Sentiment Analysis on Social Media and Stakeholders about Negative Issues Among Islamic Boarding School Community In Indonesia

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Abstract: This study examines public sentiment towards Islamic boarding schools (pesantren) in Indonesia using Twitter data and interviews with pesantren stakeholders, including administrators (asatidz), students (santri), and the surrounding community. Sentiment analysis of Twitter data, collected using the hashtag #pondokpesantren in 2023, revealed that public sentiment is predominantly neutral, with fewer positive and negative opinions. The analysis, conducted using the K-Nearest Neighbors (k-NN) model, achieved 90% accuracy and an F1-Score of 89.9%, indicating reliable performance in classifying sentiment. On the other hand, interviews with pesantren stakeholders highlighted more nuanced issues, such as security concerns, educational autonomy, and disciplinary practices, which were not widely discussed on social media. The findings reveal a gap between public perceptions on Twitter, which tend to generalize pesantren issues, and stakeholders' detailed, experience-based insights. This discrepancy underscores the need for open communication between pesantren and the public to address emerging concerns and improve pesantren's education and security systems. By combining sentiment analysis and phenomenological interviews, this study provides a deeper understanding of public perceptions and the internal challenges faced by pesantren in Indonesia, offering valuable insights for future improvements in pesantren management and public engagement.

Keywords: phenomenology, k-NN, Islamic boarding schools, stakeholders, twitter

A. Introduction

Islamic Boarding School is an institution of education characterized by Islam that has become the identity of Islamic education in Indonesia.¹. Its existence

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¹ Syahrani Syahrani, "The Role of Homeroom Teachers in Fostering Learning Discipline at the Anwarul Hasaniyyah (Anwaha) Islamic Boarding School, Tabalong Regency," *Al Qalam: Journal of Religious and Social Sciences* 16, no. 1 (2022): 50, https://doi.org/10.35931/aq.v16i1.763.

became an educational alternative besides the country's institutions, but it also became the choice for older adults. Parents often choose to enroll their children in Islamic boarding schools to provide a more focused Islamic education. On a number of these times, a lot of negative via social media or news media coverage hit Islamic boarding schools, among them issues of immoral and also violence inside the environment Islamic boarding school. Islamic boarding school ², action violence to children in the Islamic boarding school in the area Java east, which resulted in the fall victim soul ³, and violent sex involving Ustad against 13 female students during the range time 2016 to 2021 produced nine babies results in violent sex, which were then exploited To look for donations of funds for needed Islamic boarding schools ⁴.

Social media is a method For exchanging information, revealing opinions, and sharing stories. ⁵. Twitter is a real-time social media platform that allows users to disclose their opinions and feelings about many problems or topics. ⁶. Social media has become an alternative for following development and a forum where users can interact in response to an issue. ⁷. Data from social media such as Twitter, Facebook, and other platforms allow large amounts of real-time data about the issue of Islamic boarding schools to be collected. Combining data from social media sources with interview data And surveys of local communities and students will provide more comprehensive views about sentiments regarding issues on Islamic boarding schools.

² Kompastv Lampung, "Hit by Immoral Issues, Hundreds of Santri Suddenly Leave Islamic Boarding School," Kompas TV, 2022, https://www.kompas.tv/article/348926/diterpa-isu-asusila-ratusan-santri-mendadak-tinggalkan-pondok-pesantren.

³ KPAI Public Relations, "ENDING VIOLENCE AGAINST CHILDREN IN BOARDING SCHOOL STUDENTS," https://www.kpai.go.id/, 2023, https://www.kpai.go.id/publikasi/kpaisantri-ponpes-pasuruan-alami-kekerasan-dan-meninggal.

⁴ Said Ali Uraidhi et al., "Analysis of Sexual Violence Behavior in Islamic Boarding Schools (Analysis Study of Erving Goffman's Dramaturgy Theory)" 1, no. 4 (2023): 785–96.

⁵ Tri A Sundara and Sherly Ekaputri Arnas, "Naïve Bayes Classifier for Sentiment Analysis of Radicalism Issues," *Proceedings of the National Seminar on Sisfotek (Information Systems and Information Technology)*, 2020, 93–98.

