responses about various services in Indonesia. The scraping process focused on posts that explicitly mention Tokopedia as the reported party, capturing elements such as complaint titles, content excerpts, publication dates, comment counts, author

names, and original URLs. These data form the dataset used to analyze trends in ESG issues and public responses over time.

A preprocessing stage was carried out to prepare the data for computational analysis using Python on Google Colab. Column names were standardized to be descriptive, while publication dates in Indonesian format were normalized into the international date format. Comment counts were extracted from raw text using regular expressions (regex), and complaint texts (titles and excerpts) were cleaned and merged into a single column. All text was converted to lowercase to ensure case-insensitive keyword matching. ESG issue identification was conducted using a keyword dictionary approach, with three primary lists to detect Environmental (E), Social (S), and Governance (G) dimensions, and three additional lists to detect indicators of non-financial costs: return/waste, legal/regulatory, and boycott/reputation. Each entry was assigned ESG scores (E, S, G) and binary flags for each non-financial cost indicator.

The scored and flagged data were then aggregated by month to calculate key metrics such as the total number of complaints, average E/S/G scores, public engagement levels (measured by comment counts), and the proportion of posts indicating non-financial cost risks. Statistical analysis was conducted to test three main hypotheses:

- H1: Complaints with social issues trigger higher engagement.
- H2: Governance issues are more likely to elicit indications of reporting intent (legal threats).
- H3: Environmental issues correlate with an increase in return/waste-related complaints.

To test these hypotheses, the study applied mean difference tests, Pearson correlation analysis, and time-series visualizations to explore the dynamics of ESG-related complaints and their potential impact on non-financial costs..

3. Result and Discussion

3.1. Result

This study utilizes consumer complaint data related to Tokopedia published on MediaKonsumen, an online forum widely used by Indonesian consumers to share their experiences. By analyzing this dataset, we aim to explore how ESG-related issues are expressed in consumer complaints and examine the potential relationship between specific ESG issue types and both public engagement levels (measured by the number of comments) and proxy indicators of non-financial costs, such as potential legal threats or product return/damage incidents.

The research began with the collection of consumer complaint data directly from MediaKonsumen.com through a web scraping process. MediaKonsumen was chosen because it is an independent and publicly accessible platform that hosts consumer complaints in Indonesia, including those related to Tokopedia's services and transactions. The scraping process was conducted by specifying the keyword "Tokopedia" to capture all posts explicitly mentioning Tokopedia as the reported party. The collected data included key elements for analysis: complaint titles, content snippets, article URLs, publication dates, author names, and recorded comment counts for each post. Data collection was carried out systematically for the

period December 2021 to September 2025, resulting in a longitudinal dataset that captures the evolution of consumer complaints over time.

id	col0	col0_HREF	col1	col2	col2_HREF	col3	col4	col5	col15	
0	Keluhan	https://mediakonsumen.com/keluhan	Surat Pembaca	Transaksi yang Tidak Berhasil di Tokopedia, Su...	https://mediakonsumen.com/2025/09/23/surat-pem...	23 September 2025	KEVIN	Komentar	8	Pada tanggal 27 Agustus 2025 saya melakukan pe...
1	Keluhan	https://mediakonsumen.com/keluhan	Surat Pembaca	Tokopedia Belum Mengembalikan Dana Refund Seja...	https://mediakonsumen.com/2025/09/22/surat-pem...	22 September 2025	Lia	Komentar	9	Saya ingin menyampaikan keluhan terkait pengem...
2	Tanggapan	https://mediakonsumen.com/tanggapan	NaN	Tanggapan J&T Express perihal 'TikTok Shop dan...	https://mediakonsumen.com/2025/09/16/tanggapan...	16 September 2025	J&T Express	Komentar	2	Yth. Ibu Shirley Mulyanty Sehubungan dengan su...
3	Headline	https://mediakonsumen.com/headline	Keluhan	TikTok Shop dan Tokopedia Tidak Mengembalikan ...	https://mediakonsumen.com/2025/09/15/surat-pem...	15 September 2025	Shirley	Komentar	8	Sebelum berintegrasi dengan TikTok Shop, Tokop...
4	Keluhan	https://mediakonsumen.com/keluhan	Surat Pembaca	Tokopedia dan JNT, Paket 3 Bulan Tanpa Kejelasan	https://mediakonsumen.com/2025/09/14/surat-pem...	14 September 2025	Bagus	Komentar	9	Halo Tokopedia. Saya membeli barang dengan nom...

