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## Social media analytics: tools, techniques and present day practices

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**Abstract:** As a result of the availability of web-based application programming interfaces (APIs) for social networking sites, the study of social media has become a major research and business practice. This environment is evolving rapidly due to market demands and enormous applications. This paper presents a comprehensive review of leading social media analytics tools available for various social networking platforms. A comparative analysis has been carried out for the free and subscription based tools to judge their suitability for specific organisation. Various challenges are faced by businesses in adopting social media analytical tools to support the knowledge based business strategies. Correspondingly, the present day corporate challenges from the perspective of social media analytics in its adoption for corporate decisions have been outlined. This work will be very much useful for organisations in identifying the various tools available in the market, which may help them take knowledge based strategic decisions.

**Keywords:** social media analytics; data mining; decision support; knowledge creation; social networking platforms; *Hootsuite*; *Google alerts*; *social harvest*; *Viralwoot*.

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**Biographical notes:** Pooja Nanda is currently working as an Assistant Professor in the School of Business Studies, Sharda University, Greater Noida, India. She has done her PhD in Management and Master's in Business Administration. She has published research papers in Scopus indexed international journals and presented many research papers in various national and international conferences. She is a regular reviewer for a number of international journals (*International Journal of Rough Sets and Data Analysis (IJRSDA)* and *International Journal of Curriculum Development and Learning Measurement (IJCCLM)*). She is a life time member of Centre for Education

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## 1 Introduction

With the proliferation of internet and mobile communication, people are doing more and more activities online. This has created a widespread social media network with increased awareness and responsiveness. As per Statista (2017), the number of worldwide active social media users is anticipated to reach 3.02 billion monthly active users by 2021. With the usage of social media platforms like Facebook, Twitter, Skype, YouTube, Flickr, hi5 etc., customers can now connect online and share their views about the various products and services used by them. Batrinca and Treleaven (2015) said that social media data clearly gives the main, richest and most active evidence of human behaviour, which can bring new opportunities to understand individuals, groups and society. Social Media Marketing and internet have changed the medium of communication between consumers and marketers (Kumar and Pradhan, 2015). All the brands are now concerned with, what their customers say about the product, and what they want? There are many new investigative tools like online surveys, reviews and live chats via social media, which the companies make use of as marketing research source (Kumar and Pradhan, 2016). Social Media Marketing has grown as a new area in marketing by which an organisation is able to work in a cost efficient manner and is able to connect with the prospective and existing customers in new and dynamic ways.

Social media has become the most popular channel of communication for the people. Social networks, forums, and websites allow interactive dialogues, which make the online conversation more convenient and collaborative (Kumar and Sharma, 2016). This helps in sharing a lot of valuable information and experience with anyone, at any time and on any topic. As social media channels have penetrated from personal lives into professional lives, organisations have realised the need for it. They also acknowledged the value of formulating strategies and implementing evaluation protocols to help them gain feedback from social media interactions to determine the effectiveness of their social media initiatives. Social media is growing in popularity and is being used by a large number of consumers, due to following reasons:

- *Happiness of sharing information:* It is essential in enhancing happiness to be socially proficient and able to communicate with others in person. Time spent on the internet and social media can have a huge impact on whether a person can connect confidently and practically with other people. Soat (2015) has called Social media usage as a dopamine gold mine. People find pleasure in giving their input and

checking the feedback. Study by Fowler and Christakis (2008) showed that each happy friend increases an individual's chance of being happy by 9%, whereas each unhappy friend decreases it by 7%.

