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DIGITAL ANALYSIS OF TRENDS IN SUSTAINABLE DEVELOPMENT ISSUES

Florentinus Nugro Hardianto[1], Veronica Karmelia[2]
[1,2]*Sanata Dharma University*
Email: [1]flnugroho@gmail.com, [2]veromewmew@gmail.com

ABSTRACT

The issue of sustainable development is an interesting international issue because it is related to the development process implemented in various countries in the world. The concept of sustainable development emerged in response to the negative impacts of conventional development that tend to ignore environmental, social, and economic sustainability. The issue of sustainable development came to the fore for the first time since the Stockholm Conference organized by the United Nations (UN) in 1972 as the first attempt to discuss global environmental issues and sustainable development. This paper aims to conduct a digital analysis of sustainable development issues. This research tends to be qualitative because it uses text data that appears on many digital social media and then analyzes these data so that certain image / graphic patterns and certain numbers are easier to understand in general. The analysis was conducted using the social media monitor platform Brand24. The results of digital analysis show interesting trends in sustainable development issues in terms of volume of mentions, sentiment analysis, social media reach, non-social media reach, the context of discussion, public profiles, influential sites, and trending hashtags.

Keywords: *Digital Analysis, Sustainable Development, Brand24 platform*

1. Introduction

The concept of sustainable development has been of international concern for a long time. The United Nations Organization officially began to establish a vision of sustainable development in 1972 when the Stockholm Conference was held in Sweden. Several definitions of sustainable development have been put forth, including the following common one: ``development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Dincer, n.d.; Keeble, 1988). Achieving solutions to environmental problems that we face today requires long-term potential actions for sustainable development (Dincer, n.d.). In recent years, the concepts of inclusion and sustainability have become central to socio-economic development (Ospina-Forero et al., 2022).

But in reality, the development process carried out by many countries in the world has still not succeeded in fully implementing the principles of sustainable development. An increasing number of researchers and practitioners advocate for a systemic understanding of the Sustainable Development Goals (SDGs) through interdependency networks (Ospina-Forero et al., 2022). The exploitation of renewable energy resources and technologies is a key component of sustainable development (Keeble, 1988). Public awareness, information, environmental education and training, innovative energy strategies, promoting renewable energy resources, financing, and monitoring & evaluation tools are various essential parameters that can help in achieving successful sustainable development in society (Dincer, n.d.).

Increasing the world population requires the definition and successful implementation of sustainable development (Dincer, n.d.).

The issue of sustainable development issues continues to be the subject of discussion internationally. Perhaps, the best example is the Sustainable Development Goals (SDGs), the leading international agenda for national and regional development strategies (Ospina-Forero et al., 2022). As the 2030 Agenda has progressed, it has been recognized that to truly achieve sustainable development, it is necessary to understand how its multiple dimensions interact with each other (Nilsson et al., 2016; Ospina-Forero et al., 2022).

This paper aims to analyze trends in international sustainable development issues that have occurred until now. This research has a major question, namely the extent to which the concept of sustainable development is of public concern on social media. Digital analysis was conducted to collect and analyze research data from many popular social media. Digital analysis is done with the help of the Brand24 platform.

2. Review Literature

Sustainable development is a movement to prevent environmental damage in the development process. Environmental degradation has attracted the attention of many parties including policymakers, government agencies, the United Nations, and researchers (Khan et al., 2021). At the national level, an environmental dimension that does not receive enough attention will promote more carbon-intensive growth and damage the environment which ultimately weakens economic competitiveness and also increases environmental damage (O'Mahony, 2021). Air pollution from burning fossil fuels and the resulting greenhouse gas effects have permanent, long-term effects on well-being and the economy, including climate change and biodiversity loss (O'Mahony, 2021). Sustainable development goals remain unattainable without improving environmental quality so therefore sustainable development practices need to be considered to minimize damage to planet Earth (Khan et al., 2021).

Sustainable development contains principles that guide all parties. To minimize damage to the planet, policymakers need to reconsider green practices that inevitably contain principles of sustainable development (Khan et al., 2021). The application of sustainable practices in daily life needs to be improved to offer maximum efficiency and minimal damage to the environment in commercial and domestic activities (Khan et al., 2021). The principle of sustainable development contains three main principles, namely the principles of holistic, futurity, and equity (Sharpley, 2000). Here's an explanation for each of the holistic, futurity, and equity concepts as shown in Table 1. The principle of a holistic approach explains that development and environmental issues are integrated into the global social sphere. The principle of futurity leads to a focus on the long-term capacity for the sustainability of the global ecosystem. The principle of equity explains that development must be fair and equitable and provide opportunities for access and use of resources for all current and future members of society.