⁶ Arsya Monica Pravina, Imam Cholissodin, and Putra Pandu Adikara, "Sentiment Analysis of Airline Opinions on Twitter Documents Using Support Vector Machine (SVM) Algorithm," *Journal of Information Technology and Computer Science Development* 3, no. 3 (2019): 2789–97, http://j-ptiikub.ac.id.

⁷ Wawan Setiawan, "The Digital Era and Its Challenges," *National Seminar on Education*, 2017, 1–9.

To process text, a study needs to be done to view public information about listed Islamic boarding schools in the Twitter document moment. Analysis sentiment describes how the public looks, understands and responds to issues in the environment of Islamic boarding schools. As it is said⁸ The sentiment analysis process significantly filters public views and classifies them into positive and negative categories. Classification is grouping data into in-class labels that have been determined. ⁹. Several algorithms are included in algorithm classification. Among them are decision trees, naive Bayes, support vectors machine (SVM), and K- Nearest Neighbor (k-NN). K-NN is a simple technique that is easy to apply And can classify data with good¹⁰. Therefore, the data collected from social media, especially Twitter, will be processed and analyzed using method analysis sentiment with the k-NN algorithm. The collected data will include tweets that use hashtags related to Islamic boarding schools. In addition, researchers will also do interviews directly with stakeholders in Islamic boarding schools, such as administrators, ustadz, and students.

In interview data analysis, researchers will use the phenomenological method. This approach will allow the researcher To understand the experiences, perceptions, and perceptions of each stakeholder related to issues in the Pondok Islamic boarding school. Results analysis phenomenology will give a better understanding of the impact issues on individuals and communities in the environment of Islamic boarding schools.

The sentiment analysis results from social media will be compared with the phenomenological analysis of interview data. Thus, this research will not only describe the public view through social media but will also provide a better understanding of the view and the experience of the stakeholders involved in a way directly related to Islamic boarding schools.

⁸ Pravina, Cholissodin, and Adikara, "Sentiment Analysis of Airline Opinions on Twitter Documents Using Support Vector Machine (SVM) Algorithm."

⁹ Styawati et al., "Optimization of Support Vector Machine Parameters Based on Firefly Algorithm on Film Opinion Data," *Jurnal RESTI (Rekayasa Sistem dan Teknologi Informasi)* 5, no. 5 (2021): 904–10, https://doi.org/10.29207/restiv5i5.3380.

¹⁰ Mhd Furqan, Sriani Sriani, and Susan Mayang Sari, "Sentiment Analysis Using K-Nearest Neighbor on New Normal During Covid-19 in Indonesia," *Techno.Com* 21, no. 1 (2022): 51–60, https://doi.org/10.33633/tc.v21i1.5446.

By utilizing this approach, this study aims to analyze differences in public perception through social media and stakeholder views regarding negative issues in the pesantren environment. This research seeks to provide a deeper understanding of the sentiments and perspectives circulating among the public and various Islamic boarding school stakeholders. Such insights can help identify potential challenges faced by pesantren, enabling these institutions to improve their image and educational practices.

B. Method

The methodology of this study was adopted from the CRISP-DM (Cross-Industry Standard and Process for Data Mining) model. ¹¹. This study uses data from Indonesian people's comments on social media about Islamic boarding schools and the results of interviews with stakeholders of Islamic boarding schools (community, administrators, students).

Figure 1 illustrates the process study started with collecting the dataset from the media using crawling techniques with, say, a key "Islamic boarding schools". The data was then cleaned up during stage preprocessing. For classification, the k-NN algorithm is used, and evaluation is done to evaluate opinions of the positive and negative public about Islamic boarding schools on social media. Methods second involves interviewing stakeholders of Islamic boarding schools. For dig opinion public-related, the Islamic boarding school was analyzed using a phenomenological method. Data from the second source was analyzed and compared to get more insight. Framework think This research is shown in Figure 1.