- *Easy access and convenient to use:* Technology continues to help us each and every day, from accessing vast quantities of data on the internet to actually enjoying an enhanced personal lifestyle. Social networking sites offer a cost-effective, convenient way to connect easily with clients or consumers around the world. This makes it easy to adopt technology for the small and medium enterprises, where the adoption of new technology is not so easy (Vidhyalakshmi and Kumar, 2016). Social Media also gives convenience to the consumers by which they can connect conveniently anytime, anywhere as required. These networks are very fast and require least effort. Besides, an upgradation in the use of Smartphone has made access to social media very easy. The ease and convenience with which people can use social media has increased its usage manifold.
- *Inquisitiveness:* Using social media platforms has become a daily routine for a large number of people. If there is any news which is very surprising, it is likely to spread more rapidly and extensively via social media platforms as the people become more inquisitive and curious about it. People remain very keen and are always seeking suggestions to make the most use of social media. Vega-Oliveros et al. (2017) claimed that it is possible to approach the transmission of knowledge as a psychological contagion where an idea spreads from individual to person and contaminates many people's minds. Also, people are inquisitive and take suggestion from other consumers seriously. After getting suggestions, many people follow these suggestions in their decision making.
- *Increased awareness:* Through social media, anyone online is sanctioned an unlimited flow of information to increase their knowledge bank. This can be further used by the organisations for knowledge management (Mittal and Kumar, 2019). A large variety of topics of interest can be discussed online by the consumer communities. Siddiqui and Singh (2016) said that through campaigns, advertising, papers and promotions, social media provides society with knowledge that allows society to be up to date with current information. It also enables individuals to make new friends, share material, images, audios, videos, among themselves. Companies can also analyse their competitors through this and take appropriate action. In addition, the companies get to know their markets and their own reputation in the market (Kumar and Pradhan, 2016).
- *Feedback sharing:* This is considered as the best place, where happy customers and unhappy customers express their thoughts and expect immediate action on their complaints. This feedback is of immense relevance for a market researcher. Not only the people who are happy can recommend a product, people who are unhappy can also warn others users regarding any product. Social interaction of consumers may lead to increased trust and intention to buy. Social networking allows clients promote and express the buying experiences with other people by providing their positive or negative opinions on a purchased product (Parson, 2013). Whereas, the organisations can receive complaints on a real time basis and can solve them immediately.

## 2 Social media analytics

It is very important for an organisation to define what they want to achieve through their social media effort. Companies generally use social media analytics to gain insight into their customers. Social Media Analytics can be defined as the process of collecting raw data from different kinds of conversations on social media platforms. The data can be converted into useful details which lead to more informed business conclusions and better customer opinions for brands and businesses (Kumar and Nanda, 2019). Social media analytics is described by Lovett and Owyang (2010) as a discipline that allows businesses to assess, analyse and clarify the success of social media initiatives in relation to specific business goals. The two terms metrics and measurement are similar to each other. Metrics are a quantifiable system of measurement used to track and evaluate the status of a particular business process (Ayodeji and Kumar, 2019). In the other hand, measurement is the method of taking certain parameters or characteristics and evaluating how they influence an organisation's behaviour in terms of a marketing campaign or a crisis (Siragusa, 2010). Social media analytics are interpretations of quantifiable data or metrics that can tell us information about activities, events or conversations. They provide insights into human behaviour on social media platforms. Several businesses have built tools for tracking a range of social media platforms, from blogging to internet video to internet forums. They are tools that facilitate an integrated study of organisation's strategic decisions and objectives, their measurement and performance measures at an operational level. These tools also analyse various social media metrics that can be tied to performance measures. Measuring social media is becoming commonly recognised as a business practice that is mandatory.

Businesses would be able to improve upon their performance measurement initiatives with the help of social media analytics. In addition, social media analytics also provide useful insights to the business functions like:

- a measurement of effectiveness of advertising campaigns
- b collection of insights on customer needs and preferences
- c distinction of brand perceptions
- d collection of feedbacks related to product performance and capture of data on market trends related to various aspects of business like promotion and sales, customer relationships, public relationships and product expansion.

