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Audience Trends on Facebook Regarding the Gaza War: A Sentiment Analysis Study Using Big Data

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Abstract

This study aims to analyze the feelings of the Arab audience manifested in the comments on the posts related to the Gaza War on Facebook. It is an analytical descriptive study that collects data using artificial intelligence techniques and big data. The data were analyzed with natural language processing technology and Python to classify the forms of interaction, determine the types of relevant emotions, categorize feelings in the audience's comments as positive or negative, and understand the meanings of comments and responses circulating on those pages. The sample analysis included (287,796) comments and (4,176,520) interaction forms on the Facebook pages of "Al Jazeera-Egypt and BBC News Arabic". Sentiment analysis results revealed a predominance of positive expressions of support and solidarity with Palestine and Gaza across the analyzed Facebook pages. Both the Al Jazeera-Egypt and BBC News Arabic pages recorded a high frequency of "Like" reactions, indicating generally positive audience sentiment. On the Al Jazeera-Egypt page, the use of the "Sad" emoji reflected negative emotional responses aligned with empathetic engagement, whereas the BBC News Arabic page showed a notable presence of the "Haha" emoji, which in this context may reflect sarcasm, disbelief, or detachment, indicating a different form of negative sentiment. Additionally, a substantial disparity was observed in both the volume of coverage related to the Gaza War and the level of audience interaction, with Al Jazeera-Egypt significantly surpassing BBC News Arabic. This study offers important practical implications for media professionals and policymakers and The patterns of sentiment associated with the Gaza War on Facebook reveal the public's sensitivity to the emotional frames and media narratives of the conflict.

Keywords: Facebook, social media platform, Arab Audience, sentiment analysis, Gaza War, big data

1. Introduction

Rapidly developing digital technologies over the past two decades have caused major changes in the field of media (Khalifa, M. A., et al., 2026). Recently, discussions about employing AI in media have increased, starting from employing various tools in researching and verifying information to the use of AI technologies to measure virtual public opinion (Al Adwan, M. N, et al., 2024).

In the same context, social media sites are playing an increasingly critical role in the present age, serving as a key component in crisis management (Abdelhay, H. F, et al., 2025). They enable the interactivity provided by social media to allow audiences to create and share experiences on platforms like Facebook (Hassan, T.H, et al., 2024). Social media platforms have become an important indicator of virtual audience opinion trends. With the increasing reliance on these platforms for accessing information, staying updated with news, and engaging with posts (Adway, A., 2023), traditional methods of measuring audience opinion have proven inadequate. These interaction patterns and feelings towards issues and topics, especially with the information flow and the huge amount of data and user interactions (Elmahdy A, et al., 2024). In this regard, big data technology and network analysis technology represent one of the most prominent

methods for analyzing virtual public opinion in the modern era (Faus,M., et al., 2025).

With the escalation of the Israeli war on the Gaza Strip in 2023, the interaction of the Arab audience with news and posts related to the war increased. This interaction on some posts exceeded one million comments, which included emojis, shares, and comments (Aboualhuda, I., 2025). With this huge number of interactions, data, and information being circulated, data collection and analysis using traditional quantitative or qualitative tools is inadequate. Therefore, the analysis of big data is the most effective way to understand the interaction of the Arab audience to analyze feelings and trends. Since the first day of the outbreak of the war, media coverage has been present. Media coverage coincided with the interaction of the Arab audience through news pages with different editorial orientations and policies.

Despite the growing body of research on sentiment analysis across digital media, it has mostly focused solely on textual content, neglecting nonverbal cues such as emojis as indicators of audience sentiment (Yarchi, M., & Boxman-Shabtai, L., 2025; Liyih, A., et.al., 2024; Daher, S., et.al., 2021). There is also a marked dearth of studies examining how audiences express their emotional engagement with conflict news coverage through these visual symbols. This study stands out for its originality in combining big data analysis with emoji-based sentiment analysis to capture real-time audience responses to media coverage of the Gaza war on Facebook. Unlike most previous studies (Abdel Azim, R, & Ibrahim, E., 2025) (Gangwar A., 2022), this study compares audience interactions and comments on two prominent news pages: Al Jazeera Egypt and BBC News Arabic. By filling this gap, the study enhances our understanding of audience behavior in politicized media environments and offers a significant methodological contribution to the use of big data in communication research. It makes an original contribution by incorporating sentiment analysis into audience interactions, particularly through emojis, as indicators of attitudes and emotions toward a prominent geopolitical event, such as the Gaza War, using big data to identify the forms of audience interaction and trends through comments on these pages.

The current study aims to analyze users' sentiments on the Al Jazeera Egypt and BBC News Arabic pages on Facebook by analyzing and classifying the comments and interactions using the big data framework. Accordingly, (287,796) comments and (4,176,520) interaction forms were addressed among the most interactive posts. Additionally, the audience's comments in Arabic on social media were classified into (positive-negative) feelings according to the polarity of the feelings test, relying on big data analysis techniques, including sentiment analysis and opinion mining.

2. Literature Review

2.1 Big Data

Big data is of great importance in many fields. It helps find answers to many complex problems, such as climate change, conflicts, biodiversity, earthquakes, the different attitudes of the audience towards issues, and judging audience opinion (Ahmed, H., 2022). Interest in this field has been increasing, with the term big data becoming commonplace in scientific circles and the focus of researchers in various fields, including media and communication (Al Adwan M. N, et al., 2025). Big data is the basis of the information industry's knowledge-gathering efforts. Applications that analyze these data sets obtain indicators and predictions used to manage and develop societies and make knowledge-based decisions (Mayer, S., 2013). The information and knowledge derived from big data play a key role in enhancing and increasing scientific contributions in various fields (Williamson, B., 2017).

