# A Methodical Examination in the Pursuit of Big Data Analytics in Digital Media Broadcasting

Nivetha Dhanakoti
*Department of Computer Science and Engineering*
*SSN College of Engineering, Chennai, Tamil Nadu, India*

Dr. V.Dhanakoti
*Department of Computer Science and Engineering*
*SRM Valliammai Engineering College, Chennai, Tamil Nadu, India*

**Abstract- The 21st century has witnessed the global connectivity potential through advancements like Internet 2.0, sweb 2.0 technologies and society 2.0. Social media platforms have become avenues where individuals freely express their thoughts and interact with businesses, governments, and each other. This interaction generates vast amounts of data, which can be harnessed through Data Analytics and Machine Learning techniques for valuable insights. With a special emphasis on big data analytics in digital media, this study gives a broad review of recent advances in data science and machine learning. It spotlights the versatility of social media data analysis, covering areas such as business analytics, geospatial analytics, and sentiment analysis. The importance of social media data is emphasized by considering factors like the 5 Vs and the Model of Big Data. Additionally, the study identifies the top ten social networking sites and addresses four key research questions pertaining to analytics employed in ditgital media data analysis, machine learning algorithms, supported data categories, and commonly used analytics methods.**

**Keywords – Social Media, Text Analytics, Big Data, Systematic Mapping Study, Machine Learning, Big Data Analytics, Sentimental Analytics, Data Science**

## I. INTRODUCTION

Big Data describes datasets that are extremely huge or intricate. that conventional data management methods struggle to handle them effectively. Its applications are widespread, spanning from social networks, e-commerce, businesses, finance, insurance, and various other fields[1]. The number of people who used the web in October 2023 was 5.3 billion, or 65.7% of the global population. 4.95 billion, or 61.4 percent, of these individuals were engaged on social networking sites[2]. The internet now plays a crucial role as the main channel for public reporting and emergency service access[3]. Due to its worldwide accessibility, Chief Marketing Officers (CMOs) have adjusted by answering online queries. According to statistics, 26.2 percent of responses happened on Facebook, 16.5 percent happened on LinkedIn, and 40.8 percent happened on Twitter[4].

Internet has emerged as a key source for consumer data analysis and business development in these processes[5]. Unlike traditional marketing methods, it provides instant exposure to clients, often in its most effective form, leading to higher levels of efficiency. Making accurate forecasts in a variety of businesses requires an increasing amount of data analysis, correlation, and insight-gathering skills. With the growing number of social media users, vast amounts of information, including text, audio, and video, are shared online, serving as valuable big data for extracting meaningful insights. These insights, obtained through sentiment and text analysis, assist corporate companies in achieving success by identifying connections, patterns, knowledge, and consumer preferences to enhance commercial decision-making.

Online social networking has gained popularity due to large recent investments made by many firms for the study of consumer data and company advancement. In comparison to more conventional marketing techniques and technology, it is more efficient and enables businesses

to establish an immediate connection with customers possibly in the most efficient way possible. The capacity to assess, correlate, and derive insights from enormous quantities of information is growing increasingly essential for forecasting purposes across a wide range of industries.

The remaining part of the work is structured in this manner. The background research is examined, data analysis and big data concepts are covered in Section II. It also gives a summary of the Sunflower Model and emphasizes the significance of data analysis. It also examines the relationships between social media, social data, and social media analytics. Section III outlines the research methodology, with a focus on the Systematic Mapping Study (SMS). The results are shown in Section IV, which also looks at the various forms, techniques, and classifications of big data in social media. Section V addresses the challenges and limitations encountered. Finally, Section VI draws conclusions from the study.