Figure 2. Table of Consumer Complaints Scraped from Tokopedia (2021–2025)
 Source: Research Data, 2025

This study leverages web scraping techniques to obtain context-rich consumer complaint data, capturing full narratives and supporting evidence that are typically unavailable in official company reports.

Subsequently, the data analysis was conducted using Google Colab. The process began by setting up file paths and loading the scraped dataset from MediaKonsumen, followed by normalizing column structures for easier analysis (e.g., renaming col2 to title, col3 to date_str). Dates originally formatted in Indonesian were converted into a standardized international date format by mapping Indonesian month names to English, enabling the creation of a monthly period variable (period) for trend analysis. Additionally, the number of comments was extracted from raw text and converted into an integer (engagement_comments) as a proxy for public engagement. The core text for analysis was constructed by combining complaint titles and content snippets, then converted to lowercase (text_cf) to ensure consistent keyword matching.

Next, the study developed a keyword dictionary as a seed lexicon to map ESG-related issues and non-financial cost proxies relevant to marketplace management.

- The E (Environmental) list captured issues such as waste, excessive packaging, and expired products.
- The S (Social) list included product safety, authenticity, misleading labeling, and product defects.
- The G (Governance) list focused on fraud, unclear policies, and refund obstacles.

Beyond ESG, additional keyword lists were defined to capture operational cost risks, such as returns/waste (e.g., damaged packaging or defective products), legal/regulatory signals (e.g., mentions of BPOM, YLKI, BPSK), and reputation risks (e.g., boycott calls). This framework enables each complaint to be mapped into categories that may drive non-financial operational costs, allowing for monthly trend analysis, engagement intensity measurement, and data-driven risk prioritization.

Each complaint was then scored to identify whether its content related to environmental (E), social (S), or governance (G) issues. The function count_matches calculated the number of keyword/phrase matches within complaint text, while make_flag assigned a binary indicator (1) if at least one keyword was detected. This method focused on the presence rather than the frequency of keywords, emphasizing the type of issue mentioned.

- The scoring results were stored in several columns:

- `esg_E`, `esg_S`, `esg_G` scores for each ESG dimension,
- `esg_total` total ESG score per complaint.

Additionally, three binary flags were created to represent non-financial operational cost risks:

- `flag_return_waste` (returns/waste),
- `flag_legal_reg` (legal/regulatory issues),
- `flag_boycott_rep` (boycott/reputation risk).

This structured scoring allows complaints to be immediately categorized and analyzed for monthly trends, engagement patterns, and priority risk areas, helping companies identify which issues are most likely to generate additional costs or reputational damage.

The processed results are summarized as follows:

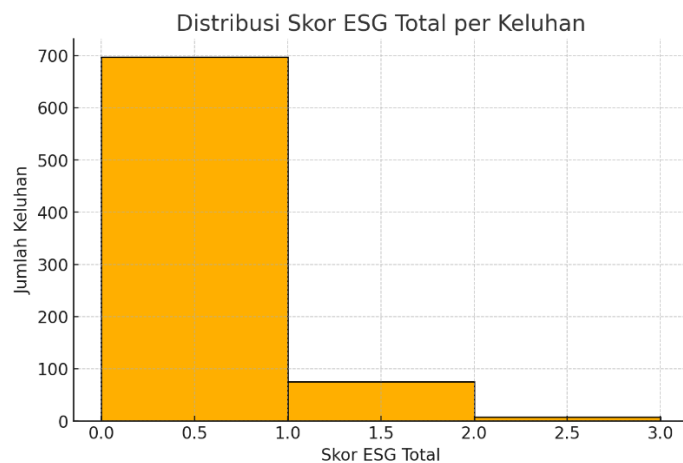


Figure 3. ESG Score Distribution per Complaint
Source: Research Data, 2025

The histogram shows that most customer complaints have a very low total ESG score, generally ranging from 0 to 2. Only a small number of complaints reach higher scores, indicating that the majority of customers do not highlight many environmental, social, or governance aspects in their complaints. This pattern suggests that ESG issues have not yet become a dominant topic in public complaints.