The importance of big data originates from the increasing number of relevant studies. Although it is mainly a computer science and electronic marketing research field (Fayez, H., 2022), it has been linked to other fields. Due to its impact and effectiveness, digital media has been directly linked to big data. The trend towards artificial intelligence, communication technology, algorithm research, and its impact on digital media performance has interested researchers worldwide (Fayez, H., 2021). Interest in big data is not limited to researchers but extends to Internet users and those interested in technology and digitization, as demonstrated in the statistics of the search for big data in recent years, which have witnessed remarkable growth, in the following figure:

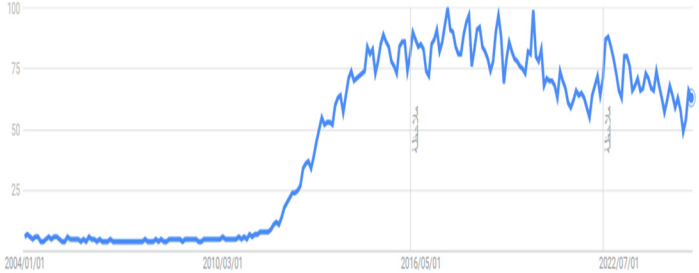


Figure (1). The search volume for the term "big data" during the period from 2004 to October 2024 via Google Trends (Source: Big Data, 2024)

Properties of Big Data (Mishra, A. S., 2015) (Demchenko, Y. N, 2013):

- Volume refers to the amount of data generated using the Internet, social networking sites, and smart applications.
- Variety: Big data includes structured data and represents the lowest percentage; unstructured data, which represents the largest part of the data; or a mixture of the two, called semi-structured data.
- Velocity: The speed of data flow and processing for a set of data in a period
- Value means the value and quality of information that makes it important through its association with numbers, statistics, and important events, as well as the existence of relationships and assumptions related to the uses of the audience.
- Honesty "reliability" is related to the quality of the data obtained, which requires a careful analysis of its usefulness while investigating its source and validity.
- These properties apply directly in terms of form and content to social networking sites that are huge in terms of the size of their users and those who interact with their posts, which confirms the effectiveness of their use with the current subject of study**.**

2.2 Sentiment Analysis

The concept of analyzing the audience's feelings, attitudes, and interaction with different topics and issues is related to big data (Fahmi, B. M., 2024). It is intended to study, monitor, and classify opinions, comments, and discussions circulated by users online, examining the nature of these comments and assessing the audience's feelings and attitudes (negative or positive).

Access to posts for which sentiment analysis applies falls within the framework of data mining systems, specifically text mining, including the Internet mining process, which is an application of data mining techniques for model analysis, divided into three sections: Web usage mining, web structure mining, and web content mining.

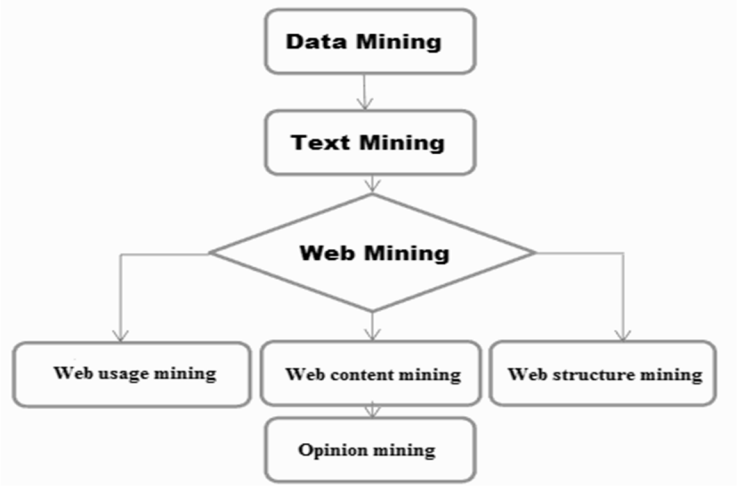


Figure (2). Types of online data mining (Source: Sharma, S. P., 2017)

Comment mining is part of web content mining. Sentiment analysis is one of the dimensions of comment mining. It is a field of study that examines people's opinions, feelings, attitudes, and emotions based on written texts. It is an effective research area in natural language processing (NLP). It is one of the ways of communication between humans and machines through text and conversation. It is called natural language because it is a type of communication between man and the smart device through natural language, not through computer language (Al-Sharif, S., 2022), as well as dealing with social media data. It involves finding meaning and emotions in seemingly unrelated texts that users publish (Cambria, E. S., 2017).

Opinion-seeking for sentiment analysis is one approach to utilizing big data in media studies. Big data can also be used for sentiment analysis of online content and social media posts. Thus, it helps researchers understand how people feel about certain topics, problems, or products. It can also be used to track changes in sentiment over time (Habibi, I., 2020).

The importance of recent studies lies in their reliance on sophisticated technical tools to analyze the big data produced by social media users and extract their opinions and feelings. Social media is a rich environment for research compared to traditional tools that are based on opinion polls or content analysis and applied to a limited number of items, while

big data studies and sentiment analysis are characterized by their reliance on a continuous flow of information. In addition, traditional survey methods are expensive and time-consuming (Al-Sharif, S., 2022).

Sentiment analysis studies on the Palestinian issue and the attacks on the Gaza Strip in the past years have not been adequately studied in Arab studies, which was shown by surveying previous studies, most of which focused on COVID-19 and analyzing the audience's feelings towards it. Wars on Gaza have been frequent in recent years. Arab and international media have always provided various coverage of events, which requires identifying the position of the Arab audience on the issue and its attitudes towards it.

For instance (Sami, R, 2021), searched social media users' attitudes towards the COVID-19 pandemic. (Al-Garaady, J., 2022) analyzed audience sentiment in social media about COVID-19 vaccination using the polarity of the VADER Dictionary, and (Al-Sayed, H, 2021) employed artificial intelligence applications to analyze the feelings of social media users in real-time during the COVID-19 pandemic (employing artificial intelligence applications to analyze social media users' sentiments in real-time for the Coronavirus pandemic crisis). These studies were concerned with analyzing the content of tweets via the (X) platform, while the current study is based on analyzing the content of audience comments on Facebook.