## II. RELATED DATA

### *2.1 Big Data*

Despite the diversity of structured data generated by technological progress, the predominant portion consists of unstructured data, commonly referred to as "Big Data." To gain information and guide decision-making processes, these vast and intricate data collections require sophisticated yet reasonably priced data management and analysis solutions.[6]. Big Data and data science find practical applications across various domains, both within commercial and non-commercial settings. The facets of data encompass seven categories, namely:

- Streaming data
- Unstructured data
- Machine generated data
- Structured data
- Natural Language data
- Audio, video and images data
- Graph based data

Structured Data is typically organized in tables or relational databases, while Unstructured Data doesn't conform to a specific data model due to its context-specific or variable content. Natural Language, a subset of unstructured data, demands specialized data science techniques and linguistic expertise for analysis. Machine-generated data is produced automatically by computers or other machines without human involvement. Graph-based data is commonly utilized for representing social networks. Streaming data is continuously fed into the system as events occur. Together, these data types all of which are common in social media make a contribution to big data.

In light of big data's enormous volume, varied structures, fast momentum, and frequently complex nature, conventional technology finds it difficult to efficiently gather, store, manage, and analyze this type of data. Existing data science methodologies and tactics have hurdles in efficiently addressing the unique properties of big data, as well as the related problems and ambiguities.

The attributes of Big Data are commonly described using the concept of the 5 V's:

- Volume: Referring to the quantity of data available.
- Variety: Indicating the diversity of the data types.
- Velocity: Characterizing the rate at which fresh data is produced.
- Veracity: Evaluating the data's precision and dependability.
- Value: Assessing the importance and practicality of the information.

Table -1 Description of 10 Big's in Big Data

| Bigs | Description |
|---|---|
| Big Volume | Refers to the vast quantity of data present in Big Data sets. |
| Big Variety | Shows the wide variety of data sources and kinds that make up big data. |
| Big Velocity | Describes how new data gets created and handled at a rapid pace. |
| Big Veracity | Assessing the accuracy, reliability, and |

| | |
|---|---|
| | trustworthiness of the data. |
| Big Value | Evaluating the significance, usefulness, and potential insights derived from data. |
| Big Intelligence | Refers to the ability to extract meaningful insights and knowledge from data. |
| Big analytics | Involves the use of advanced analytics techniques to analyze and interpret data. |
| Big infrastructure | Encompasses the necessary hardware, software, and systems to support Big Data processing. |
| Big service | Pertains to the services and platforms that facilitate Big Data management and analysis. |
| Big Market | Represents the economic and commercial opportunities arising from Big Data applications. |

Combining the 5 V's, the concept of the 10 Bigs in big data is introduced. These encompass Big velocity, Big volume, Big variety, Big analytics, Big veracity, Big value, Big intelligence, Big infrastructure, Big service, and Big market. The Figure 1 is proposed Model of 10 Bigs in big Data.

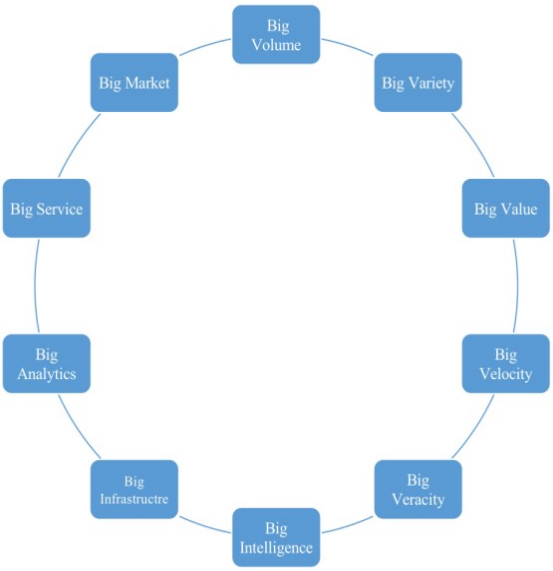


Figure 1. Model of 10 Big's

This represents that all these are inter-related. Data sharing on social networking platforms continues to rise steadily, with billions of users worldwide updating their statuses, sharing photos, and exchanging videos daily. This influx of data reveals valuable insights into users' interests, beliefs, movements, demographics, and more. The surge in remote work, education, and leisure activities due to the pandemic further contributes to the increase in data volume. The analysis of big data is essential to customization because it enables businesses to interact with clients more precisely according to their likes and dislikes. It empowers businesses with comprehensive insights into their customer base, enabling them to craft targeted messages that enhance acceptance and engagement.