Fan and Gordon (2014) categorised three important steps of social media analytics as: data capturing, data understanding, and data presentation. *Data capturing*: This stage is concerned with obtaining sufficient social media data by tracking, archiving relevant data and collecting relevant information from different sources of social media. This process is done by collecting huge amounts of pertinent data across various social media sources through news feeds or through the APIs. The capture stage operates on mainstream sites such as Facebook, Twitter, LinkedIn, YouTube, Pinterest, Google+, Tumblr, etc., as well as on smaller, more personal channels, including web forums, blogs, microblogs, etc. To address different business requirements, vast volumes of data are archived. Many pre-processing steps are carried out to prepare a dataset for the comprehension stage. These include Data modelling, data linking from various sources, extraction of features, and other syntactic and semantic operations that assist in analysis (Fan and Gordon, 2014).

The information that is extracted is used for later analytical analysis and about businesses, users, events, user feedback, and other entities. The analysts are able to identify relevant data, irrelevant data, filtered data, a vague message or a precise message that conveys exact message including the reasons behind it. This process is done either by a company itself or through outsourcing.

*Data understanding:* The interpretation phase is the next step in the process of social media analytics. This stage selects suitable modelling data, eliminates inaccurate, low quality data, and uses various advanced data analytical techniques to examine and get insights from the extracted data. A company must then analyse its significance and produce valuable metrics for decision-making after gathering the conversations relevant to its goods and operations. To gain useful insights from the cleaned data, various statistical methods and other techniques are used. As the capture stage gathers data from multiple sources, before conducting any substantive analysis, a significant portion can be noisy and has to be removed. This stage produces many useful metrics and trends about users related to their experiences, comforts, apprehensions, and links. This stage has a huge influence on the data and measurements that are shown if it is effectively completed in the present phase. Therefore, an organisation may make appropriate future decisions or actions depending on the outcomes. This stage requires participation of humans wherein visual analytics are used by them to understand many types and depictions of data at one time.

*Data presentation:* The last or the final stage in the above process is the presentation stage. This stage involves displaying the findings from the 2<sup>nd</sup> step in a expressive way. The results of various analytics are compiled, interpreted and presented to users in a format that is simple to understand. To present this useful information, many visualisation techniques may be used. There is a Visual Dashboard which comprehends and displays information from various sources. Advanced visual analytics go further than simply presenting information. Some extra support may also be added by data analysts and statisticians in this stage. If the final results presented are not interesting or have low predictive power, there is a possibility of returning to the understanding or capturing stage to adjust the data used in analytics. This system supporting social media analytics can go through several reiterations before it is really expressive. Data predictors and statisticians play a vital role in this by helping in developing and testing the system several times before they are used by others.

### **3 Social media analytics tools**

As per different levels of business requirement, there is a huge collection of tools available that offer social media analytics. The tools work on a logic designed for analysis, which involves selection of data, pre-processing of data, and transformation of data, data mining and evaluation of hidden patterns. Boone and Kurtz (2013) explained that Social media analytics deals with ongoing monitoring of social media platforms, usually tracking social media activity on blogs, wikis, news pages, micro blogs such as Twitter, social networking sites, video/photo sharing websites, forums, message boards and user-generated content. Various technologies are used by social media monitoring platforms for tracking and measurement. Facebook's Graph API provides social media monitoring solution products that connect to extract data from social media platforms.

Many businesses in social media monitoring and analytics contact data providers every time an end-user generates a query. Social media management tools can help companies listen, manage, measure, and respond to social web conversations about their brand. Several companies have developed tools to help track a number of social media platforms from blogging to online video to internet forums. With more and more social media analytics tools popping up on the market, keeping track of what is happening has become challenging. Social Media Analytics tools can be further categorised depending on their functionality and availability. Two broad categories of the Social Media Analytics tools are:

- open source and proprietary tools
- real time and offline tools.