This study agrees with some studies on the importance of big data and analysis according to artificial intelligence techniques and their accuracy in judging the feelings, interactions, and attitudes of the audience and towards various societal issues. For example (Al-Sharif, s., 2022), analyzed the feelings of Twitter users during the 2020 US presidential elections using the big data framework, (Daher, S et.al., 2021) analyzed the feelings of Arab tweets about the Great March of Return using machine learning, and (Al-Sarraj, W, 2018) investigated bias in the Palestinian/Israeli conflict in Western media. In sum, this study is distinguished by its analysis of the Arab audience's feelings toward the Gaza War in 2023.

2.3 Gaza War and Social Media Platforms

The United Nations notes the Gaza war 2023 began with an attack on Israel by Hamas and other Palestinian armed groups on October 7 (United Nations, 2024) that resulted in over 1,000 Israeli deaths (Farnnce24, 2023; Human Rights Watch, 2024). Over 200 hostages were also taken during the attack (the Guardian, 2023)

The October 7 attack was followed by a military offensive launched by Israel in the Gaza Strip that has resulted in over 67,000 deaths and extensive destruction over almost two years (Reuters, 2025).

News related to disasters and wars is of interest to the media that follow and cover these events, and the Israeli attacks on the Palestinian territories and the Gaza Strip have received the attention of various media outlets (Fayez, H., 2023). This attention varies according to changes in the Palestinian-Israeli conflict.

Gaza War 2023 is the longest among the wars waged by Israel during the past years and the largest in terms of human and material losses and media coverage after the Al-Aqsa Intifada in 2000. Perhaps the abundance of social media platforms at this time, considering the political and social changes experienced by Arab citizens, has led to a focus on wide interaction with the event. Since the first day of the war, media coverage has been present from various official and unofficial Arab and foreign media outlets, and they have been active on multiple social media sites, where the event has been extensively covered with numerous images and a large volume of interaction and comments.



Figure (3). A post about the 2023 Gaza War showing the extent of interaction with the news

(Source: AlJazeera-Egypt page, 2024)

The size of the interaction of the Arab audience with the news related to Gaza War varies according to several considerations, including the time when the war began at a higher pace, the event being transmitted, and its ugliness. The war witnessed difficult events, such as the targeting of the Baptist Hospital, where hundreds of Palestinians were killed, an event which generated a great interaction with it, in addition to the media outlet and how it dealt with the event.

The size and type of interaction also vary according to the published content (Abushbak, A. M.,et al., 2024), However, this great interaction emphasizes the value of social media platforms, specifically Facebook, as an outlet for the general audience despite its restrictions on the interaction of Palestinian content (Al-Najjar, A., and Zaid, B, 2025; Human Rights Watch, 2023; Bassoumi, N., 2025). Despite rumors regarding Trump's Peace to Prosperity and the preoccupation of the Arab nations with their internal affairs, with the Palestinian issue, the war this time and the size of interaction with it brought the issue back to the Arab and global arena. Therefore, analyzing this huge number of interactions and comments requires the appropriate mechanism to deal with and judge them appropriately, achieved by analyzing big data techniques.

3. Method

This descriptive study aims to monitor the audience's interaction with news and posts related to the Gaza War 2023 and analyze the feelings included in the comments. It takes advantage of the huge data from Facebook to reveal whether users' comments express positive or negative feelings. It adopts the analytical survey of posts related to the Gaza War 2023 through the research sample news pages. The study based its sentiment analysis steps on previous studies that addressed the use of comments and emojis to analyze interactions and emotional feelings in a political context (Al-Sayed, H., 2021) (Al-Sharif, S., 2022) (Al-Garaady, J., 2022). The study focused on analyzing comments published in Arabic only.

Furthermore, there were limitations to the approach used to classify sentiments. Despite relying on sentiment analysis based on emoji interactions, the study acknowledges some methodological limitations, most notably the cultural and social context that may influence the interpretation of emojis. For example, the "laughter" emoji in the Arabic context may not always express humor, but rather sarcasm, veiled anger, or even disapproval. Similarly, the use of the "sadden me" emoji may not always reflect a negative feeling, but rather emotional solidarity with an event or incident that evokes public sympathy and support. Such issues may lead to some problems in interpreting actual sentiments. Given these problems, researchers were careful during the analysis process to consider the differences in cultural and political contexts and the nature of audiences in Arab countries. They also carefully controlled the analysis process and discussed the results in a way that reflects the true feelings and correct meaning of audience interactions with the Gaza War during the analysis period.

3.1 Population and Sampling

The population includes Facebook news pages in Arabic, focusing on Al Jazeera–Egypt and BBC News Arabic because they are the highest in terms of coverage and interaction, according to the results of the survey conducted by the researcher on the pages of Al Jazeera-Egypt, Al-Arabiya, CNN Arabic, and BBC News Arabic. Additionally, one page is in Arabic, and the other is in English.

The sample included the highest audience interactions from 7 October 2023 to February 2024, due to the large number of audience interactions related to the war during this period. Posts related to the 2023 Gaza War have been withdrawn from (Al Jazeera– Egypt and BBC News Arabic pages.

Posts with the highest engagement rates in terms of (likes, comments, and shares) were selected as representing the most widely accessible and influential content during the study period. This selection is based on the fact that posts with the highest engagement often reflect issues and content that were of significant public interest and are an indicator of the content that shaped digital public opinion at the time. This supports the study's objective of analyzing public sentiment related to media coverage of the war.

Facebook was chosen as the platform for analysis based on scientific justifications, most notably:

1. The volume of data and the diversity of the audience on Facebook: Facebook remains-especially in the Arab region-the largest platform in terms of the number of active users, the diversity of age and social groups, and the volume of political and news content circulating. International reports indicate that Facebook is the most widely used platform for following general news and political conflicts compared to other platforms.