### *2.2 Social Media*

Online platforms that facilitate information exchange and consumption are referred to as social media. The advent of Facebook in 2004 brought about a momentous change in the social media landscape by enabling users to submit content that could be easily changed and modified at any time[9]. Facebook remains one of the most popular social networking sites to date.

Ellison defines social media through three primary elements:
1. Users share their profiles publicly or semi-publicly.
2. They establish connections with other users within the network.

3. They simultaneously observe the public actions of other users [10]

Different forms of online communities include social networking websites and applications, forums, blogs, curation of content websites and applications, bookmarking websites and applications, and collaborative platforms such as Wikipedia. Numerous platforms, including blogs, wikis, YouTube, Twitter, Instagram, Facebook, LinkedIn, and others, produce large amounts of unstructured data.


Figure 2. Online in 60 seconds

According to Figure 2, a total of 241.2 million emails were sent, alongside 18.8 million messages. 10.4 million people were viewing Instagram. 6.9 million emojis were sent. 6.3 million zoom meetings. 3.47 snaps were created. 3.02 million photos were captured in smartphones. 694000 videos were played. 347222 tweets were recorded. 271309 iOS and Android downloads took place. 34247 slack messages were passed. 22831 visits were made to ChatGPT. 11834 chats were made on Microsoft Teams.

Web 2.0 technology is a collection of online resources that makes it possible for anybody to create and share content. Social media adopted the term "Society 2.0" due to Web 2.0 technologies and widespread internet connectivity. The objective of Society 2.0 is to enable virtual communication between people with different origins and promote the sharing of viewpoints. Twitter, Facebook, LinkedIn, Instagram, YouTube, Flickr, Google+, Tumblr, forums, emails and blogs are some of the prominent elements of Society 2.0. There are several uses for these online platforms, including business networking through LinkedIn and social networking through Facebook, Instagram, and Myspace. Businesses are leveraging social media to make informed decisions, as consumers and clients increasingly rely on these platforms to research and evaluate various topics, spanning from banking and government services to healthcare and product reviews.

In today's digital landscape, businesses face heightened demands and competition, prompting the adoption of big data analytics on digital data. Industry titans like Facebook, YouTube, Google, and LinkedIn use these statistics to improve brand awareness, increase inbound traffic, optimize operations, and predictably advertise digitally. Analytics, data, and tools play a pivotal role in improving global reach, customer service, and marketing strategies. Consequently, businesses of all sizes are investing in data analytics and social media data to stay competitive and meet evolving consumer expectations.

## 2.3 Social Media Statistics

Because social media provides so much information about consumers, it is an invaluable tool for data research and analysis. Big data, delivered through social media content in vast quantities and unstructured formats, provides valuable insights. The accuracy and worth of this information are ensured by its user-produced nature, making it highly appealing to academics, businesses, government entities, and other stakeholders. Table 3 below displays the

amount of engagement on different digital media platforms. It presents the Top 10 used Social media networks worldwide according to the October 2023 statistics.

Table -2 Social Media User Statistics

| SOCIAL MEDIA | NO. OF CUSTOMERS |
|---|---|
| Douyin | 743 million |
| Snapchap | 750 million |
| Telegram | 800 million |
| Facebook messengers | 1.036 billion |
| TikTok | 1.218 billion |
| WeChat | 1.327 billion |
| Whatsapp | 2 billion |
| Instagram | 2 billion |
| Youtube | 2.491 billion |
| Facebook | 3.030 billion |

2.4 Big Social Data

The tremendous audience on all of the social networking sites generates huge amounts of data every day. Text, photos, audio, video, web transactions, gifs, blogs, and more are all included in this data. Successful social analysis of data requires choosing the right analytics for big data. The vast amounts of data associated with social networking sites are referred to as "big social data" informally. For studies, companies, and administrative groups looking to make well-informed judgments, this kind of data is extremely informative and pertinent.