¹¹ Angelina Puput Giovani et al., "Sentiment Analysis of Ruang Guru Application on Twitter Using Classification Algorithm," *Jurnal Teknoinfo* 14, no. 2 (2020): 115, https://doi.org/10.33365/jti.v14i2.679.



Figure 1. Research Thinking Framework

C. Result and Discussion

Data Description

Twitter dataset (X)

Data was taken from Twitter using the hashtag #pondokpesantren in 2023, as seen in Table 1. This data is used To understand public sentiment towards Islamic boarding schools (*pesantren*) in Indonesia.

This dataset's main characteristics include the following:

Table 1. Twitter Dataset Description

Description	Details
Number of Tweets	500
Unique Users	445
Time Range	Year 2023
Language	Majority in Indonesian

Every tweet in the dataset has attributes as follows in Table 2.

Attribute	Description
Tweet Text	The text content of the tweet
Date and Time	Timestamp when the tweet was posted
Username	Username of the user who posted the tweet

Table 2. Attributes of Each Tweet in the Dataset

Table 3. Example Dataset from Twitter with Hashtags Islamic Boarding School

Created-At	From-User	Text
05/22/2023 11:25	Zainuddin_ITS	RT @tvOneNews: Ustadz Abdul Somad, better known as UAS, was furious after a video of the leader of the Al Zaytun Islamic Boarding School (Ponpes) singing
05/22/2023 11:23	olivevv?	RT @themorningtide: @tomahawkriders When prisoners are more humane than some Islamic boarding schools

Created-At	From-User	Text
05/22/2023 11:22	Funny Line Capitalist	RT @nu_online: Innalillahi wa inna God Rooji'un. Sad news enveloped the family of big Nahdlatul Ulama (KBNU) Regency Garut. Elders of P
05/22/2023 11:20	sugg~	RT @themorningtide: @tomahawkriders When prisoners are more humane than some Islamic boarding schools
05/22/2023 11:19	Dap.	RT @themorningtide: @tomahawkriders When prisoners are more humane than some Islamic boarding schools
05/22/2023 11:11	Cell Friend	RT @tvOneNews: Ustadz Abdul Somad, better known as UAS, was furious after a video of the leader of the Al Zaytun Islamic Boarding School (Ponpes) singing

Interview Data

In researching this, interview data with stakeholders of the Islamic boarding school will become a source of important information For understanding views and experiences of the related issues that arise in the environment of the Islamic boarding school. Here is a description And The expected interview data analysis from this study :

Interview data will be obtained through direct interaction between the researcher and stakeholders at Islamic boarding schools, including administrators, ustadz, and students. Interviews will be conducted with the use of a guide the interview that has been prepared previously, which contains questions about issues being addressed in the context of this research. Interviews will be conducted deeply and structured, allowing stakeholders to convey their

views in detail. The distribution place interview data source is seen in Table 2, which is spread over nine places: Central Java, West Java and South Kalimantan.

No	Islamic Boarding School	Address
1	An-Najah Modern Boarding School for Girls in Cinda Alus	Road, Cindai Alus, Martapura, Banjar, South Kalimantan 70714
2	Al Mubaarok Islamic Boarding School Mangosteen	Jl. Manggisan, Gubragan, Mudal, Kec. Mojotengah, Regency Wonosobo, Central Java 56351
3	At-Taqwa Islamic Boarding School for Girls	Road Kh. Noer Alie, Village Ujungharapan, Bahagia, District. Babelan, Bekasi Regency, West Java 17610
4	Al-Amin Islamic Boarding School	Pabuaran, North Purwokerto, Central Java
5	Al-Qutub Islamic Boarding School	Rowokembu, Wonopringgo, Pekalongan, Central Java
6	Darussalam Islamic Boarding School	West Candlenut, Subah, Batang, Central Java
7	Ittihadus Shafi'iyah Islamic Boarding School	Pahlawan street No.801, Rowolaku, Kajen District, Kajen Regency Pekalongan, Central Java 51161
8	Nurul Ummah Islamic Boarding School	Sawangan, District. Paninggaran, Regency Pekalongan, Central Java 51164
9	Yanbaul Huda Islamic Boarding School	Plentungan, Kendal, Central Java