2. Data Accessibility via APIs: Facebook offers data access via APIs and provides more stable and accurate capabilities than other platforms for extracting posts, comments, and interactions. TikTok and Instagram restrict access, while LinkedIn limits it to professional content.

3. The Nature of Content Circulating About the War: The Palestinian crisis was the focus of extensive and regular discussions on Facebook, with numerous active discussion groups and news pages with large followings, making it a suitable environment for studying audience trends. Furthermore, audience engagement with serious war-related content was more prevalent on Facebook than on entertainment or visual platforms (such as TikTok and Instagram).

4. Methodological Consistency with Facebook Selection: Relying solely on Facebook data aligns with Big Data Sentiment Analysis (BDI) methodology and ensures an accurate and reliable model, free from the distortions that can arise from varying interaction and content across other platforms. Therefore, focusing on a single platform enhances methodological consistency and increases the reliability of the results.

Furthermore, the selection of Al Jazeera Egypt and BBC Arabic specifically was based on two main reasons:

1) The high level of engagement and reach on these two Facebook pages during the Gaza war, according to publicly available indicators, making them among the most influential and followed news pages in the Arab world.

2) The differing editorial policies and approaches of the two institutions, which provide a more balanced and broader representation of perspectives and contribute to enhancing the reliability of sentiment analysis using multi-faceted data.

3.2 Tools

To achieve the study's objectives and answer questions, the researcher used the NLP sentiment analysis tool and Python as a type of opinion mining to understand the data collected, which is designed specifically for the feelings expressed on social media.

3.3 Analysis

3.3.1 Data Collection

Data were extracted from Facebook by the AD SHARE tool, in which data from posts related to the Gaza War were extracted from Al Jazeera-Egypt. Additionally, Python and web scraping were used to collect the rest of the data related to BBC News Arabic.

Data were collected from 7 October 2023 to February 2024, as this period was settled due to the significant escalation of events and the huge number of interactions and comments by the audience. After data extraction, they were stored in an Excel file that included all the categories concerned with the analysis. The most interactive posts were approved on both pages, so the final number of comments from the Al Jazeera-Egypt page was (283,471), while the number of comments on the BBC Arabic page was about (4,325).

	id	Content	Likes Count	Replies Count	Date	Publisher Name	Publisher id	Link
2	9744219_6630445	دة تفاق المساعدات الإنسانية	2486	880	2023-11-01T20:30:01+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663044596010441
3	9744219_6630431	ة في منطقة ميس الجبل جنو-	1430	81	2023-11-01T20:27:58+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663043172677250
4	9744219_6630423	ف بني عسكرية ومنصة إطلا	1474	79	2023-11-01T20:26:52+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663042349343999
5	9744219_6630413	ين": مستمرون بعمليتنا نصر	22822	1519	2023-11-01T20:25:16+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663041366010764
6	9744219_6630399	هوتيين": إطلاق دفعة كبيرة	37719	3213	2023-11-01T20:23:02+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663039909344243
7	9744219_6630382	ا تنبيًا بمجزرة الاحتلال الإ-	8637	157	2023-11-01T20:21:03+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663038289344405
8	9744219_6630383	شركائنا وقُربنا ممرًا آمنًا للنجا	3884	1452	2023-11-01T20:20:46+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663038316011069
9	9744219_6630368	يكون سيكونون قادرين على	2062	331	2023-11-01T20:19:02+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663036899344544
10	9744219_6630358	ة ستواصل العمل للحصول	2318	1131	2023-11-01T20:17:24+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663035872677980
11	9744219_6630356	فارة الأمريكية في بلجيكا تنه	23681	440	2023-11-01T20:17:22+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663035656011335
12	9744219_6630345	ي الشفاء في غزة إلى مأوى	9774	526	2023-11-01T20:16:00+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663034576011443
13	9744219_6630328	الإسرائيلي على القطاع في ا	2419	263	2023-11-01T20:13:19+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663032816011619
14	9744219_6630322	لب من الولايات المتحدة مؤ-	3855	1167	2023-11-01T20:12:32+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663032239345010
15	9744219_6630313	ر قطر والولايات المتحدة للتو	1619	227	2023-11-01T20:11:09+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663031319345102
16	9744219_6630281	عناصر الدفاع المدني بنصف	3065	192	2023-11-01T20:06:56+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663028179345416
17	9744219_6630268	": دخول الوقود فورًا إلى غز	2291	95	2023-11-01T20:06:16+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663026879345546
18	9744219_6630243	خارات الإسرائيلية في محيط	3211	283	2023-11-01T20:01:28+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663024326012468
19	9744219_6630231	العية للجزيرة: منشآتنا في «	2348	145	2023-11-01T19:59:47+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663023122679255
20	9744219_6630222	زيرة: أكثر من ثلث مستشفيا-	2544	148	2023-11-01T19:58:36+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663022282679339
21	9744219_6630214	ة له إلى القطاع منذ بدء الحر	3961	173	2023-11-01T19:57:15+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663021476012753
22	9744219_6630158	ل للجزيرة: الكل يعرف في ا	4162	311	2023-11-01T19:49:27+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663015829346651
23	9744219_6630144	المستقبل للجزيرة: حل النوا	2670	173	2023-11-01T19:47:08+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663014456013455
24	9744219_6630135	سف المدنيين في قطاع غزة «	2162	204	2023-11-01T19:46:01+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663013566013544
25	9744219_6630130	ل للجزيرة: تسببت ضغوطًا و	2925	93	2023-11-01T19:45:03+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663013009346933
26	9744219_6630120	يل للجزيرة: اللوبي الإسرائيل	2567	104	2023-11-01T19:43:47+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663012046013696
27	9744219_6630102	مستقبل للجزيرة: ما وُثق من	3342	117	2023-11-01T19:41:37+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663010272680540
28	9744219_6630096	ي يو.هـ.ود مؤيدين للمستوطنين	5944	494	2023-11-01T19:40:45+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663009612680606
29	9744219_6630090	سان المستقبل للجزيرة: انتهاً	2999	83	2023-11-01T19:39:43+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663009002680667
30	9744219_6630010	الغاز بكثافة عند مدخل مخيم	2499	200	2023-11-01T19:28:37+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663001086014792
31	9744219_6630007	لسماح لحركة "حـ.مـ.اس	7456	1536	2023-11-01T19:27:52+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_663000776014823
32	9744219_6629939	لحرب بها باستهداف المدنيين	16441	765	2023-11-01T19:23:10+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_662993976015503
33	9744219_6629954	ر الذين في حرب توصف بأ	61485	1595	2023-11-01T19:20:21+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_662995459348688
34	9744219_6629927	ر للأونروا: الوكالة ستبقى مع	10000	234	2023-11-01T19:16:09+0000	الجزيرة - مصر	2.06388E+14	m/2063881997442 19_662992736015627