### 3.1 Open source tools

Open source tools are very much popular for the Social Media Applications, these are the tools for which the source code is willingly published for use and is modified from its original design (economictimes, 2018). They are freely available for usage and do not need a commercial license. The licenses are held by a user community, and not by a profit making company. Some of the open source Social Media Analytics tools have been presented in this section: *Socioboard* (<https://www.socioboard.com>): This open source tool helps businesses in understanding and connecting with the social media's ability to make further sales. Functions such as maintaining accounts for social media, analytics and reporting are performed by these tools. The dash board provides complete predictive analysis features. Data points from different data sources are collected and categorised according to more than thousand groups which facilitates provision for consumer oriented publicising data to industries and makes. It works in real time and helps in sentiment analysis. Socioboard provides the most competent app for managing social media data anytime and anywhere.

*Hootsuite* (<https://hootsuite.com>): This social media analytics tool works with both options of free and paid services. It is a tool, which examines real time data. It has a single dashboard, which allows one to monitor and post messages on Facebook, Twitter, LinkedIn, Google + and several other social networks. Marketers are able to assign tasks, communicate and also schedule messages. It drives ROI for any business. The facility of generating weekly reports along with excellent team management facility offered by this tool is especially useful in case of multiple people handling the social media accounts. It can monitor up to 10 social profiles and supports features like Auto content scheduling and bulk scheduling.

*Social harvest* ([www.socialharvest.io](http://www.socialharvest.io)): It is an open source and free software, which is designed to be a data gulping machine on hardware or in the cloud. This majorly works for Twitter and Facebook. Highly customisable dashboard can have room for visualisation of any data with widgets. Its goal is to provide insight for social media for individuals and small businesses. Primary focus of this tool is cost effective hosting and is providing a scalable and flexible platform. The tool helps in doing predictive analysis and works in real time. It is a very efficient and scalable tool. However, it has not been designed as an enterprise tool.

*Google alerts* (<https://www.google.co.in/alerts>): This is free tool, which uses targeted keywords for monitoring huge amount blogs and latest sites. It provides alerts or batch reports, if any new content is received. It works for blogs, news, websites etc. and generates batch reports in real time. Google Alerts are in the form of email updates based on the latest relevant Google results (blogs, news, etc.) depending on one's searches. The topic which is to be monitored can be entered, and then a preview of the type of results received can be seen. Some practical uses of Google Alerts include monitoring and developing a news item and keeping a watch on the current happenings at competitor or industry front.

*TweetDeck* ([https://web\(tweetdeck.com\)](https://web(tweetdeck.com))): TweetDeck is an application which has a dashboard and works for managing the Twitter accounts. It is a free tool and works realtime for the Twitter. It also searches for multidimensional social media applications that allow publishing. TweetDeck works with the Twitter API and allows users to send and receive tweets and view profiles. TweetDeck was an independent application originally, however it was acquired by Twitter. It is the most powerful Twitter tool for tracking, coordinating, and interaction in real-time. This tool can manage multiple accounts, schedule Tweets for future posting and build a collection.

*Quickmetrics* (<https://quickmetrics.herokuapp.com>): QuickMetrics is a free and easy to use product for digital marketers, product managers, corporate communications and public relation teams to get more outcomes from their investments across social media platforms. It is designed to generate data from any platform that allows Facebook, Twitter, Instagram, Pinterest, YouTube, Google+, Complaint forums, e-commerce forums, websites and blogs. This basically generates revenue from social websites and works offline. The events on the client side website can be tracked using a client-side JavaScript. This is a very good tool to compare one's own performance with reference to the competitors.

*Howsociable* ([www.howsociable.com](http://www.howsociable.com)): This is a free tool, which indicates a clear level of the activity for a particular brand in a given week. This has a different approach to social monitoring. It gives detailed scores for different social media platforms facilitating one to see which social media platforms can work best for the company and which call for further development. In addition, brand magnitude can also be seen across social networks, including LinkedIn, Google+, Tumblr, YouTube and Reddit. It is one of the easiest ways to identify that where does one needs to rethink and reshape strategy. It measures social performance and can work on historical data as well. The software works both offline and real time.