Table 4. List of Sources Pondok Stakeholder Interview Islamic Boarding School

2. Data analysis

a. Twitter Data Preprocessing

1. Data Cleansing

This stage involves data cleansing to ensure quality And consistency. Steps taken include: a). Delete the tweet duplicate to avoid bias, b). Change text to make the letter small, and remove punctuation, links, and characters, c). Delete general words without meaning, essential in analysis sentiment (like 'and', 'the', etc.).

2. Tokenization

Process tokenization is done for breaking text tweets into words or individual tokens.

3. Stemming and Lemmatization.

Stemming And lemmatization are used to reduce words to form basically. This helps reduce dimensionality and increases the accuracy of analysis sentiment;

4. K-NN analysis sentiment modelling process;

5. Matrix performance

b. Interview Result Data Processing Stakeholders

Interview data analysis will be conducted using a phenomenological approach. First, the interview data will be described in detail, covering various views and the experiences conveyed by stakeholders. Every interview will be analyzed separately to understand the subjective meaning of the experience and view of the individual. Then, phenomenological reduction will be carried out. To identify common patterns or themes that emerge from the interview data. Researchers will look for equality and differences in stakeholder views and experiences related to the examined issues. The final step is reflection, where the researcher will consider the meaning of the data that has been collected without adding interpretation or influence from outside. Interview data analysis will help better understand How stakeholders of Islamic boarding schools understand and respond to issues that develop in the environment of Islamic boarding schools. With an understanding of their view and experiences, this research will give a more comprehensive insight into issues and their impact on individuals and communities within Islamic boarding schools.

3. Discussion

a. Analysis sentiment opinion people on Twitter about Islamic boarding school

In the digital era, social media has become essential for the public to voice opinions, share experiences, and discuss social issues. Twitter, as Wrong One, the most popular platform, allows its users to participate in real-time discussions with comprehensive coverage. Therefore, an analysis of sentiment on Twitter describes how the public responds to issues, including sensitive topics like Islamic boarding schools.

The sentiment analysis conducted on Twitter data, based on the hashtag #pondokpesantren in 2023, reveals that the general public sentiment towards Islamic boarding schools (pondok pesantren) is predominantly neutral. This conclusion is based on the classification of tweets into three main sentiment categories: positive, neutral, and negative. The breakdown of sentiment categories is shown in Table 5 below, where the majority of tweets (approximately 98.8%) reflect neutral sentiment, while a smaller percentage (1.4%) are positive, and the remaining 1% are negative.

Additionally, the K-Nearest Neighbors (k-NN) algorithm was applied to classify the sentiment, achieving an accuracy of 90% and an F1-score of 89.9%. This demonstrates that the model performs well in categorizing sentiment within the dataset.

Accuracy	90%
F1-Score	89.9 %
Neutral	488
Positive	7

Table 5. Sentiment Analysis Result Data with K-NN

Negative	5
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Results This analysis provides an essential outlook for stakeholders, including managers of Islamic boarding schools, the government, and the general public. Stakeholders can use this information to identify and overcome negative issues and strengthen the positive aspects that are already there. A deeper understanding of public opinion can also help develop a better communication strategy.

b. Analysis sentiment from the interview stakeholders Islamic boarding school

In contrast to the Twitter data, interviews with stakeholders, including pesantren managers, students, and the surrounding community, provided more detailed insights into the specific issues that stakeholders face regarding Islamic boarding schools. The key themes from the interviews highlight concerns over security, educational independence, and rules and punishment. These themes were discussed in depth during interviews, where stakeholders expressed concerns that are not fully captured in public sentiment on social media.

Phenomenological method focuses on understanding the subjective experiences of individuals And How they give meaning to the world around them. In this context, an analysis of sentiment from the interview stakeholders at Islamic Boarding School was done To explore experiences, perceptions, and views relevant to issues with life in the Islamic Boarding School. The results of the interviews were grouped into three categories: society, students, managers, and teachers (asatidz).