Table 1. A Model of Sustainable Development: Principles and Objectives

Fundamental principles	*Holistic approach*: development and environmental issues integrated within a global social
	Futurity: focus on long-term capacity for continuance of the global ecosystem
	Equity: development that is fair and equitable and which provides opportunities for access to and use of resources for all members of all societies, both in the present and future
Development objectives	Improvement of the quality of life for all people: education, life expectancy, opportunities to fulfil potential
	Satisfaction of basic needs; concentration on the nature of what is provided rather than income
	Self-reliance: political freedom and local decision making for local needs
	Endogenous development
Sustainability objectives	Sustainable population levels
	Minimal depletion of non-renewable natural resources
	Sustainable use of renewable resources
	Pollution emissions within the assimilative capacity of the environment
Requirements for sustainable development	Adoption of a new social paradigm relevant to sustainable living
	International and national political and economic systems dedicated to equitable development and resource use
	Technological systems that can search continuously for new solutions to environmental problems
	Global alliance facilitating integrated development policies at local, national and international levels

Sources: (Sharpley, 2000)

Many countries have made efforts to apply the principles of sustainable development in their development programs. Several countries have agreed to the 2015 Paris Agreement (COP21) which emphasizes the need for progress toward using low-carbon energy technologies that produce little or no greenhouse gases including renewable energy sources such as solar, wind, and geothermal, as well as cleaner energy technologies such as nuclear power and carbon capture and storage to meet the global challenge of reducing temperature rise very large earth to below 2 °C (Anser et al., 2021). A total of 193 countries endorsed the 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs) in 2015 which reaffirmed their commitment to Sustainable Development in five important dimensions: people, prosperity, planet, partnership, and peace (Stephens & Couzens, 2016).

In practice, there are many obstacles to implementing the principles of sustainable development correctly and consistently. The Nexus Bonn conference in 2011 stressed that increased pressure on water, energy, and food results in irreparable environmental damage that can pose a serious threat to sustainable development (Radmehr et al., 2021). Significant conflicts between economic benefits and environmental damage actually result in environmental exploitation such as excessive use of groundwater resources which causes the impact of groundwater subsidence, land subsidence, and soil & water salinization (Radmehr et al., 2021). The increased economic benefits of environmental resources make environmental damage increase dramatically. This has happened for example in the case of increasing groundwater use, there is an increase in groundwater extraction which causes environmental degradation (Radmehr et al., 2021).

3. Research Methods

Brand24 is a social media analytics platform that tracks keywords across various social media platforms, including Facebook, Instagram, Twitter, TikTok, YouTube, and Twitch, and further performs analysis by calculating social media reach, voice share, and monitoring hashtag performance (Hutagalung et al., 2023). The Brand24 platform can be found at https://brand24.com website address and from this platform are written keywords that are the

focus of research attention to then be analyzed with some available features. Analysis using Brand24's social media monitor platform involves monitoring and evaluating data from multiple platforms such as Twitter, Facebook, Instagram, and others. Brand24 provides in-depth analytical tools to monitor public sentiment towards a particular topic, enabling an in-depth understanding of people's perceptions and responses. The platform facilitates topic-related keyword tracking, enabling the identification of emerging trends and issues. Sentiment analysis of comments and posts can provide insight into positive, negative, or neutral views on a topic. Metrics such as the number of interactions, likes, and retweets give you an idea of how much impact a piece of content or campaign has on social media.

In addition, the platform can provide easy-to-understand analytics reports, including graphs and statistics that visualize data from social media. Through real-time monitoring, Brand24 enables quick response to changing trends or crisis situations. By synthesizing data from multiple sources, Brand24 facilitates informed decision-making.

4. Research Findings and Discussion

We get a summary of mentions based on our previous analysis using the Brand24 tool. Five main points of the study are shown in the summary of mentions. Initially, the volume of mentions, social media reach, non-social media reach, positive sentiment, and negative sentiment were all graphically displayed. It displays the numbers that have increased and decreased over the past 30 days on the internet. It has 1.0 million non-social media reaches, 99,000 social media reach, and 217 mentions volume overall. There are 23 positive sentences and 10 negative sentences out of 217 volume mentions; Other mentions are neutral.