*Followerwonk* (<https://moz.com/followerwonk>): Both the free and paid versions of the software are available. If one has the need for social data limited to Twitter, one can be connected with a single profile and get insights on social rankings. It can also be used to view followers, their locations, and when they are active. With this tool, one can search for Twitter profiles, as well as search for keywords with limitations. It helps in optimisation and works offline. Followerwonk helps in exploration and growth of social graph. One can compare follows/followers, view follower losses and gains and maximise times to tweets. Here, all twitter follows and followers can also be sorted. The free option allows one to connect a single profile. However for multiple profiles, the costs may vary.

*Viralwoot* (<https://viralwoot.com>): This tool also has got both the free as well as paid versions. This is the best promotion tool for Pinterest, along with scheduler and management and analytics tool used by individuals and businesses. This platform gives more exposure for Pinterest profiles. It helps in engaging influencers and boost performance. The key areas are the basic analytics like Spam and SEO Check and best Pinning Time. This application works both offline and real time. Viralwoot also offers a 'seed' system, where other people can be followed or repined, which earns followers. The upgraded version has features like Pinterest content manager, influencer manager, and drip pinning.

*Socialmention* (<http://www.socialmention.com>): This tool is used as a search and analysis platform for social media and performs real time monitoring of social media websites. It collects and combines user created content from across the world into one flow of information, which can be used for taking useful decisions. Socialmention allows one to create alerts for one's brand, one's industry, one's company, name or competitors. This is quite popular among people, who are enthusiastic for social media and this tool can monitor numerous social media sites. This is perhaps among the finest free listening tools in the market as it analyses data in more depth and measures the influence within 4 categories: Strength, Sentiment, Passion, and Reach. Additionally, it also exhibits top keywords, hashtags, and websites.

### 3.2 Proprietary tools

This type of software is a software machine for which the publisher of the software or another user holds intellectual property rights that are generally copyrighted by the source code. They are the sole domain of their creators or publishers and cannot be copied or distributed without their licensing agreements being complied with. Most popular proprietary tools for the social media analytics have been presented in this section:

*Meltwater* (<https://www.meltwater.com>) is an online business intelligence service. It is constantly looking for new sources of relevant keywords for its customers. Meltwater Buzz is a web-based social media measurement tool to track and analyse user-generated content. It has a database that connects journalists to their most relevant topics using natural language processing technology. It works in real time and is a paid tool. Solutions for many marketing and business problems can be obtained from Meltwater.

*Buffer* (<https://buffer.com>) – Scheduling the social media posts is Buffer's primary function. It allows for scheduling of posts to a single platform. Users can see how their posts performed over a single day, week, month or a quarter. Twitter, Facebook, LinkedIn, Google+, Pinterest and now Instagram are all supported on it. It also gives a breakdown of which posts were popular the most and which the least, which posts got the maximum clicks, mentions, and re-tweets etc. This tool can work offline and is a paid as well as free tool. It keeps sharing the content for the entire day. This also helps to create or customise the images as per size required. In addition, it gives options of driving traffic and increasing fan engagement. There are powerful publishing tools, which can easily share the content across multiple platforms.

*Cyfe* ([www.cyfe.com](http://www.cyfe.com)): This is a self-service interface that analyses, and transforms data from various integrated business intelligence sources. Tracking and controlling all company indicators in a single location is a successful application. Cyfe dashboard is an

online platform for building company dashboards in real time. It offers a browser-based dashboard that enables business users to connect to various data sources, automate data collection, analyse, and then turn and visualise business intelligence data. This works for platforms like LinkedIn, Facebook, Twitter etc.