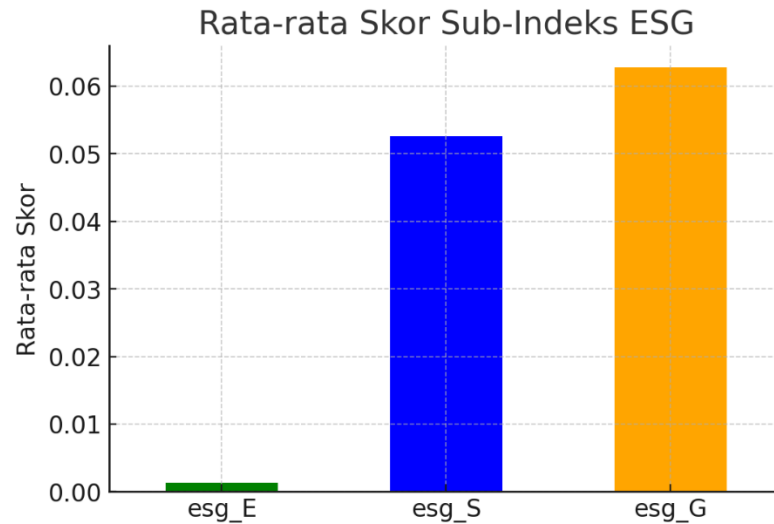


Figure 4. The chart of average sub-index ESG
 Source: Research Data, 2025

The bar chart of average sub-index scores shows that customer complaints most frequently address the Social (S) dimension, followed by Governance (G), while the Environmental (E) dimension appears relatively rarely. This indicates that customers tend to complain more about issues such as customer service, user rights, or internal company matters (e.g., management practices and data breaches) rather than concerns related to environmental impact or sustainability.

Proporsi Keluhan dengan Flag Non-Keuangan

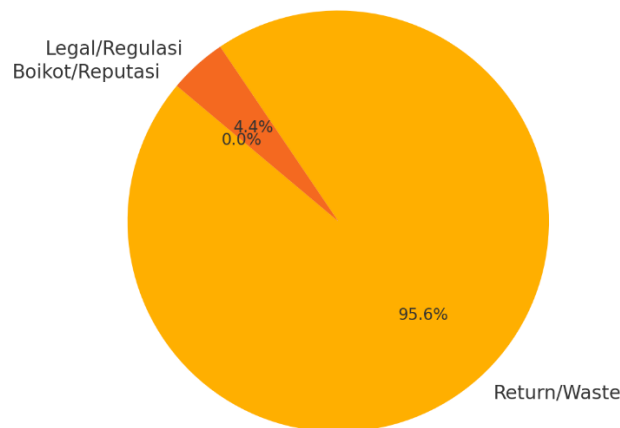


Figure 5. Proportion of Non-Financial Flagged Complaints
 Source: Research Data, 2025

The pie chart shows that the Return/Waste flag dominates among non-financial complaints, indicating that many issues are related to product returns, damaged goods, or waste. Meanwhile, flags related to Legal/Regulatory and Boycott/Reputation appear in much smaller

proportions, yet they still indicate the presence of legal and reputational risks, even though these are not highly dominant.

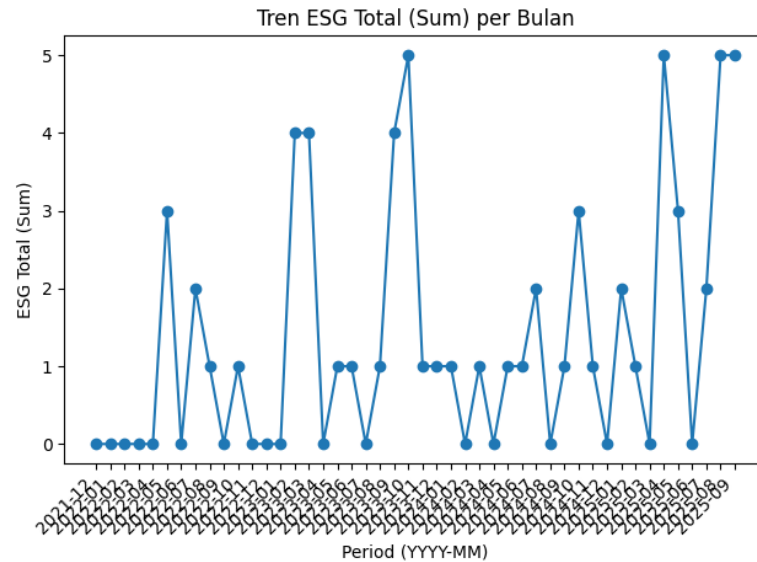


Figure 6. The trend analysis of complaints
 Source: Research Data, 2025

The trend analysis of complaints shows that the total monthly ESG scores fluctuate quite sharply, with several spikes in certain months indicating the occurrence of major issues that drew public attention to the company’s sustainability, governance, or social aspects. Most months display relatively low values, suggesting that ESG topics are not yet a primary focus in everyday complaints, but they can rise significantly when specific incidents occur.