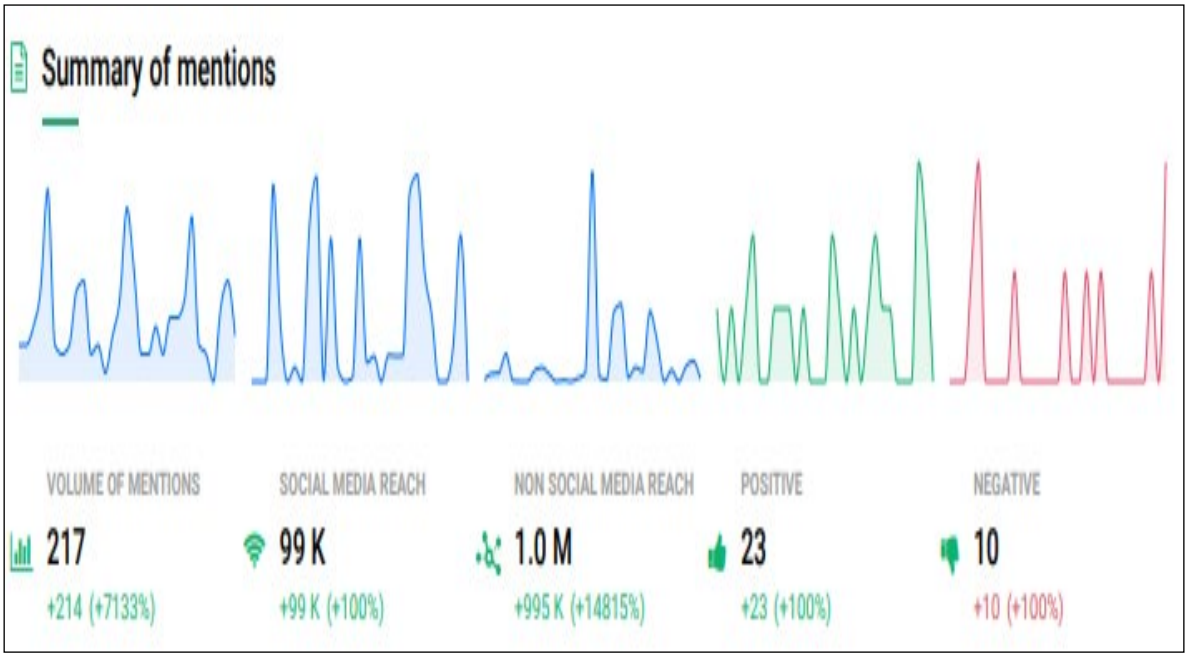


Figure 1. Summary of Mentions

In detail, the Volume of Mentions Graph explains that on October 20, 2023, the internet reached its highest volume. The maximum volume of the current period is 21, which is up from the previous period, which had only 3. The lowest volume of mentions occurred on November 12, when it reached the zero line of the chart. And the average quantity of Volume Mentions is 7. The dashed line describes the previous period, and the clear line describes the current period.

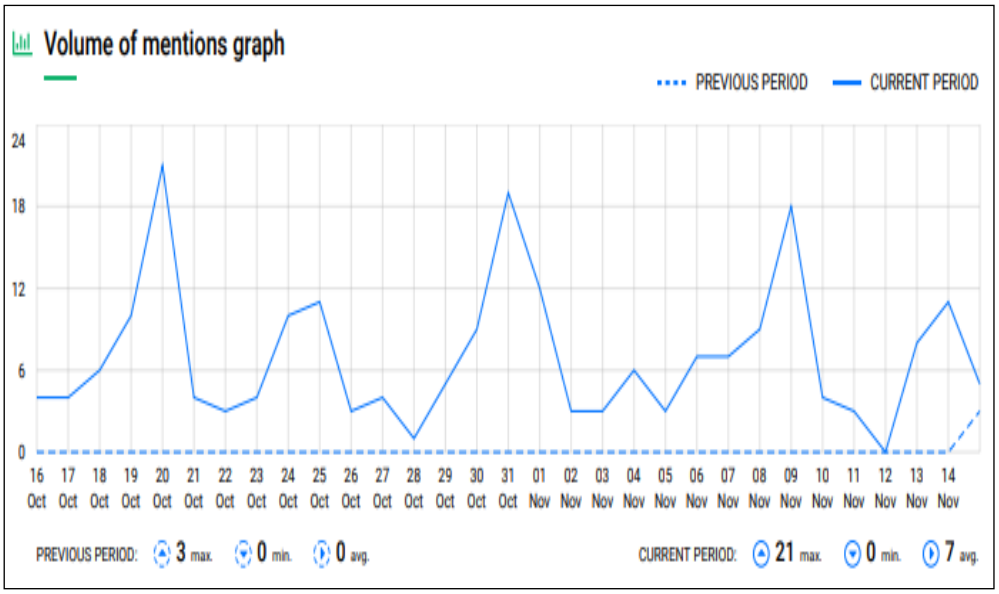


Figure 2. Volume of Mentions

Next, the data shows a graph of social media reach (figure 3). This shows that as of November 8, 2023, the number of mentions found on social media platforms has reached the maximum number, according to the chart. The maximum amount of social media reach is 11,300. And the lowest number occurred on several days, such as October 16, 17, 21, 23, 26, 29, and November 3, 11, and 12, 2023. The graph also shows that the average social media reach is 3198. The dashed line describes the previous period, and the clear line describes the current period.