2.5 Big Data Analytics in Digital Media

In order to analyze data in complex formats and support improved choice-making, analytics is essential. It uses numerical, computational, and artificial intelligence approaches to do this. Many methods for big data analytics are applied in the field of social networking, such as sentiment analysis, mining text, social graph theory, opinion mining, statistical evaluation, cybersecurity risk analysis, and opinion mining[13]. Companies across many sectors can leverage the knowledge acquired from big data analytics to enhance their advertising approaches or manufacturing schedules, thereby preserving their competitive advantage in the digital market. Social media analytics, for instance, helps businesses to get input from customers on their goods, which can be used to improve and strengthen the value of their brand.

Well-known businesses like Microsoft, Apple, Google, Facebook, Honda, NVidia, Amazon, Samsung, and many more routinely use social networking analytics to enhance their customer service and business strategy. Research, civil defense, healthcare, finance, telecommunications, public transit, insurance, and many other businesses gain from social media analytics as well, since it helps them stay flexible and responsive while making data-driven, well-informed decisions for the future. Sentiment and opinion mining techniques are commonly utilized, particularly during critical events such as elections, to gain insights into public sentiment and inform decision-making processes. Social data analytics is used by both the federal and state governments to create predictive techniques for making choices.

## III. RESEARCH METHODOLOGY

The current research employs the reputable and academic Systematic Mapping Study (SMS) approach, which is widely utilized in academic research. Systematic Review (SR) is another term for the Systematic Mapping Study. With this method, a sequence of independent tasks are completed in order to reach the ultimate goal through a series of sequential activities. We follow the guidelines provided by Kitchenham and Charters [14], as well as Petersen et al. [15], in order to use the SMS approach. The six tasks listed below are completed in the order listed to conduct this research:

- Defining the research goal
- Formulating research questions
- Establishing a searching strategy
- Determining selection criteria
- Selecting relevant studies
- Analysing the results

3.1 Defining the Research Goal

Undoubtedly, social media has evolved into a valuable asset for big data research and data analysis. Each day, users on social media platforms share a vast array of content, including text, photos, videos, and audio files, generating a substantial volume of raw data that encompasses semi-structured, unstructured, and structured formats. In the field of social networking data analysis, adaptability and diversity are essential. To handle the diverse nature of massive amounts of social data, data analytics, machine learning, and data science approaches must be applied. Not every analytics tool accessible for large data analysis is suitable for data research, despite the fact that there are plenty of them.

This research attempts to meet this need by locating big data analytics and the associated mathematical models that are specifically designed for social media data analysis. We also wish to look into the many forms of unstructured and structured supporting data that are utilized by these big data analytics. By using empirical statistical data, this study aims to demonstrate the significance of social networking sites as a provider of big data.

3.2 Formulating Research Question

The goals of the investigation guided the formulation of the following inquiry. This facilitates the creation and acceptance of the research project.

- What are the common analytics utilized in platforms for analyzing digital media data?
- What methods or machine learning algorithms are employed in social media for implementing these analytics?
- What types of data categories serve as the foundation for these analytics?
- Which big data analytics tool is predominantly utilized for analyzing digital media data?

3.3 Establishing a Searching Stategy

We develop a technique for performing keyword-based queries throughout academic resources in order to obtain responses to the research questions above from a variety of pertinent sources. We have chosen the following search terms: "Social Data," "Big Data," "Analytics" or "Data Analytics," and "Social Media," "Social Network," or "Social Sites." These search phrases are intended to help find scholarly articles in the IEEE Xplore Digital Library[17], ScienceDirect Digital Library[18], and ACM Digital Library[16].

3.4 Determining a Criteria for Selection

We develop a set of standards to filter out unrelated or tangentially relevant scientific papers and include the most significant ones.

Below are the Criteria for Inclusion.

- Focuses on the relevance of data analytics, big data, and social media.
- A published scientific paper describes this particular study.
- The entire text is accessible.
- The field of computer science is covered by this article.
- This paper is a study and evaluation.

Below are the Criteria for Exclusion.