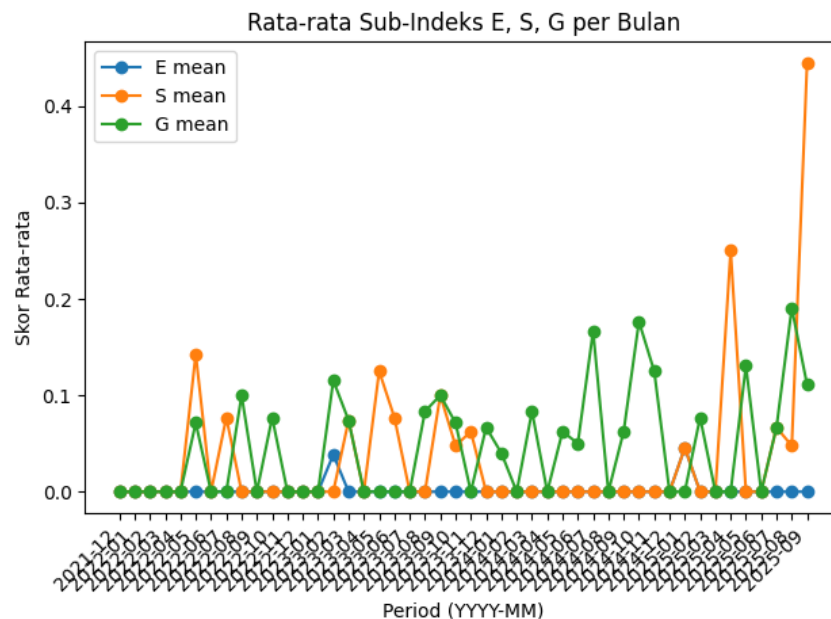


Figure 7. ESG sub-indices Chart
 Source: Research Data, 2025

From the perspective of ESG sub-indices, customer complaints most frequently address Governance (G) and Social (S) issues, while Environmental (E) issues are mentioned relatively

rarely. This indicates that platform users are more sensitive to customer service problems, consumer rights, company policies, as well as compliance and internal management than to environmental impact or sustainability concerns.

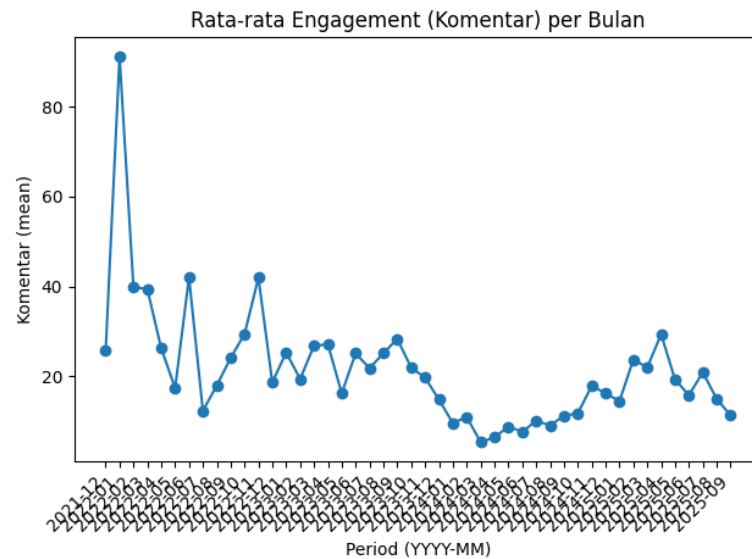


Figure 8. The Level of Engagement Chart
 Source: Research Data, 2025

When viewed from the level of engagement (comments), public interaction reached a very high peak at the beginning of the analysis period, then declined but remained fluctuating in the following months. This phenomenon indicates that certain complaints can quickly go viral and spark widespread public discussion, highlighting the importance of monitoring sentiment and public reactions in real time.