*DataSift* ([datasift.com](https://datasift.com)): It is a paid social media analytics platform, offering a number of products. It works for platforms like LinkedIn, Facebook and Twitter. It is a social media data platform that allows businesses to compile, process, and take information from public social conversations. DataSift is an intelligence leader in human data. It is the only independent social data provider for blog and news data. It integrates social, blog and news data in one place and presents normalised and enriched view for accurate real time analysis. It saves time by applying a single filter across multiple data sources when we require both historical and real time data filtering.

*Brandwatch* (<https://www.brandwatch.com>): This is a self-serving software that stores social media data to provide information and means for businesses to monitor different segments in order to evaluate the online presence of their brands. The tool includes blogs, news sites, forums and social networks such as Twitter, Facebook and others. Users can scan data, and use charts, categorisation, analysis of sentiments and other features to provide additional details and analysis. This is also a paid tool. It is a powerful and responsive social media listening and analytics platform. It gives an instant access to conversations from any part of web.

*Sproutsocial* (<http://sproutsocial.com>): It is a very useful tool, which helps in finding new customers which can grow social media presence. It can schedule Twitter content and also all the social media profiles of clients' can be monitored in real time. It is a chargeable tool and the cost is USD 39 per month. Sproutsocial lets companies connect on social media with customers, collaborate through teams, and assess the success of their efforts. The Sprout platform allows users to integrate into Twitter, Facebook, LinkedIn, Instagram, Google + and many others.

*Crowdbooster* ([crowdbooster.com](http://crowdbooster.com)): This is an analytics software which works preferably for Twitter profiles and Facebook pages. The statistics generated by Crowdbooster are compiled in a customisable dashboard and includes insights about the most valuable followers, the ideal time for posting material, and noteworthy statistics and mentions that may require extra attention. It is a real time tool and a paid tool. It also talks about the long term engagement benefits of a one- time social media campaign. Crowdbooster analyses the data to automatically tell anyone, when is the best time to post, who can be engaged, what is going right and what opportunities exist for improvement. Weekly reports can be obtained with this tool.

*SocialBakers* (<https://www.socialbakers.com>): This analytics tool works for platforms like Facebook, Instagram, Twitter etc. and comprises of all necessary resources needed to monitor multiple profiles. It also tests key indicators of the results through competitive intellect. The paid plans come with an administrative reporting alternative that comprises of actionable statistical summary recommendations and predictive analysis with benchmarks. This offers real time analysis. One can measure the success metrics across all channels and this tool specifically helps one in benchmarking against competitors across various channels.

*Tailwind* (<https://www.tailwindapp.com>): This tool focuses on Pinterest and Instagram. It does spontaneous scheduling of pins. It also gives critical data related to repins, likes, comments, traffic along with revenue on scheduled pins. It analyses the trending topics, monitors the conversations real time and content insights to deliver all what the audience wishes for. It also can keep a track of competitors and find out what is working for them. This is a paid tool. It works for both small businesses and large organisations. It helps in better content management and discovers trends about brands and industry. It also promotes brand awareness and drives traffic for a particular platform. The Tailwind Plus version starts at USD 9.99/month for bloggers and small businesses. One can track key performance indicators to evaluate if the strategy is working.

*Viralheat* (<https://www.viralheat.com>): This is also a real time social media monitoring tool, which is used for analysing video sites, blogs, social networks, groups and forums. It provides predictive analysis and is a subscription-based tool. It has the ability to put a restriction on the profiles by location. They are a great method for powerful monitoring of social media campaigns in a region. It has features for accounts management, monitoring, analytics and publishing. Based on fans, mentions, and re-tweets, the strength of a Twitter handle is calculated. Users are paid depending on the number of accounts, references, and profiles they use. The app has a free and a paying option.

*Tweetreach* (<https://tweetreach.com>): This tool analyses certain aspects such as who reads the tweets and how they are communicated. Tweetreach evaluates the real effect and consequences of discussions on social media. It gives real time monitoring of reports and is subscription based. By using a hash tag search, it presents a basic data about how long a particular tweet has travelled as well as how many people are following it. This majorly works for Twitter and a free trial is also available. It is a good method to find out who are the most popular fans, indirectly directing one towards the right people to approach while sharing and promoting content online.