- This paper provides an overview of a conference or workshop.
- This paper constitutes a chapter from a book or a course.
- This study's complete text is not accessible.
- Although it has nothing to do with social media, this particular study exemplifies big data analytics.
- The content is videos.
- Documents composed in a language different from English

3.5 Selecting Relevant Analysis

We chose papers for this study from IEEE, ScienceDirect, and ACM, three reliable research databases. We made use of each database's sophisticated search and filtering features. To avoid repetition of work, we restricted our review to the ACM Publications On Finding Knowledge From Data section of the ACM digital library.

## IV. ANALYSING THE RESULT

4.1 Social Media Analytics

The results of the comprehensive review that was carried out for this research project are shown in this section. The primary goal of the research is to locate and compile notable instances of big data analytics in social networking networks. We currently have the top three social networking analytics. Table 3 displays the details list. For clarification, the third column includes the names of those publications' authors along with the year of publication.

Table -3 The most frequently utilized social networking analytics.

| DESCRIPTION OF THE PAPER | WRITER | INVOLVED BDA's |
|---|---|---|
| Moving past exaggerated claims: Concepts, methods, and analytics of big data. [19] | Haider and Gandomi (2015) | • Audio analysis<br>• Text analysis<br>• Video analysis<br>• Predictive analysis |
| An overview of big data analytics in social media. [10] | Ghani et al. (2019) | • Explanation-based analytics<br>• Investigation-based analytics;<br>• Future-oriented analytics;<br>• Recommendation-based analytics |
| Analyzing big data in the realm of social media. [1] | Dhawan and Zanini (2014) | (1) Text analysis;<br>(2) website analysis |

4.2 The Organizational Structure of Social Media Analytics

Our research revealed that within the social media industry, there is a predominant focus on ten key big data analytics methods for analysis of the data. These methods fall into three categories, which are determined by three factors:

(1) Types of data

(2) Intended purpose

(3) Nature of the task.

Depending on the type of data, social media analytics are divided into four: they are simple data types, such as image, audio, video, and text.

(1) Text analytics uses word or character data, which includes thoughts on problems , opinions on themes, evaluations of goods, and other textual data from the internet.

(2) Images, pictures, scenes, or photographs that show any item can be analyzed with the use of image analytics. Users of social media regularly share pictures of occasions, get-togethers, romantic moments from travels, and commercial goods.

(3) Audio analytics extracts relevant information from speech, music, or audio using machine learning. Numerous research projects continue to translate speech to text and analyze users' social media audio to glean insights, among other things.

(4) The use of video analytics demonstrates the latest developments in social data analysis technology. In the realm of digital communication and data evaluation, we are witnessing a new era where video data has the ability to convey information on our behalf.

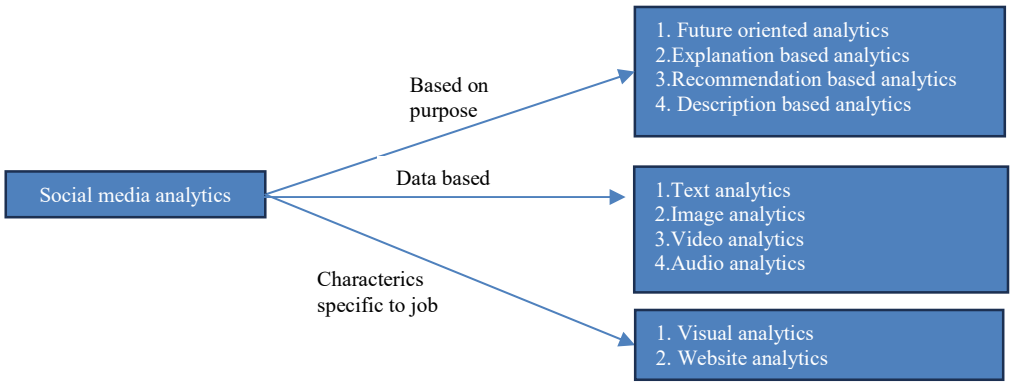


Figure 3. Categorization of analytics methods used in social data analysis

Figure 3 provides a visual representation of the taxonomy in social data analytics. Four additional categories of social data analytics are determined by the objective of the data analysis.