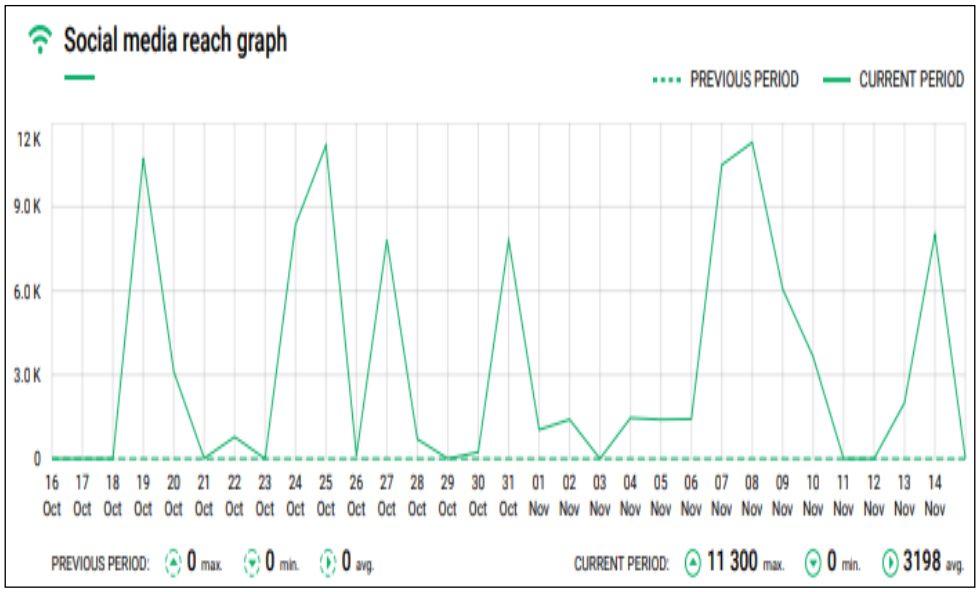


Figure 3. Social Media Reach Graph

The Non-Social Media Reach Graph describes the number of mentions/threads found outside of social media platforms (eg. on forums, news websites, etc.). The highest peak occurs on October 31, 2023. And for the rest days of the month, it explains not much activity happens in Non-Social Media Reach. The average Non-Social Media Reach in a month is 32313. The dashed line describes the previous period, and the clear line describes the current period.

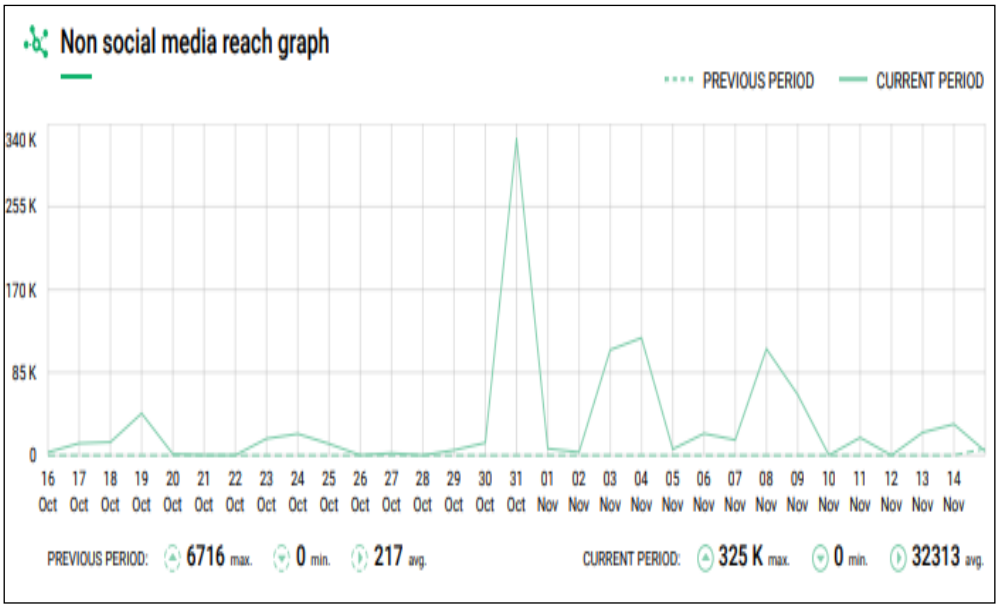


Figure 4. Non-Social Media Reach Graph

We have a breakdown of the number of mentions per category, and the green number shows the percentage increase from the previous period. On Twitter, there were 71 mentions of sustainable development; Perception has improved by 100% during this period. On Instagram, Facebook, TikTok, and Podcasts, according to the data, there were no activities on sustainable development during this period. On the video platform, we have 19 mentions that show a 100% increase in volume from the previous period. In the news, there were 71 mentions, indicating an increase of 700%. The number of forums in this period shows 2 mentions, which means a 100% increase. From the blog, there were 35 mentions of activities an increase of 3400% from the previous period. Finally, from the web, we have 19 mentioned data points showing an increase from the previous period of 1800%.