Al Jazeera Egypt | BBC Arabic | Sheet3

Figure (4). Cross-section of the collected posts, including comments from within a Microsoft Excel spreadsheet

(Source: Authors)

3.3.2 Data Processing Preparation

Data were filtered and initialized through initial processing using NLP and preparing comments for use in the analysis form. This included removing unnecessary characters, such as symbols and repetition, and other elements that could affect the quality of the analysis. Then, the text was converted into a suitable format for analysis. Table (1) shows the total comments before and after initialization.

Table (1). Number of comments on Gaza War 2023 in the analyzed posts before and after the initialization (Source: Sentiment analysis techniques and authors)

Pages	AlJazeera-Egypt	BBC Arabic
Number of comments before initialization	336122	4903
Number of comments after initialization	283471	4325

- Identifying attributes: The important attributes that helped analyze emotions were identified: Structural attributes, such as the number of words and sentences in the text, and linguistic attributes, e.g., specific keywords and phrases.
- Building the model and ensuring its accuracy: Machine learning techniques, such as text classification or NLP, were used to build an analysis model. A set of technical terms and commands would be entered, based on which data could match the model. Finally, the model was used to analyze emotions in new texts. The text to be analyzed could be entered into the model, and expectations about potential emotions in the text could be extracted, stressing that these stages were carried out technically using artificial intelligence.

3.3.3 Analysis

Initially, feelings were analyzed using NLP and Python to classify them in the comments by applying machine learning algorithms and text mining methods and to convert unstructured texts into more structured ones. This method involved analyzing the keywords in the comments and exploring the feelings expressed in each post related to Gaza War 2023. The study chose a pre-prepared model* to analyze feelings, a model trained on data classified into (positive and negative).

To ensure the accuracy of the model and the validity of its emotion classification, it was subjected to an initial test process by entering a set of texts. Its post-test efficiency was 90%, indicating a high accuracy in emotion classification.

4. Results

This section examines the results, beginning with the presentation of the data for the pages where the comments were analyzed and ending with the results of the sentiment analysis of the comments of the audience and their interactions with the posts of the Gaza War 2023.

4.1 Page Analysis Properties

Table (2) shows the properties of (AlJazeera-Egypt, 2024) page and (BBC News Arabic, 2024) page via Facebook.

Table (2). Properties and statistics of the study sample pages and details of the interaction (Source: sentiment analysis techniques and authors)

Properties and statistics	Al-Jazeera	BBC News Arabic
Page followers	15 million	16mn
Owner	Arabic (Al-Jazeera-Qatar)	Foreign (BBC-UK)
Post refresh rate	Instantaneous	10–15 min
Number of Comments	283471	4325
Number of interactions with posts	4061092	115428
Number of share posts	69512	2151

Table (2) shows that the followers of the (Al Jazeera-Egypt) page numbered about 15 million, while the followers of the (BBC News Arabic) page numbered about 16 million. The results revealed that the rates of interaction and comments on the (Al Jazeera-Egypt) page were higher than those of the (BBC News Arabic) page, as the number of comments on posts reached (283,471) comments, the number of interactions was (4061,092), and the number of posts was (69,512) on the Al Jazeera-Egypt page, while the comments were (4,325), the number of interactions was (115,428), and the number of shares was (2,151) on the BBC News Arabic page.

4.2 Forms of Audience Interaction with the Gaza War

Table (3) illustrates that the total interactions on the (Al Jazeera-Egypt) page amounted to (4,061,092). (Like) was at the top of positive emoji reactions at 73.7%, while (support) was ranked last, rating 4.1%. In contrast, (sad) was the most common emoji of negative interactions by 2%, followed by (anger) at 1% and (wow) at 0.09%.

As for the page (BBC News Arabic, 2024), the total emoji-based interactions were (115,428). (Like) was at the top of positive forms of interaction at 66.5%, while (support) was ranked last, rating 1.1%. In contrast, the (haha) emoji was ranked first among the negative forms of interaction at 17.3%, followed by (anger) at 5.2% and (Wow) at 0.2%.

*ARABERT is one of the best sentiment analysis models for Arabic language texts. Its structure is based on the global language model Bert, which Google developed. It supports artificial intelligence services in many different fields.

Table (3). The forms of interaction of the two-page audience of the study sample with the posts of the Gaza War according to the trends of feelings, whether positive or negative (Source: Sentiment analysis techniques and authors)

Forms of interaction	Al Jazeera-Egypt			BBC News Arabic		
	F	%	Kind of feelings	F	%	Kind of feelings
Like 	2991150	73.7%	Positive	76729	66.5%	Positive
Love 	766177	18.9%	Positive	7787	6.7%	Positive
Support 	166255	4.1%	Positive	1222	1.1%	Positive
Wow/Wonder 	3733	0.1%	Negative	206	0.2%	Negative
Laughter/ Haha 	12,200	0.3%	Negative	19936	17.3%	Negative
Sad 	80177	2%	Negative	3591	3.1%	Negative
Anger 	41400	1%	Negative	5957	5.2%	Negative
Total	4061092	100%		115428	100%	

The forms of interaction reflected positive or negative feelings that expressed solidarity with the Palestinians in their ongoing war and against the ongoing attacks on the Gaza Strip, according to the Al Jazeera-Egypt page.