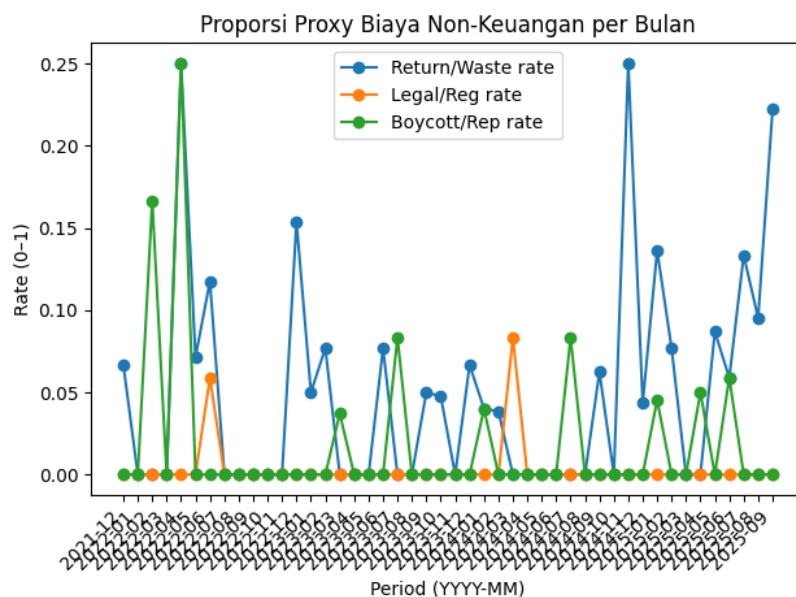


Figure 9. Non-Financial Cost Proxy Chart
 Source: Research Data, 2025

Meanwhile, the analysis of non-financial cost proxies reveals that Return/Waste issues appear most consistently every month. This indicates the potential for additional costs arising from product return processes and waste management. Although Legal/Regulatory and

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Boycott/Reputation issues occur less frequently, they remain significant because they can affect legal compliance and the company's brand image if not managed properly..

Overall, these findings underscore the importance of continuous monitoring of public complaints, particularly regarding governance and social aspects, as well as the management of logistics and reputational risks that may impact a company's non-financial costs.

Subsequently, this study tested the first hypothesis (H1), which states that complaints containing social (S) issues tend to trigger higher engagement compared to complaints that do not mention social issues. The hypothesis testing was conducted using statistical analysis of the scraped dataset with Python on Google Colab. Specifically, we compared the average number of comments (engagement_comments) received by complaints with an S score greater than zero (indicating the presence of social issues) against those with an S score equal to zero. To test this hypothesis, we compared the mean of engagement_comments between the two groups of posts:

- Posts where $esg_S > 0$.
- Posts where $esg_S = 0$.

The formula used is as follows :

- Average engagement for $esg_S > 0$:

$$\bar{E} * S > 0 = \frac{1}{n * S > 0} \sum_{i \in \text{set of posts with } esg_S > 0} engagement_comments_i$$

where $n_{S>0}$ is the number of posts with $esg_S > 0$.

- Average engagement for $esg_S == 0$:

$$\bar{E} * S = 0 = \frac{1}{n * S = 0} \sum_{i \in \text{set of posts with } esg_S = 0} engagement_comments_i$$

where $n_{S=0}$ is the number of posts with $esg_S = 0$.

This approach was used because the number of comments serves as an indicator of user engagement and can act as a signal of the broader spread of public opinion..

```

4 engagement_s_positive = df[df['esg_S'] > 0]['engagement_comments'].mean()
5 engagement_s_zero     = df[df['esg_S'] == 0]['engagement_comments'].mean()
6
7 print(f"Rata-rata engagement untuk postingan dengan isu S (esg_S > 0): {engagement_s_positive:.2f}")
8 print(f"Rata-rata engagement untuk postingan tanpa isu S (esg_S == 0): {engagement_s_zero:.2f}")
9
10 engagement_by_esg_category = {}
11 for col in ['esg_E', 'esg_S', 'esg_G']:
12     engagement_by_esg_category[col] = df[df[col] > 0]['engagement_comments'].mean()
13
14 print("\nRata-rata engagement untuk postingan dengan skor > 0 di masing-masing kategori:")
15 for category, mean_engagement in engagement_by_esg_category.items():
16     print(f"- {category}: {mean_engagement:.2f}")