- 1. Public
- a. Islamic Boarding School Experience

Lots of members of the public are involved directly or No directly with Islamic boarding school, good through personal experience or through member families that ever become Santri. This experience creates an emotional And strong cognitive connection with Islamic boarding schools, influencing viewing methods. From a phenomenological perspective, this experience is not only understood as an interaction with institutional education but also as an integral part of identity and daily society. This shows how Islamic boarding schools have become the centre of life and have influenced their perception of education and spirituality.

b. Activity Religious

Activities like studying the Koran, praying to the congregation, and activities that are the essence of life in the Islamic boarding school. From the phenomenological view, these practices are seen as routine and a loaded experience with meaning, spirituality and culture. Sharing community and involvement in religious activity in the Pondok Islamic boarding school have become methods for strengthening spiritual and social bonds and forming an identity for religious people.

c. Perception Security

Part of the public sees Islamic boarding school as a safe place For education, although There is concern about bullying. Phenomenology helps us understand that perception of this security is not only about the physical condition but also about the sense of security psychologically and socially. This sense of security is rooted in the belief that Islamic Boarding School is the right place to form character and morals in children. However, there are minor concerns about possible bullying disturbing the sense of security.

d. Education Independent

The public considers Islamic boarding schools to be supporting institutions for children to be independent. This view reflects the belief that Islamic boarding schools can provide a balanced education between theory and direct practice. From a phenomenological perspective, education independent in the Islamic boarding school is understood as a transformational experience that shapes the method by which individuals see self they Alone And the world around them.

2. Student (santri)

a) Student Experience

Students experience various emotions during the education period they are in the hut Islamic boarding school, starting from feelings like Being uncomfortable to depression and homesickness. The phenomenological approach allows Us To understand that this experience is natural for the individual and social, where emotions And feelings are closely related to the environment. For example, feelings of homesickness And pressure can be considered essential adaptations in forming independence and mental resilience.

b) Activity Daily

Activities daily like Raji, Roman (work) devotion), and school are part of a routine that helps students develop themselves and learn religion. Phenomenology views this routine as a structure of experience that provides meaning to daily life, where every activity is about what to do and how activity forms identity, religious and social students.

c) Layout Orderly Islamic Boarding School

The layout is orderly in the Islamic boarding school, which students consider necessary for guard discipline. Although there are different opinions about the tightness rule, most students agree that this order is necessary. From a phenomenological perspective, rules And order This order is understood as a helpful framework for students to understand existing limitations and expectations in the environment of Islamic boarding school, which, in turn, forms behaviour and attitudes toward authority and discipline.

d) Interaction Social

Interaction between student Asatidz and fellow students shows various levels of proximity and formality. Phenomenology highlights that this interaction is a rich social experience where students learn not only from formal teaching but also from the dynamics of interpersonal connections. This experience plays an essential role in the formation of the identity of social students, where they study values like solidarity, respect, and work.

- 3. Manager or teacher (asatidz)
 - a. The Asatidz feel pressure and do not quite have enough answers in operating tasks, but they also get lessons and benefits from the experience. From a phenomenological perspective, this experience reflects the meaning given asatidz to work they, where the task teach viewed as a call beyond just profession, but as form . devotion And spiritual fulfillment.
 - b. Activities at the Islamic boarding school are set up systematically, giving a balance between worship, studying, and other activities. Phenomenology sees This activity as a temporal structure that provides rhythm to life ,

where every activity has its meaning, with an individual who contributes to the collective experience And individual residents'.