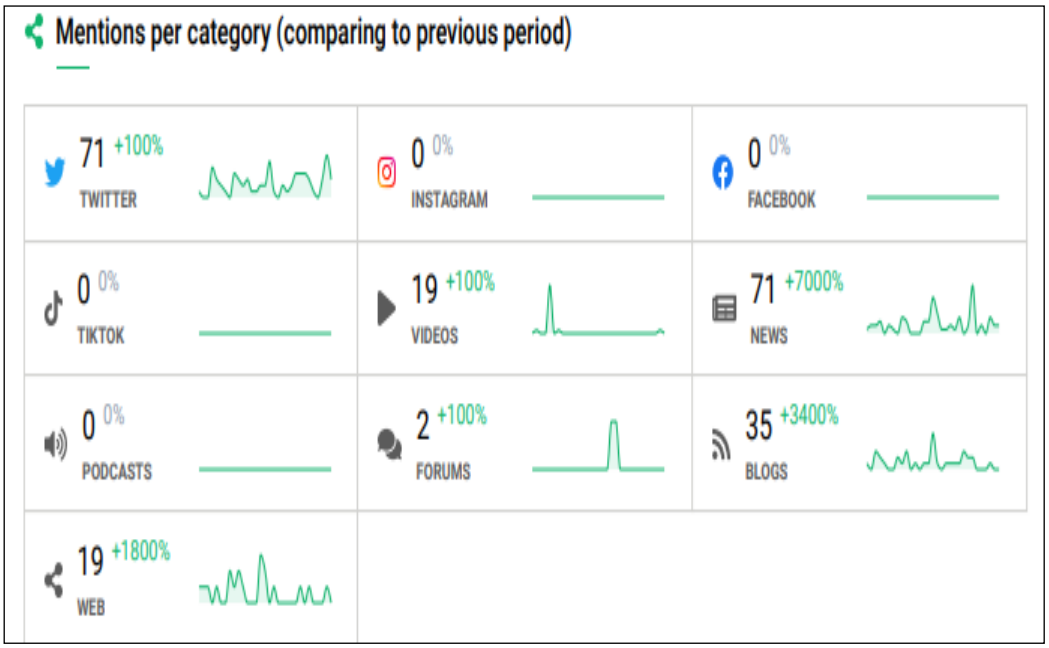


Figure 5. Mentions per Category

The numerical summary describes the summary of the data presented. We explain the meaning of each number. A designation is the total number of mentions or threads found. The study showed that there were 217 mentions. Social media mentions are the number of mentions or threads found on a social media platform. The study showed that there were 90 mentions. Non-social media mentions are the number of mentions or threads found outside of social media platforms. In this study, there were 127 mentions. Social media reach is an estimate of the number of people who can come into contact with social media mentions containing the monitored phrase. The estimated reach of social media is based on the number of authors who talk about the phrases monitored on social media, the number of their followers, subscribers, and friends, and the typical viewability percentage for the chosen social network (this percentage describes how many of your friends and followers see your posts on average). The study shows that there are 99,133 social media reach numbers.

Non-social media reach is an estimate of the number of contacts (impressions with relevant mentions contained in monitored keywords) outside of social media. Non-social reach is based on: 1. Number of domains that mention the phrase you're tracking, 2. Average monthly number of visits on a given domain, and 3. Viewability level *for mentions.*: This percentage describes how much exposure the monitored keyword has on a particular domain (title, URL, content, comments, etc.). The study shows that the total reach of non-social media is 1.0 million. User-generated content is the number of mentions generated by users of social media platforms, forums, blogs, etc. The study shows that the number of user-generated content is 127. Likes are the number of likes from mentions or threads found on social media. The study showed that the number of likes was 188. A positive mention is the number of mentions or threads with potentially positive sentiments. In this case, it indicates that there are 23 positive mentions. A negative mention is the number of mentions or threads with potentially negative sentiments. In this case, it indicates that there are 10 negative mentions. AVE stands for Advertising Value Tools. It is an additional metric that helps estimate the value of collected articles and mentions. This is an estimate of the amount of money that would have to be spent on paid advertising to achieve a similar exposition. In this case, it shows that the amount of AVR is 82, 229 in dollars. Mentions from Twitter are the number of mentions that occur on the Twitter platform. It shows that there are 71 mentions of sustainable development.

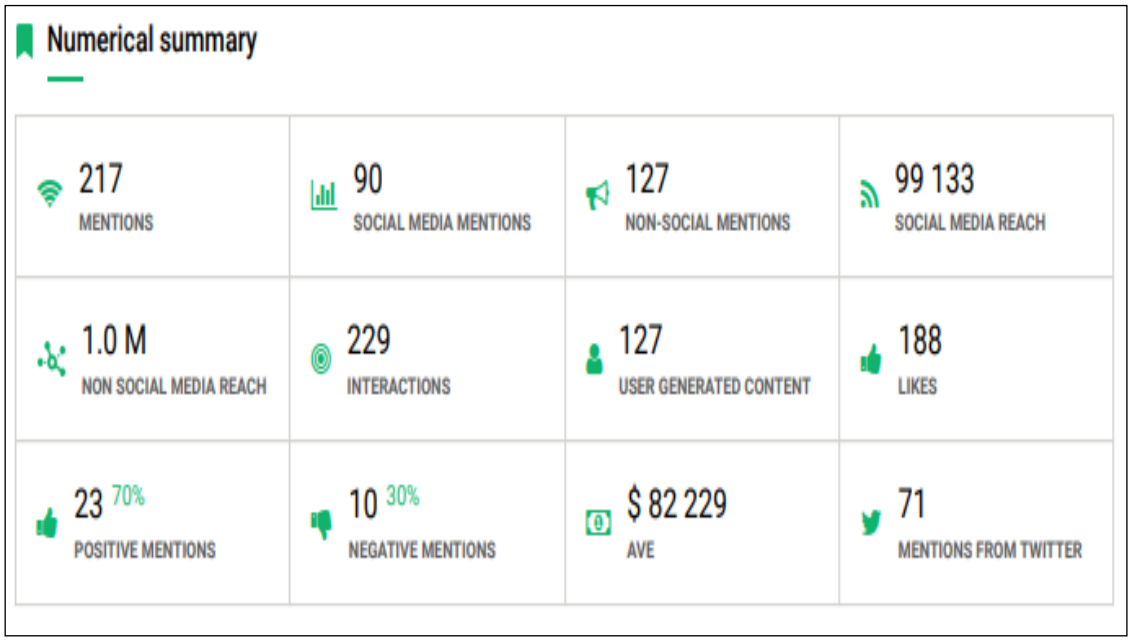


Figure 6. Numerical Summary

There are many words in the context of discussions about sustainable development on the internet. There are 100 words that have been captured in this study, consisting of major and minor contexts. The more discussed context is represented with larger fonts (Figure 7). For example, the words "United Nations," "supplier description" and "company" are the main context on the internet.