```

```

↻ Rata-rata engagement untuk postingan dengan isu S (esg_S > 0): 27.28
   Rata-rata engagement untuk postingan tanpa isu S (esg_S == 0): 22.02

```

```

Rata-rata engagement untuk postingan dengan skor > 0 di masing-masing kategori:
- esg_E: 10.00
- esg_S: 27.28
- esg_G: 19.36

```

Figure 10. H1 Testing

The analysis shows that the average engagement for complaints containing social issues ($esg_S > 0$) is 27.28 comments, while the average engagement for complaints without social issues ($esg_S = 0$) is only 22.02 comments. This difference indicates that the presence of social issues in a complaint tends to attract greater attention and trigger more discussion compared to complaints that do not mention any social aspects. In other words, topics such as customer

service, consumer rights, discrimination, or worker welfare appear to generate higher levels of public interaction.

This study also tested the second hypothesis (H2), which states that complaints addressing governance (G) issues are more frequently accompanied by reporting intent or legal threats compared to complaints that do not mention governance issues. The underlying assumption of this hypothesis is that complaints related to management practices, compliance, internal policies, or corporate ethics violations are more likely to encourage consumers to pursue legal action or involve regulatory bodies. To test this hypothesis, we compared the proportion of complaints with the `flag_legal_reg` indicator (signifying reporting intent or legal threats) between two groups: posts with $G > 0$ and posts with $G = 0$.

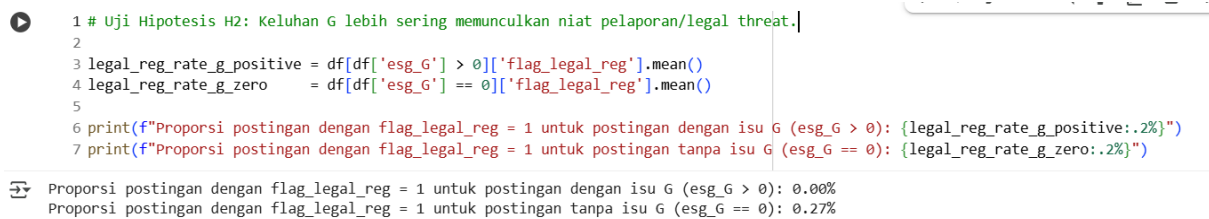


Figure 11. H2 Testing
Source: Research Data, 2025

The analysis shows that none of the complaints containing governance issues ($esg_G > 0$) had the `flag_legal_reg` indicator, resulting in a proportion of 0.00%, while among complaints without governance issues ($esg_G = 0$), 0.27% showed indications of reporting intent or legal threats. This finding suggests that, within the analyzed dataset, complaints mentioning governance issues were not more frequently accompanied by threats or intentions to report than those that did not address governance aspects at all.

Subsequently, the third hypothesis (H3) was tested to determine whether the proportion of environmental (E) issues in customer complaints increases during periods of high product returns or reports of damaged goods, which may indicate waste-related concerns. The underlying assumption of this hypothesis is that when many complaints about returns and unusable products arise, customers may also more frequently mention environmental impacts, such as packaging waste or product disposal issues..