The BBC News Arabic page's results did not differ from those of the Al Jazeera-Egypt page in terms of audience feelings related to forms of interaction. Positive feelings related to the (like) emoji topped 73.59%, but the percentage of negative feelings related to emojis rose to 26.23%.

The total interactions on the BBC News Arabic page reached (233,010) at a lower rate than the Al Jazeera-Egypt page. This result may be due to the nature of the posts and news that the page published based on its publishing policy, which was largely biased in favor of the occupation, devoting a large area to news related to the Israeli position and many statements by its political and military officials, explaining the high percentage of negative feelings compared to the Al Jazeera-Egypt page. In contrast, the BBC News Arabic page did not convey equally statements attributed to the Palestinian resistance factions or statements but relied on its correspondents to mention the numbers of victims and injured without reference to the statements issued by the Palestinian official institutions (El Damanhoury, K, et al., 2025; AlShebli, B, et al., 2025; McTigue, G., 2011).

To differentiate between the platform effect and variations in content, the distribution of reactions was re-analyzed by content category. The results showed that reports about victims generated higher percentages of "sad" reactions across different pages, while political statements attracted more "angry" reactions. However, the high use of the "haha" reaction on the BBC page remained prominent across both categories.



Figure (5). A visual publication of the Israeli Prime Minister

(Source: BBC News Arabic page, 2024)

The BBC page was not only selective in choosing the reactions' content but also restricted commenting on some posts related to the Gaza War. There was a large amount of interaction on the post, reaching 60,000; however, the number of comments was small, and the interactions were dominated using the (laugh or Haha) emojis, reflecting negative feelings towards some posts related to the war, which reflected a positive trend by the audience towards the Palestinian issue.

4.3 Sentiment Analysis of Gaza War 2023

Table (4). The sentiment analysis of the comments on the posts related to the Gaza War, based on the trends of feelings, whether positive or negative (Source: Sentiment analysis techniques and authors)

Kind of feelings	AlJazeera-Egypt		BBC News Arabic	
	F	%	F	%
Positive	193262	68.2	2239	51.8%
Negative	90209	31.8%	2086	48.2%
Total	283471	100%	4325	100%

Table (4) illustrates that the Al Jazeera-Egypt page audience had 68.2% positive and 31.8% negative feelings. In comparison, the percentage of positive feelings reflected in the comments on the BBC News Arabic page was 51.8% and 48.2% negative.

The percentage of positive emotions in the Al Jazeera-Egypt page was greater than in the BBC News Arabic page. However, the percentage of negative and positive emotions was almost equal in the BBC News Arabic page in favor of positivity, confirming the previous explanation regarding the biased coverage of Israel, which enhanced the presence of Israeli figures and excluded Palestinian ones.

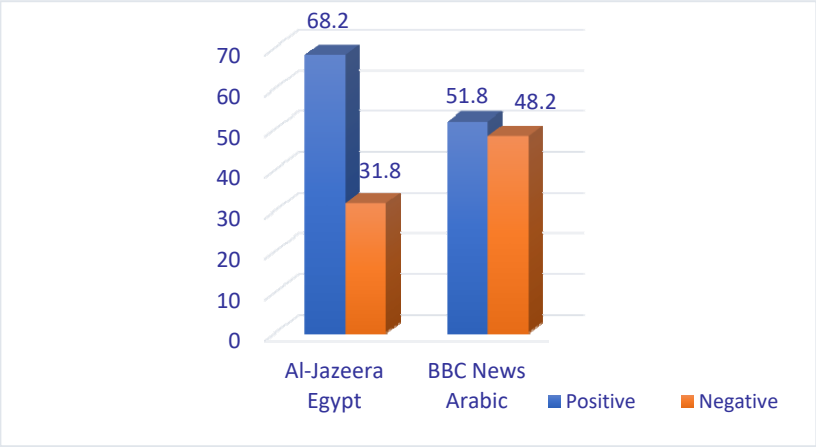


Figure (6). Positive and negative feelings of the comments on the two pages (source: Authors)

Table (5) indicates the audience's predominance of positive feelings towards the Gaza War 2023, as evidenced by the analysis of the comments, according to the automated analysis. The sentiment analysis revealed that the general trend of the audience on both pages reflected feelings of solidarity and support for the Palestinian issue and advocacy for the people of Gaza.

Table (5). The most prominent negative and positive feelings and examples of words indicating them(*)

Feelings		Kind of feelings	Examples of keywords
AlJazeera-Egypt	Positive	Advocacy, solidarity, joy, prayer, appreciation, solidarity, pride, admiration, praise, strength, resilience, pride, consistency, desire for victory, support, trust, loyalty, and hope	O God, help them, O Lord of the worlds, God is the greatest, God help them and be a help to them, long live, heroes, all support for Palestine, Gaza, the pride of the nation, heroes, Al-Azhar اللهم أنصرهم يارب العالمين، الله أكبر، اللهم أنصرهم وكن لهم عونًا، عاش يا أبطال، كل الدعم لفلسطين، غزة فخر الأمة، أبطال، الأزهر
	Negative	Anger, anxiety, hesitation, sadness, pain, doubt, disapproval, injustice, caution, resentment, heartbreak, weakness, helplessness, condemnation, anticipation, ridicule, sarcasm, criticism, rejection, and bewilderment	We seek refuge in God from this helplessness, Gaza is being annihilated, God suffices us and yes, the steward. Establish the resurrection, O God, the soul can no longer bear, where are the Arabs from these massacres, the occupation kills children نعوذ بالله من هذا العجز، غزه تباد، حسبنا الله ونعم الوكيل، أقم القيامة يا الله فلم تعد الروح تتحمل، أين العرب من هذه المجازر، الاحتلال يقتل الأطفال
BBC News Arabic	Positive	Solidarity, support, pride, hope, victory, and prayer	O Lord, support Gaza, all support for Palestine, Palestine is liberated, O Lord, support the people of Palestine, it will be liberated and we will have a meeting soon, victory for the owners of the land, the flood of Al-Aqsa is a resounding cry for the people of Palestine اللهم أنصر غزة، كل الدعم لفلسطين، فلسطين تتحرر، اللهم انصر شعب فلسطين، ستتحرر ولنا لقاء قريب، النصر لأصحاب الأرض، طوفان الأقصى صرخة مدوية لشعب فلسطين
	Negative	Resentment, anger, sadness, anxiety, mockery, sarcasm, frustration, indignation, and skepticism	The criminal murderers, God suffices us and yes, the agent, the occupation is terrorism, America and the West kill the children of Gaza, the consolation of the printing press countries, we cover your media, unprofessional coverage, the BBC supports the occupation. القتلة المجرمين، حسبنا الله ونعم الوكيل، الاحتلال هو الإرهاب، أمريكا والغرب يقتلون أطفال غزة، العزاء للدول المطبعة نكسو إعلامكم، تغطية غير مهنية، BBC تناصر الاحتلال