Figure 7. Context of Discussion

In Figure 8, we can see that there are 10 Most Popular Designations on the Internet. 10 of them happened on the Twitter platform. Figure 9, shows us the most active profiles. There are 20 most active profiles on the internet that occur in our analysis. 20% of profiles that occur are sourced from the YouTube platform. And the other 80% happens through Twitter. In this case, this analysis presents the top 20 public profiles (Figure 10). The highest share of votes was shared by ZephyrioT (Twitter account), with 12.71% of the votes and 12,600 influences on the audience. The table of the most influential sites (figure 11) shows us that YouTube is in first place with around 34 billion visits and has a ten out of ten influence score from Brand24's assessment. A hashtag is a word or phrase preceded by a hash symbol (#), which is used on social media platforms to identify and categorize content related to a particular topic. The use of hashtags helps users discover content and participate in discussions about specific subjects. When you click or search for a hashtag, you can see a feed of public posts that include a specific hashtag. This makes it easy for users to find and engage with content related to interests, events, or trending topics. Hashtags are commonly used on platforms like Twitter, Instagram, Facebook, and more. In Figure 12, 20 hashtags occur in this analysis. "#sustainability" is the most trending hashtag, with 6 mentions in 30 days.

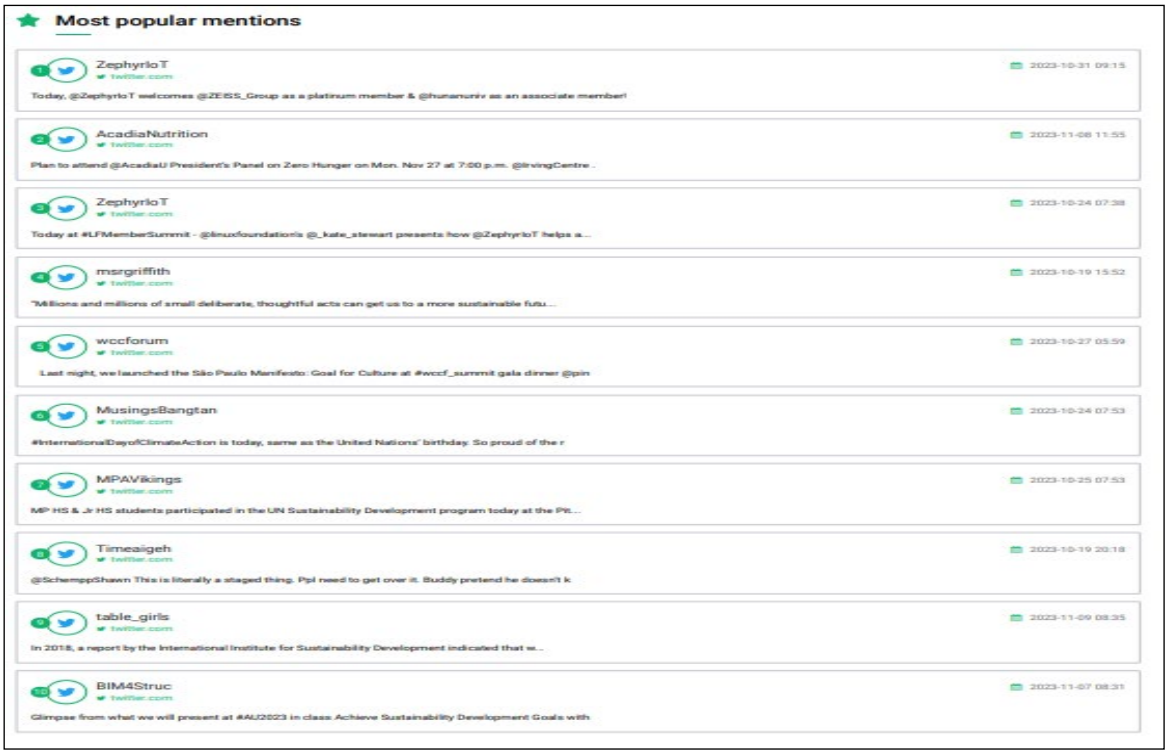


Figure 8. Most Popular Mentions

Most active public profiles

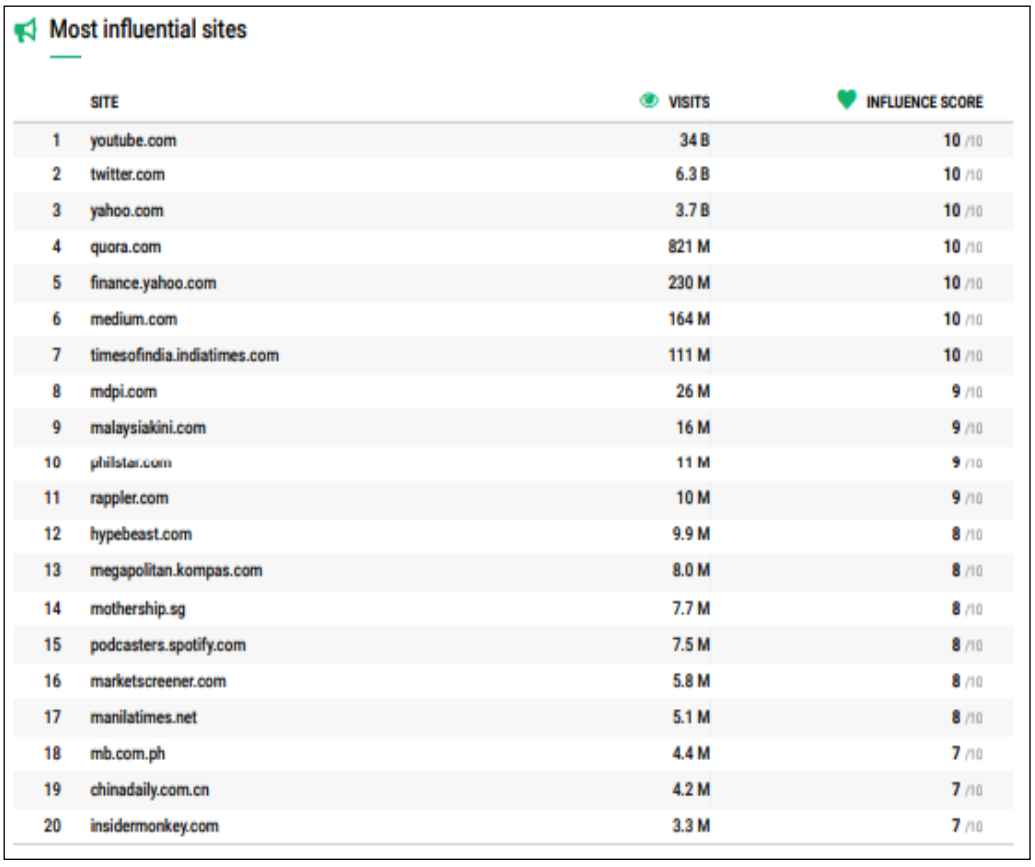
	PROFILE	SOURCE	FOLLOWERS	MENTIONS
1	The Solar Man of India Sachin		199	16
2	retroamxev		67	3
3	msrgriffith		1432	3
4	ZephyrIoT		9112	2
5	TonyWedzinga		160	2
6	James Kenny		9	1
7	IB PYP / MYP Romania		31	1
8	Bedayia International School		2	1
9	xpress2grow		157	1
10	wccforum		3934	1
11	table_girls		5520	1
12	sretthchan28423		1	1
13	showdeboy		1071	1
14	projecthaans		26	1
15	percepio		1004	1
16	patienceayeni_		114	1
17	nopopazana2		46	1
18	nicholasatuahen		1	1
19	moonlightx86		1550	1
20	mareophe		1045	1

Figure 9. Most Active Public Profiles

Top public profiles

	PROFILE	SOURCE	VOICE SHARE	INFLUENCE
1	ZephyrIoT		12.71%	12 600
2	msrgriffith		5.894%	5843
3	AcadiaNutrition		5.75%	5700
4	MPAVikings		5.649%	5600
5	Timeaigeh		4.943%	4900
6	table_girls		4.237%	4200
7	SMARTLAGOON		4.237%	4200
8	BIM4Struc		4.237%	4200
9	LDN_Culture		3.531%	3500
10	BlackoPrimary		3.531%	3500
11	wccforum		3.329%	3300
12	MusingsBangtan		3.329%	3300
13	ProgramYouself		2.824%	2800
14	HRAust		2.824%	2800
15	Bree_Edu		2.824%	2800
16	Paul_Koshy		2.263%	2243
17	TonyWedzinga		2.118%	2100
18	percepio		1.412%	1400
19	patienceayeni_		1.412%	1400
20	nopopazana2		1.412%	1400