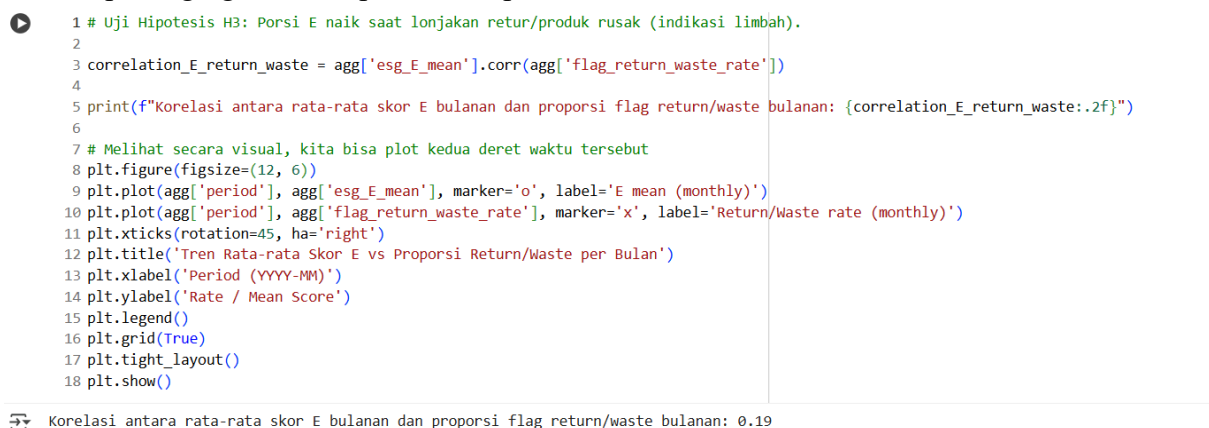


Figure 12. H3 Testing
Source: Research Data, 2025

To test this relationship, a correlation analysis was conducted between the monthly average Environmental score (esg_E_mean) and the proportion of complaints with the return/waste flag in each month. In addition, the trends of these two metrics were visualized in a single chart to observe whether increases in product returns were accompanied by a rise in the mention of environmental issues. Through this approach, we were able to assess whether customers' environmental concerns tend to increase in parallel with the growth of return-related complaints..

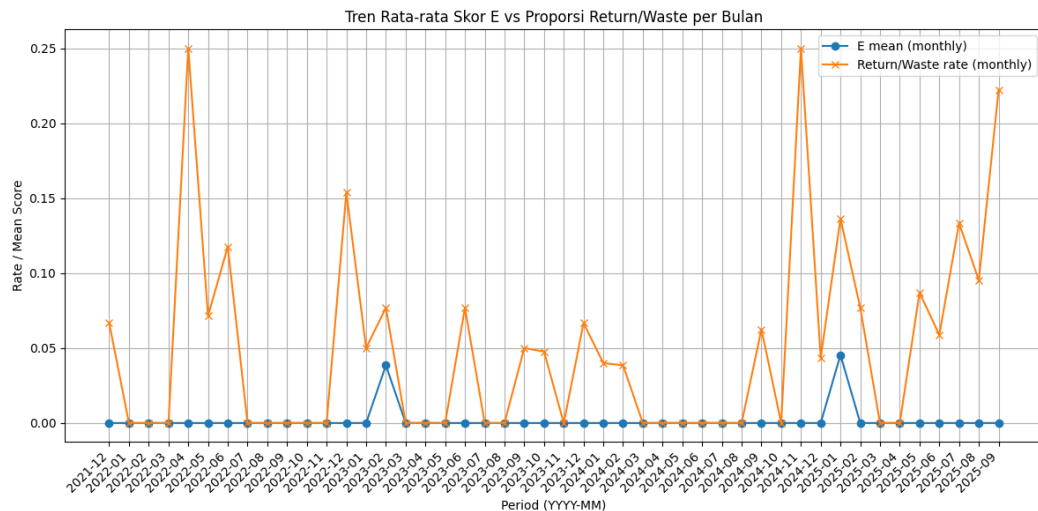


Figure 13. The Graphic Monthly Trend of Average E Score versus Return/Waste Proportion
 Source: Research Data, 2025

The analysis shows that the correlation between the monthly average Environmental score (esg_E_mean) and the monthly proportion of return/waste complaints is 0.19, indicating a positive but weak relationship. Visually, several peaks in return/waste complaints were not always followed by an increase in the Environmental score, and conversely, there were months in which the Environmental score rose while the proportion of returns remained low. Thus, Hypothesis H3 is not fully supported: although there is a slight positive tendency, return/damaged product issues are not consistently accompanied by increased mentions of environmental impacts in customer complaints..

3.2. Discussion

This study was conducted to understand how Environmental, Social, and Governance (ESG) issues emerge in online consumer complaints and how they relate to public engagement and potential non-financial costs. This inquiry is important because consumer complaints can serve as a rich data source for detecting reputational, regulatory, and operational cost risks that are not always captured in formal financial reports. Moreover, an approach based on public complaint data aligns with stakeholder theory, which emphasizes that stakeholder perceptions can significantly influence a company's sustainability and overall performance [8]. The analysis shows that the majority of complaints do not explicitly address ESG issues; most total ESG scores fall within the low range (0–2). This pattern suggests that consumers generally focus on functional problems (e.g., delivery delays or product quality) rather than sustainability-related topics. This finding aligns with previous studies indicating that, although awareness of ESG is

increasing, customers rarely express environmental or governance concerns unless major incidents occur that attract media attention [9].