(1) Predictive analytics employs machine-learning algorithms to construct forecasting models. These models utilize past data analysis to make predictions about future data.
(2) Explanation-based analytics reviews historical or present data to identify discrepancies. This analysis generates reports and aids in monitoring events.
(3) Recommendation-based analytics evaluates various scenarios and suggests the optimal course of action. This places a strong emphasis on conditions and uses the historical condition-result relationship to critically select the optimal result.
(4) Insights centered around investigations is an ongoing process that yields better results. In the data mining, social data analysis process and data correlation help at every level of diagnostic improvement.

Two additional big data analytics methods are available to carry out further specialized tasks on social media platforms.
(1) The concept of video analytics is elaborated through visual analytics. The concept of video analytics is elaborated through visual analytics.
(2) Web analytics comprises analytical tools that are accessible to the public for free. Web analytics utilizes data from the World Wide Web, including automatically generated or indirectly connected user data such as metadata, log file analyzers, web transaction data, bookmark data, and more.

4.3 Utilizing Machine Learning Approaches in Social Media Data
Despite many parallels between sentiment classification, sentiment analysis, and social network analysis, their approaches, goals, and processes are different. While sentiment analysis can make use of both unsupervised and supervised learning strategies, sentiment categorization only makes use of supervised strategies. Conversely, network analysis applies graph theory to the study of social information.

Each of these three methodologies has distinct objectives and employs varying data analysis techniques. Analytical tools for tracking and reporting website traffic include Google Analytics. Google Analytics is a tool that many businesses regularly use for marketing and online business. Other tools that share similarities and utilize machine learning algorithms in the background include AWStats, Amung.us, and WebSTAT. Instead of directly referencing the underlying algorithms or their combinations, most researchers commonly refer to these tools and techniques by their respective brands. We offered a comprehensive overview of the techniques and machine learning algorithms to enhance clarity. This comprises well-known machine learning techniques, including Convolutional Neural Networks (CNN), Recurrent Neural Networks (RNN), Naive Bayesian classifiers (NB),Support Vector Machines (SVM), Random Forests (RF), Decision Trees (DT), and others.

Both structured and unstructured data forms are supported by text analytics. Text data is inherently unstructured, however numerical data that is extracted from social text data takes on an organized framework. In contrast, complex, unstructured, and chaotic data is the main focus of picture, audio, and video analytics. While analytical and normative analytics generally deal with unstructured data, predictive and descriptive analytics may handle both types of data. Unstructured data is continuously compatible with visual analytics. Unstructured, semi-structured, and structured data can all be used in web analytics.These methodologies play a crucial role in enhancing decision-making through comprehensive analysis of social data.

4.4 Social Media Data Used by Firms
The formulation of the study's topic is the first step. This aids in selecting the kind of data that will be gathered and the type of analysis that will be carried out on the data in the ensuing steps. Data entry is the next stage, which entails choosing possible social media platforms like Facebook, Twitter, and Instagram as well as the kind of selection data to be gathered utilizing data collection technologies and made accessible for subsequent actions. The data can be unstructured, semistructured, or structured and come in a variety of formats, including text, images, video, and audio.

It is suggested that big data warehouses be used for managing and storing large amounts of data as well as enable data models for various levels of in-depth analysis. They are not the same as traditional data warehouses, which organizations utilize to gather daily data to aid in decision-making and facilitate online analytical processing. Data has been stored, and now the analysis process may begin. Big data frameworks like Spark and Apache Hadoop are used in this process, together with intelligent tools for social networking content analysis. Using algorithms and other techniques to glean insights from the data entering is part of the analysis process. Natural language processing

(NLP) and machine learning are the most widely utilized methods for improving analysis, particularly for textual data.