*Agorapulse* (<https://www.agorapulse.com>): The main focus of this tool is on Facebook and allows one to see simultaneous comparison of their brand with others. It is a real time paid analytics tool, which recommends promotional applications as well. The cost is USD 29 per month. It has 24/7 syncing apps that gather all new content and show it as fresh up to review. At a glance, the alerts show how many new things are pending for analysis. The tool can filter between 'fresh' and 'old' contents. It facilitates creation of custom tags for users' tweets and comments to categorise them, and find them later easily. One can publish onto Facebook, Twitter, LinkedIn, Google + and even Instagram from one single dashboard.

*GaggleAMP* (<https://gaggleamp.com>): This tool lets one to get the most out of employees' friends and connections. It mainly focuses on LinkedIn and works both offline and online. A Gaggle can be created within an organisation. The employees and coworkers can send out a social media message through this. One can reach their fans and networks. It is a paid tool and starts at USD 25 per month. It provides powerful social media amplification tools to support employee advocacy and brand loyalty among customers. It has an easy to use interface, backed with powerful features, enables social media managers to do more and control more. It helps build powerful actionable reports that visually show trends and success.

#### 4 Comparative analysis of the tools

There are plenty of tools available for the social media analytics area. Each of them has its own applications, advantages and limitations. Also, each one is suitable for certain specific social media platforms. Some of these tools are real time tools, which lets the user to see the reports and the analysis live. An important question for the analytics is to measure whether people's online engagement influences their actions and behaviour offline? Thus, the tools, which can track these offline activities, can be very much valuable. A comprehensive comparative analysis of the tools has been presented in the Table 1.

**Table 1** Comparative analysis of the social media analytics tools

<i>Features → Tools ↓</i>	<i>Social media platform support</i>	<i>Type of analytical support</i>	<i>Real time/offline</i>	<i>Billing method</i>
Agorapulse	Facebook	Comparison between brands	Realtime	Paid
Brandwatch	Twitter, Facebook	Sentiment analysis	Realtime	Paid
Buffer	Twitter, FB LinkedIn	Scheduling of posts	Offline	Paid
Crowdbooster	Facebook, Twitter	Most engaged customers, statistical analysis	Realtime	Paid
Cyfe	LinkedIn, FB, Twitter	Automatic data retrieval and analysis	Real Time	Freemium
Datasift	LinkedIn, Facebook, Twitter	Filtering of historic data, effective campaigns	Real Time	Paid
Followerwonk	Twitter, Instagram	Exploration and growth of social graph	Offline	Free and Paid
GaggleAMP	LinkedIn	Create gaggle and send message	Realtime and offline	Paid
GoogleAlerts	Blogs, news etc.	Batch reports	Realtime	Free
Hootsuite	Facebook, Twitter	ROI for business	Real Time	Free and Paid
Howsociable	Twitter, Facebook	Social performance	Offline/Online	Free
Meltwater	Facebook, Twitter	Business intelligence	Real time	Paid
Quickmetrics	Facebook, Twitter, Instagram,	Generate data metrics, calculate ROI	Offline	Free
Social Bakers	Facebook, Instagram, Twitter	Predictive with benchmarks	Realtime	Paid
Socioboard	GoogleAnalytics, Twitter, Facebook	Predictive analysis, sentiment analysis	Real Time	Free
Social Harvest	Twitter, Facebook	Predictive analysis	Realtime	Free
Socialmention	Websites	Aggregates user generated content	Realtime	Free and Paid