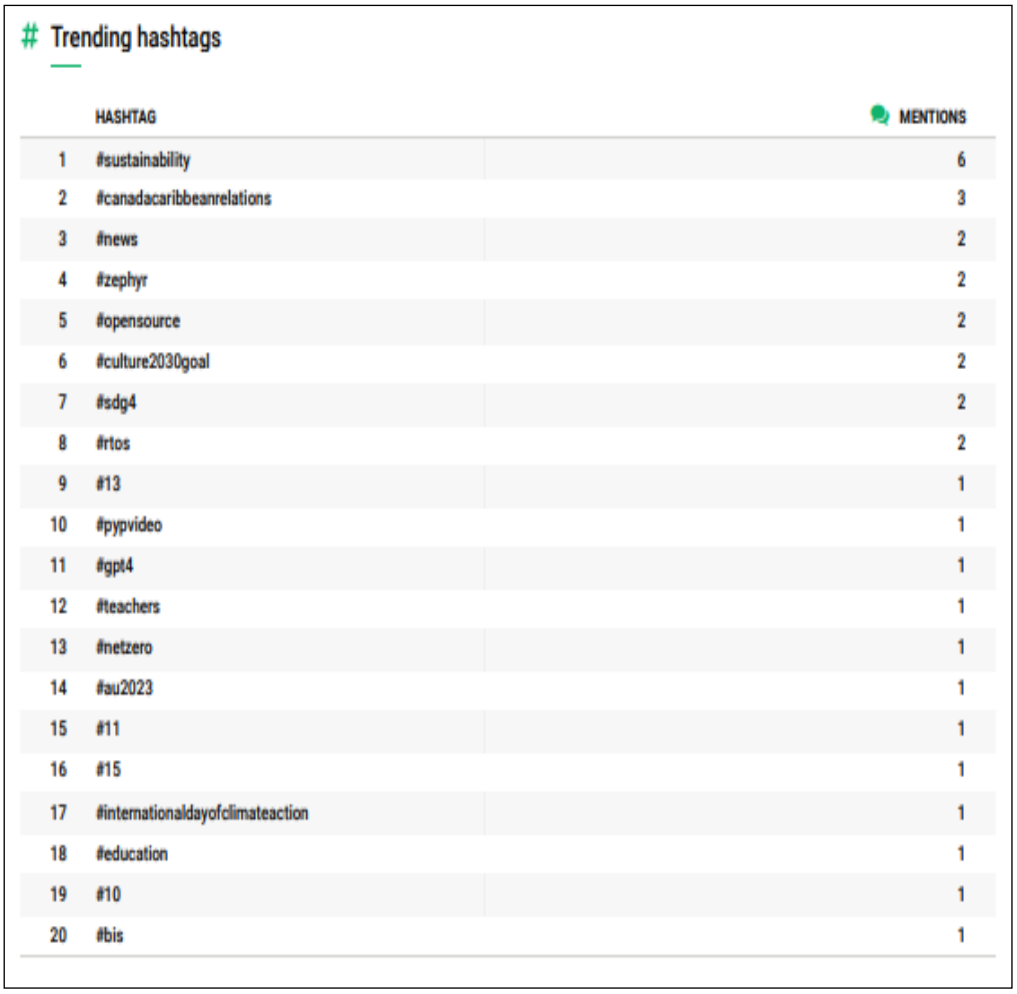
Figure 10. Public Profiles



Most influential sites

	SITE	VISITS	INFLUENCE SCORE
1	youtube.com	34 B	10 /10
2	twitter.com	6.3 B	10 /10
3	yahoo.com	3.7 B	10 /10
4	quora.com	821 M	10 /10
5	finance.yahoo.com	230 M	10 /10
6	medium.com	164 M	10 /10
7	timesofindia.indiatimes.com	111 M	10 /10
8	mdpi.com	26 M	9 /10
9	malaysiakini.com	16 M	9 /10
10	philstar.com	11 M	9 /10
11	rappler.com	10 M	9 /10
12	hypebeast.com	9.9 M	8 /10
13	megapolitan.kompas.com	8.0 M	8 /10
14	mothership.sg	7.7 M	8 /10
15	podcasters.spotify.com	7.5 M	8 /10
16	marketscreener.com	5.8 M	8 /10
17	manilatimes.net	5.1 M	8 /10
18	mb.com.ph	4.4 M	7 /10
19	chinadaily.com.cn	4.2 M	7 /10
20	insidermonkey.com	3.3 M	7 /10

Figure 11. Most Influental Sites



Trending hashtags

	HASHTAG	MENTIONS
1	#sustainability	6
2	#canadacaribbeanrelations	3
3	#news	2
4	#zephyr	2
5	#opensource	2
6	#culture2030goal	2
7	#sdg4	2
8	#rtos	2
9	#13	1
10	#pypvideo	1
11	#gpt4	1
12	#teachers	1
13	#netzero	1
14	#au2023	1
15	#11	1
16	#15	1
17	#internationaldayofclimateaction	1
18	#education	1
19	#10	1
20	#bis	1

Figure 12. Trending Hashtags

5. Conclusion

An analysis of trends in the concept of sustainable development through the social media monitor platform Brand24 revealed that over the past 30-day period, there were 217 mentions volume overall, with 99,000 social media reach and 1.0 million non-social media reach. The Volume of Mentions chart shows the highest peak on October 20 with a maximum number of 21, and the average volume quantity of Mentions is 7. Social media reach reached its highest peak on November 8 with a maximum number of 11,300 and an average of 3198. In contrast, Non-Social Media Reach hit its lowest on October 31 with an average of 32,313.

The analysis revealed a significant increase in mentions per category, especially on Twitter, which recorded 71 mentions of sustainable development with a 100% increase from the previous period. Numerical data shows 23 positive mentions and 10 negative mentions, with social media reach reaching 99,133 and non-social media reach reaching 1.0 million. User-generated content, likes, and 100 key keywords provide further insight into sustainable development discussions on the internet.

Furthermore, the ten most popular mentions on the internet, active profiles, and influential profiles show Twitter's dominance, especially with YouTube as the platform with the most visits. The hashtag "#sustainability" trended with six mentions in 30 days, reflecting the growing focus and interest in the concept of sustainability on social media. Overall, this analysis provides a comprehensive picture of how the concept of sustainable development is perceived and discussed in the digital realm.

Based on the results of the research above, here are some related suggestions that can be made. Enhance campaigns on Twitter with specific hashtags to broaden and deepen discussions about sustainable development. Focus on positive content by emphasizing positive impact and solutions to build a positive image with respect to sustainable development. Diversify your presence on social media by exploring platforms like Instagram, Facebook, and TikTok to reach a wider audience. Identify and collaborate with influential users, particularly on the YouTube platform, to expand reach and strengthen positive support for sustainable development. Plan a custom campaign by leveraging the popularity of the hashtag "#sustainability" to increase user participation, reinforce positive trends, and expand awareness.

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