Many benefits come with digital technology, including replication of reality, originality preservation, and ease of distribution.Computational holography enables the integration of the three reconstructed images in space and the addition of virtual information, such as coordinate text, to produce an improved 3D presentation of real items and an augmented reality experience.

Many benefits come with technological advances, including replication of reality, authenticity preservation, and ease of distribution.Computational holography enables the integration of the three rebuilt pictures in space and the inclusion of digital data, such as positioning text, to produce an improved 3D presentation of real items and an augmented reality experience.

4.5 Evaluation
To assess this research project, we outlined four research questions.

1. What are some common analytics that are used in digital media-based analysis platforms?
Table 3 lists the social analytics of data covered in each of the selected papers for this research. We have selected ten of the most significant methods for big data analytics for use in social media data analysis and decision-making support.

- Audio Analysis
- Text Analysis
- Predictive analysis
- Video analysis
- Explanation-based analytics
- Investigation-based analytics
- Future-oriented analytics
- Recommendation-based analytics
- Text Analytics
- Website Analytics

Segmentaion can also be used to analyse the data from social media. It categorises the social media users based on their profession, age, gender etc. The different types of data that segmentation talks about includes Geographical, Scientific, Financial, Metereological etc. By using this analytic method, decision making can be done easily.

2. How are these analytics carried out via social media using approaches or machine learning algorithms?
Big data in social media has complex patterns that make it difficult to analyze using traditional, straightforward algorithms. Numerous statistical or machine learning techniques allow the use of massive amounts of data for online data analysis. A variety of methods are displayed in Figure 3.

3. Which categories of data do these analytics use as support?
Although unstructured and structured data types are served by predictive analytics, text analytics, descriptive analytics, and web analytics, unstructured data types are also handled by the previously mentioned techniques. The most common method for analyzing text data in the past has been sentiment analysis. One of the main functions of image analytics is object detection or picture classification. It facilitates the analysis of photos or snapshots of things. Video analytics handles video data in various formats, while audio analytics deals with speech or audio from social media, both representing emerging areas of social media data analysis.

Descriptive analytics is primarily used in this study to analyze text, numbers, and images[10]. Similarly, prescriptive and diagnostic analytics typically address text data[1]. Most semi-structured data originates from web pages. Web analytics involves employing a range of tools and methodologies to analyze web data and traffic[1]. Specialized analytics known as "visual analytics" can analyze image and animation data but not video data [20,21].

4. What is the most popular big data analytics tool for analyzing data from social media?

In the world of digital media, "text analytics" remains the most popular and often used kind of statistical analysis. For the purpose of this research, text analytics was mentioned as a computational method for social data analysis in 90% of the articles that were analyzed. 25% of the papers in the survey mentioned predictive analytics, making it the subsequent most frequently used digital data analytics approach. Together, "Audio Analytics" and "Diagnostic Analytics"make for 5% of all social data analysis activities.

## V. CHALLENGES AND CONSTRAINTS

- The extensive application of big data analytics and digital media data across many fields and industries has resulted in notable advancements. But there are a lot of obstacles and restrictions in this industry.
- The increasing volume of digital media data has resulted in files being scattered over multiple physical locations. Because of this dispersion, the general public finds it more difficult to obtain the data and requires technical knowledge.
- Large social datasets are costly and difficult to maintain.
- Regularly posting images, videos, and other information doesn't always aid in evaluation. Extracting pertinent data from this complex dataset requires cleaning and filtering, which may be costly and laborious.
- Cyberattacks pose a significant threat to social media, especially during sensitive events like elections, potentially leading to misinformation.

## VI.CONCLUSION

Big data has become an essential data analytics method for comprehending human behavior through the study of social media data, largely due to technological improvements. This has an impact on many industries, including business and government. By enumerating the top 10 well-known and frequently applied big data analytics techniques for digital media analysis and decision-making, this study addresses a research gap. A classification of big data analytics in the digital media sector is produced by considering commonalities among different social media analytics methodologies. These analytics are divided into groups according to objectives, usage trends, and workspaces. With a variety of machine learning or statistical methods linked to each social data analytics method, machine learning techniques are essential in aiding data analysis in social media. Up until now, "text analytics" has dominated social data analysis analytics techniques. However, academics are becoming more skilled in gleaning pertinent information from social data's visual, aural, and image content.