Most positive feelings revolved around support for the Palestinian people's struggle against the Israeli occupier,

*All results and classifications of emotions and words are extracted through the big data analysis tools referred to earlier, which are powered by artificial intelligence and employ the models of analysis in selecting and filtering words, classifying emotions, and determining their quality.

supporting the resistance, and rejoicing in the resistance operations. Therefore, phrases, such as "O Allah, help Gaza", "AllahuAkbar", and "Victory for Palestine" "اللهم انصر غزة"، "الله أكبر"، "النصر لفلسطين", were repeated over a high percentage of the comments.

The published comments were religious phrases, religious supplications, and slogans with supportive emojis. The Palestinian flag was also used repeatedly in the comments, reflecting solidarity with Palestine and rejection of the occupation and its repeated attacks on Palestine and the Gaza Strip. Another percentage of the comments tended to disseminate optimism and hope by repeating statements close to the liberation of all of Palestine and praising Operation Al-Aqsa Flood (Tufan Al'aqsaa). In addition, various comments praised Al-Azhar's position on the Palestinian issue and Al-Azhar Sheikh Dr. Ahmed Al-Tayeb, as clearly shown in the comments (see Figure 7.8).



Figure (7). Word cloud on the AlJazeera-Egypt page



Figure (8) Word cloud on the BBC News Arabic page

(Source: Authors)

Most negative feelings were comments on the ongoing attacks by the Israeli occupation of the Gaza Strip and Palestine since the beginning of the war. The comments reflected the frequent use of phrases, such as " حسبنا الله ونعم الوكيل"، "لا حول ولا قوة إلا بالله" "Allah is sufficient for us, and He is the best disposer of affairs", "There is no power or strength except with Allah", and the use of supplication and prayer for the victory of Palestine.

5. Discussion

This study aimed to analyze Arab Audience responses, sentiments, and trends toward the 2023 Gaza War, as reflected in user comments and interactions on relevant Facebook posts. Employing a descriptive analytical approach, the research utilized artificial intelligence techniques and big data analytics to explore patterns of engagement across digital platforms. Natural Language Processing (NLP) tools and Python programming were used to process and analyze the data-classifying interaction types, detecting underlying emotions, and categorizing audience sentiment as positive or negative. The analysis further sought to interpret the semantic context of comments and reactions circulated on the studied pages. The data set consisted of 287,796 user comments and 4,176,520 interaction forms (e.g., likes, emoji reactions) collected from the official Facebook pages of Al Jazeera–Egypt and BBC News Arabic.

The results revealed interest in the posts related to war was shown on both pages; the Al Jazeera-Egypt page devoted instantaneous coverage from the first moment of the war, while the BBC News Arabic page adopted a different approach to its coverage of the Russian-Ukrainian war. However, the latter covered the Gaza War as an important event compared to other foreign and international pages, but not to the same extent and attention that the page and its media organization with the Russian-Ukrainian war before, as well as the page's restriction of many comments on the content

of the war, which was also met with a lower degree of interest by the Arab audience. The largest percentage of comments and interactions favored the Al Jazeera-Egypt page, reflecting the impact of the ownership pattern, editorial policy, and the regional and geographical dimension of the page on the amount of interest in coverage and interaction with events, This result is consistent with the study (Abdel Azim, R, 2025), which confirmed Al Jazeera Network's interest in covering war news through its digital platforms more intensively than other media platforms.

The results indicated a high and diverse degree of interaction in terms of expressive forms with the content related to the Gaza War 2023 by the Arab audience on both pages, but to a greater degree in favor of the Al Jazeera-Egypt page. In addition, the diversity in feelings associated with the use of interaction forms and emojis was evident.

The forms and percentages of interaction revealed positive and supportive sentiments towards Palestine, the Palestinian cause, and the people of Gaza. The largest percentage of posts that were interacted with via the (like, love, and support) emojis were related to news and posts related to statements issued by Palestinian resistance factions or military operations against the occupation, or those related to any positive content about the ongoing war in Gaza.

A post with a video on the field developments of the war shows a military operation against the mechanisms of the occupation. It shows a high amount of interaction, exceeding 1.1 million interactions and 14 million views (AlJazeera-Egypt, 2023), highlighting why the emojis of like, love, and support received a high ranking among the forms of interaction with positive feelings.

On the other hand, the emojis of negative feelings towards posts related to the war were about news and posts related to attacks on the Gaza Strip, victims and injured people, or military operations launched by the occupation on the Gaza Strip. Most emojis of negative feelings were represented by (anger and sad).