The sub-index analysis shows that the Social (S) and Governance (G) dimensions appear more frequently than the Environmental (E) dimension. This can be explained by consumer behavior theory, which suggests that issues most closely related to personal experience such as customer service, consumer rights, or data security are more likely to be raised in public complaints [10]. This finding is consistent with electronic word-of-mouth (e-WOM) research, which highlights customer service issues and internal policies as key drivers of online complaints. The first hypothesis (H1) that socially themed complaints generate the highest engagement was supported. Posts with an S score > 0 received an average of 27.28 comments, higher than the 22.02 comments on posts without social issues. This result aligns with the social amplification of risk theory, which posits that issues concerning consumer rights and customer treatment tend to spread more rapidly and trigger greater public interaction [11]. The H1 findings highlight that companies need to pay serious attention to social issues, as such complaints tend to go viral and amplify reputational risks. In the context of stakeholder theory, the high level of public interaction with social issues indicates that customers feel they have the right to demand improvements and transparency. Consequently, implementing a rapid response mechanism for addressing social complaints can serve as an effective crisis mitigation strategy.

The second hypothesis (H2) that governance-related (G) complaints are more likely to include reporting intent or legal threats was not supported. The data show that none of the governance-related complaints had the legal/regulatory flag, while 0.27% of complaints without G issues did include indications of reporting intent. This finding contradicts the assumption that governance problems naturally lead to legal action. One possible explanation is that governance-related issues in public complaints are often expressed as reputational criticism (e.g., data breaches or lack of management transparency) rather than direct legal threats [12]. Several previous studies have found that governance failures do indeed increase legal and litigation risks [13]. However, the findings of this study indicate that in the context of public complaints, this relationship does not occur automatically. This suggests that consumers on complaint platforms may prefer to express dissatisfaction rather than immediately issue legal threats. This result enriches the literature by showing that social media or public complaint platforms are not a direct reflection of litigation potential.

The third hypothesis (H3) that the proportion of environmental issues increases during surges in product returns or damaged goods was only weakly supported, with a correlation of 0.19. This means that although there is a slight positive tendency, complaints about returns or defective products are not consistently accompanied by mentions of environmental impacts. Consumers often do not associate defective products with waste or sustainability concerns, except among segments that are highly environmentally conscious.

This finding indicates an opportunity for consumer education. If customers have not yet linked returns to environmental impact, companies can strengthen sustainability narratives through waste reduction campaigns and eco-friendly return policies. By doing so, companies

can not only reduce operational return costs but also enhance their eco-friendly brand image, potentially increasing loyalty among sustainability-conscious consumers.

Overall, the study shows that the social dimension is the primary driver of public interaction, governance issues act more as reputational signals rather than legal threats, and environmental concerns are not yet strongly connected to product returns. These findings reinforce stakeholder theory and the literature on digital reputational risk, while offering practical insights for companies to strategically manage consumer complaints and align ESG communication with the issues to which the public is most sensitive..

4. Conclusion

The findings of this study reveal that the majority of consumer complaints do not explicitly address Environmental, Social, and Governance (ESG) issues and tend to focus more on functional problems, such as delivery delays and product quality. However, among the three ESG dimensions, Social (S) and Governance (G) issues appear more frequently than Environmental (E) issues. The first hypothesis (H1) is confirmed: complaints containing social issues generate significantly higher public interaction compared to those without social themes, indicating that customers are highly responsive to matters such as consumer rights, customer service, and perceived unfair treatment. Conversely, the second hypothesis (H2) that governance-related (G) complaints would be more frequently associated with reporting intent or legal threats was not supported. Governance issues in public complaints tend to function more as reputational criticism rather than direct legal threats. The third hypothesis (H3) also receives only weak support: although there is a slight positive correlation between Environmental (E) issues and return/waste complaints, customers rarely associate defective products or returns with environmental impact. These findings suggest that, in the context of Tokopedia, social issues are the primary drivers of public engagement, governance concerns act mainly as reputational signals, and environmental topics remain a secondary focus. For platform managers, the results underscore the importance of real-time monitoring of social complaints, reputation risk management linked to governance practices, and consumer education on sustainability, such as linking return policies to waste reduction and environmental impact awareness..

5. Reference

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