Social media sites are constantly generating data for analysis as users express their thoughts on a range of subjects. Making the most of the enormous amount of data that is available is essential.

## REFERENCES


[1] V. Dhawan and N. Zanini, Big data and social media analytics, *Res. Matters A Cambridge Assess. Publ.*, no. 18, pp. 36–41, 2014.

[2] Internet Users Reference, October 2023, [online] Available https://www.statista.com/statistics/617136/digital-population-worldwide

[3] V. Nunavath and M. Goodwin, The role of artificial intelligence in social media big data analytics for disaster management–initial results of a systematic literature review, in *Proc. 2018 5th Int. Conf. Inf. Commun. Technol. Disaster Manag.* (*ICT-DM*), Sendai, Japan, 2018, pp. 1–4.

[4] F. Piccialli and J. E. Jung, Understanding customer experience diffusion on social networking services by big data analytics, *Mob. Networks Appl.*, vol. 22, no. 4, pp. 605–612, 2017.

[5] P. Ducange, R. Pecori, and P. Mezzina, A glimpse on big data analytics in the framework of marketing strategies, *Soft Comput.*, vol. 22, no. 1, pp. 325–342, 2018.

[6] M. Gupta and J. F. George, Toward the development of a big data analytics capability, *Inf. Manag.*, vol. 53, no. 8, pp. 1049–1064, 2016

[7] Davy Cielen, Arno D.B. Meysman, Mohamed Ali, Introducing Data science

[8] Z. Sun, K. Strang, and R. Li, Big data with ten big characteristics, doi: 10.13140/RG.2.2.21798.98886.

[9] W. Contributors, Timeline of social media, https:// en.wikipedia.org/wiki/Timeline of social media, 2019.

[10] N. A. Ghani, S. Hamid, I. A. Targio Hashem, and E. Ahmed, Social media big data analytics: A survey, *Comput. Human Behav.*, vol. 101, pp. 417–428, 2019.

[11] eDiscovery Today, July 2023, https://ediscoverytoday.com/2023/07/03/icymi-2023-internet-minute-infographic-by-ediscovery-today-and-ltmg-ediscovery-trends/

[12] Datareportal, Oct 2023 , https://datareportal.com/social-media-users

[13] W. Y. Ayele and G. Juell-Skielse, Social media analytics and internet of things: Survey, in *Proc. 1st International Conference on Internet of Things and Machine Learning*, Liverpool, UK, 2017, pp. 1–11.

[14] B. Kitchenham and S. M. Charters, Guidelines for performing systematic literature reviews in software engineering, Tech. Rep. EBSE-2007-01, Keele University and Durham University, Keele and Durham, UK, 2007.

[15] K. Petersen, S. Vakkalanka, and L. Kuzniarz, Guidelines for conducting systematic mapping studies in software engineering: An update, *Information & Software Technology*, vol. 64, pp 1–18, 2015.

[16] ACM digital library, https://dl.acm.org/, 2022.

[17] EEE Xplore, https://ieeexplore.ieee.org/Xplore/home.jsp, 2022.

[18] ScienceDirect,https://www.sciencedirect.com/, 2022.

[19] Gandomi and M. Haider, Beyond the hype: Big data concepts, methods, and analytics, *Int. J. Inf. Manage.*, vol. 35, no. 2, pp. 137–144, 2015.

[20] R. Vatrapu, R. R. Mukkamala, A. Hussain, and B. Flesch, Social set analysis: A set theoretical approach to big data analytics, *IEEE Access*, vol. 4, pp. 2542–2571, 2016.

[21] R. Vatrapu, A. Hussain, N. B. Lassen, R. R. Mukkamala, B. Flesch, and R. Madsen, Social set analysis: Four demonstrative case studies, in *Proc. 2015 International Conference on Social Media & Society*, Toronto, Canada, 2015, pp. 1–9.