- c. Rules in the Islamic boarding schools tend to be flexible, emphasising discipline and allowing adjustment to situations and needs. Phenomenology emphasizes that this rule is not only a tool controller but also a medium through which values of Islamic boarding schools are translated And understood by the students and teachers.
- d. Partial Asatidz agrees with the existing punishment system and believes that a Islamic boarding school is a safe place For education. The phenomenological approach allows us to understand that this perception is rooted in direct experience in managing a Islamic boarding school, where security and discipline are considered the foundations that are important for effective education.
- c. Comparison And correlation between sentiment from Twitter data with stakeholders Islamic boarding school related issues negative in the Islamic boarding school

The analysis of Twitter sentiment and the interviews with pesantren stakeholders reveal significant differences in the perspectives of the general public (as represented by Twitter users) and the stakeholders (managers or asatidz, students, and community members) of Islamic boarding schools. Here is a comparison and correlation that can be Viewed :

1) Perception Security

On Twitter, issues related to the security of pesantren are rarely discussed. Most tweets tend to be neutral or positive, focusing on the general benefits of pesantren without specifically addressing security or violence issues. However, during an interview, a parent whose child studies at a pesantren stated that security at the pesantren is considered sufficient, as there are asatidz (teachers) who ensure the safety of the santri (students). This sentiment was echoed by several santri, who also felt that the security within the pesantren environment is well-maintained. The stark contrast in these sentiments indicates that issues like security are more personal in nature and are not always reflected in public discourse.

2) Education Independent

Although Twitter data shows a generally neutral and somewhat positive view of islamic boarding schools education, stakeholders, particularly the students (santri), have expressed positive views regarding the enjoyment of learning in islamic boarding schools, such as studying the *kitab kuning*, learning nahwu-shorof, tahfidz, and other religious subjects. A student from a islamic boarding schools in Java stated: "*I feel happy, very at home, and comfortable in the pesantren because I can meet many friends and learn a lot of useful knowledge*." This positive sentiment was echoed by several interviewees, in contrast to the predominantly neutral sentiment found in the Twitter discussions.

3) Layout Orderly And Punishment

Twitter users do not seem to focus on the issues related to rules and punishments within islamic boarding schools. This contrasts with the findings from interviews, where some students expressed their disagreement with the punishment system in pesantren, citing instances where certain administrators might abuse their authority in administering punishment. However, the majority of students (*santri*) and other stakeholders believe that the existing system of punishment in pesantren is effective in fostering good morals and supporting the educational goals of pesantren.

These findings highlight significant differences between the way pesantren are perceived on social media and the experiences of those directly involved in the islamic boarding schools environment. Public sentiment on Twitter tends to oversimplify complex issues, often reflecting only surface-level impressions. In contrast, stakeholders provide more nuanced perspectives, taking into account the internal challenges and complexities of managing and living within islamic boarding school.

These divergent perceptions suggest a need for more effective communication strategies between islamic boarding school and the broader public. While social media offers a platform for wide-ranging discourse, it does not always capture the lived realities of those within the islamic boarding schools system. For instance, concerns about educational security and academic freedom issues that are significant to stakeholders may not be adequately addressed in the public domain, either due to fear of reputational harm or a general lack of awareness. Nevertheless, it is evident that the islamic boarding school environment is, for the most part, viewed positively by nearly all stakeholders. In conclusion, this study emphasizes the value of combining social media sentiment analysis with direct interviews of stakeholders to gain a more comprehensive understanding of the issues facing islamic boarding school. Bridging the gap between online public opinion and the concerns of islamic boarding school stakeholders can help improve both the perceptions and practices of Islamic education in Indonesia.

D. Conclusion

This study reveals significant differences between public sentiment on Twitter and the views of stakeholders directly involved with Islamic boarding schools (*pesantren*), particularly regarding issues of security, educational autonomy, and disciplinary systems. While sentiment on Twitter was largely neutral, interviews with pesantren administrators, students, and community members highlighted deeper concerns around these issues.

Recommendations for Stakeholders: Islamic boarding schools administrators should improve communication with the public and students through social media and open forums to better address emerging issues. It is crucial to strengthen security measures within pesantren and provide a safe, anonymous reporting mechanism for students to voice concerns. The disciplinary system at pesantren needs to be updated with a more fair, transparent, and educational approach to foster a positive learning environment.

By taking these steps, islamic boarding schools can improve their public image, enhance the quality of education, and be more responsive to the needs of students (santri) and the broader community.

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