Among the interesting results was that the (Haha) emoji was high on the BBC News Arabic page because many of the posts at the beginning of the war were linked to statements by Israeli officials, especially the Israeli Prime Minister and the Minister of Defense, which the page had been publishing frequently. The audience's reaction was one of mockery, especially in posts on which the page had restricted comments. In light of the BBC News Arabic page's comment-restriction policy, Arab audiences have resorted to using sarcastic emojis to express their rejection of the page's pro-Israel editorial bias, especially since they are unable to write comments that reflect their opinions and feelings about the content published by the page. The results of these studies showed a similar trend to that of the current study, which showed that emotional reactions are influenced by the nature of media coverage and the extent to which the media organization is positioned within the political landscape. In comparison, the results of the current study are consistent with these studies, as interaction patterns reveal a marked disparity among audiences regarding coverage of the Gaza War, which enhances the reliability of the results. (Liyih A et. al., 2024; Aboualhuda, I., 2025; Yarchi, M., & Boxman-Shabtai, L., 2025; Mohammed, A et. al., 2025).

Results confirmed that the percentage of positive emotions in the Al Jazeera-Egypt page was greater than in the BBC News Arabic page. However, the percentage of negative and positive emotions was almost equal in the BBC News Arabic page in favor of Positivity, confirming the previous explanation regarding the biased coverage of Israel, which enhanced the presence of Israeli figures and excluded Palestinian ones.

The comments reflected the widespread sentiments of resentment, anger, sadness, helplessness, and frustration on both pages. Additionally, they reflected negative feelings increasing with the targeting of children, women, and hospitals, which received a high percentage of interaction and commentary. For example, the targeting of the "Mamdani Hospital" in the center of the Gaza Strip was one of the most important events that met with great interaction in comments that condemned the occupation for this crime. Blame was pointed at Arab governments for not taking a decisive position and deterring the occupation authority from stopping the continuous attacks on the Gaza Strip.

However, some comments reflected negative feelings against the Palestinian resistance and blamed the Palestinian factions for causing the war. These comments were frequent on the BBC News Arabic page. Similarly, some comments accused BBC News Arabic of bias towards Israel, supporting the occupation, justifying its crimes, and attacking the policy of preventing and restricting the comments that the page adopted in all content related to the war, which made the comments reflect negative feelings towards its handling of events; this can be explained in light of the political and editorial context. Some researchers believe that the BBC adopts an editorial style characterized by "balanced neutrality," which, in the Arab context, particularly regarding Palestinian issues, may be viewed as "normalizing the Israeli narrative" or minimizing the scale of the human tragedy, provoking emotional criticism from viewers. Emojis, such as "laughter", have been used sarcastically or angrily, expressing the Arab public's rejection of a style of coverage that, in their view, may lack moral bias toward the victims. This interpretation is political, not merely technical.

These results are consistent with (makana360, 2023), which found positive and sympathetic feelings with Gaza and the victims, specifically after the attack on the Mamdani Hospital and the National Hospital in Gaza, as well (Yarchi, M., &

Boxman-Shabtai, L., 2025; Al-Agha, I., 2019; Abdel Azim, R, 2025; Mohammed, A et. al., 2025), while differing from (Gangwar A., 2022; Siapera, E., 2015), which showed that negative feelings prevailed over audience comments.

6. Conclusion

This study revealed important insights into how Arab audiences emotionally engage with conflict coverage on Facebook, particularly in the context of the Gaza War. The results showed a predominance of positive sentiment-as evidenced by the intensity of likes and sympathetic comments-toward the Palestinian narrative, particularly on the Al Jazeera-Egypt page. In contrast, the BBC News Arabic page received more negative interactions, such as the use of the "laughter" emoji, which in the Arab context denotes sarcasm, disapproval, or latent anger.

The sentiment analysis of the comments of the Arab audience proved that positive feelings on the (Al Jazeera Egypt) page topped at 68.2%, but negative feelings rated 31.8%. In contrast, the positive and negative feelings on the (BBC News Arabic) page were rated 51.8% and 48.2%, respectively. The most prominent positive feelings were (support, solidarity, joy, supplication, appreciation, pride, admiration, praise, strength, steadfastness, desire for victory, support, trust, loyalty, and hope). On the other hand, the most prominent negative feelings were (anger, anxiety, hesitation, sadness, pain, doubt, disapproval, injustice, caution, resentment, heartbreak, weakness, helplessness, condemnation, anticipation, sarcasm, criticism, rejection, confusion, indignation, and doubt).

Moreover, the total interactions on the (Al Jazeera-Egypt) page reached (4,061,092), in which (Like) topped the forms of interaction emojis that reflected positive feelings of the audience, while (Support) was ranked last. On the contrary, the (Sad) emoji topped negative feelings, followed by (Anger). The results of the emotion analysis based on the forms of interaction on the BBC News Arabic page agreed with the Al Jazeera-Egypt page in that (Like) topped the forms of positive interaction, while (Support) was ranked last, while the laughter emoji (Haha) topped the forms of negative interaction, followed by (Anger).

The results confirmed a significant difference in how the Al Jazeera Egypt and BBC News Arabic pages covered the Gaza War and the audience's interaction with the posts in favor of the Al Jazeera page. This result may be due to the nature of the event and its regional and religious connection to the Arab and Islamic region. In addition, the Al Jazeera Egypt page provided intensive and continuous coverage of the war since the first day. This result differed from the coverage of the BBC News Arabic page, whose coverage style and media policy for the Gaza War differed from its coverage of the Russian-Ukrainian war.

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Authors contributions:

Dr. Hossam Fayez and Dr. Muhammad Noor Al Adwan, Dr. Abdallah Adway, Dr. Mohamad EL HAJJI were responsible for the study design and revising. Prof. Hossam Fayez was responsible for data collection. Prof. Abdallah Adway and Dr. Mohamad EL HAJJI drafted the manuscript, and Prof. Muhammad Noor Al Adwan revised it. All authors read and approved the final manuscript. Dr. Hossam Fayez and Dr. Muhammad Noor Al Adwan, Dr. Abdallah Adway, Dr. Mohamad EL HAJJI contributed equally to this study and share first authorship.

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