**Table 1** Comparative analysis of the social media analytics tools (continued)

<i>Features → Tools ↓</i>	<i>Social media platform support</i>	<i>Type of analytical support</i>	<i>Real time/ offline</i>	<i>Billing method</i>
Sprout Social	Twitter, Facebook, LinkedIn	Brand communication between customers	Realtime	Paid
Tailwind	Pinterest, Instagram	Schedule posts, monitor conversations	Realtime	Paid
TweetDeck	Twitter, Facebook	Managing accounts	Offline	Free
Tweetreach	Twitter	Hashtag searching	Realtime	Free + Paid
Viralheat	Twitter, Blogs, Facebook	Predictive analysis	Realtime	Paid
Viralwoot	Pinterest, Instagram	Engage influencers, boost performance	Offline/Real time	Free and Paid

## 5 Challenges in using social media analytics tools

Initially, the social media analytics was mainly used for real time tracking of fans, followers and website visitors. Nowadays, many better tools are available, which can reduce big data into a more manageable group of metrics. For several companies, being able to evaluate and forecast consumer and client behaviour with social media data is a new paradigm change. If properly implemented, by capturing blind spots and making smarter choices, it can create improved versatility, efficiency, responsiveness, anticipation and ability to meet consumer needs (Sen et al., 2016). However, unfortunately, many businesses still resist implementation of social media analytics and struggle to produce actionable insights from these metrics. There are a number of challenges faced by organisations as far as implementation of Social Media Analytics is concerned. These include:

*Lack of Technical skills and Ignorance about Tools:* Bhoganadam et al. (2017) argued that in terms of lack of electricity, deficiency of capital, including unavailability of raw materials, high cost of raw materials, nonexistence of technological upgrading, shortage of machinery and equipment, absence of quality measures, deficiency of knowledge, lesser research and development facilities, deficiency of demand, shortage of production capacity, less education, etc., business enterprises have been facing production challenges. This results in many decision-makers also sometimes lacking technical skills. Often, social media is not valued and is ignored within the organisations. Especially, real-time social media analytics create serious challenges for many organisations. Organisations follow an old pattern which means taking months to gather data and then analysis. These organisations do not use social media analytics tools for strategic decision-making because of the following constraints:

*Visualisation of Real time complex data:* The growing emphasis on social media data and its ability to affect almost every field of the industry gives it the opportunity to be seen as a new option for companies. Visualisation of real-time social media analytics data is a key element that is involved in developing details that matter. When the values are simply displayed graphically, it helps in making fast interpretations necessary for making

decisions with real-time data. Many organisations, however, also struggle to incorporate technical and analytical systems effectively in order to take advantage of some of the potential knowledge of these tools. Much of the early applications of collecting a wide range and volume of data were within large organisations. Ogbuokiri et al. (2015) said that mostly larger enterprises have launched initiatives to complement their analytical proficiencies. Adding more complex algorithms and also using models for decision making provides deeper insights, especially when visualised. The whole process thus requires lot of expertise and effort which is generally lacking in many organisations. As per a paper in your story (2017), because of an unawareness, fear of exorbitant prices, data protection issues, and immense unused data, some companies also fail to take advantage of this.

*Poor Handling of Data:* Mittal (2017) were of the opinion that in today's connected world, knowledge as a highly valued commodity is rising in volume like never before. The UK e-skills survey highlights an exceptionally low awareness by small business representatives of big data analytics, while about 30–40% of the representatives of larger companies appear to have a fair or very good understanding of data analytics. The process of generating useful information for end-users requires sufficient infrastructure to capture, process and handle large quantities of data (Coleman et al., 2016). The data used by analytics is mostly unstructured. However, blended formats of data may be available that are not always ready for review. This unstructured data is very challenging for any kind of real time analytics as the interpretations based on the analysis also need to be in real time. The unstructured data needs to be transformed to structured form. Hence, social media architecture requires added techniques to organise data in organised formats where relevant information is mined, transformed and integrated (such as people, relationships between them, etc.). It is not easy for users to handle this kind of unstructured data and businesses are normally limited by constraints such as storage, capital, and security.

*Uncertainty of reliable data:* The creation of an application for data analytics also involves a mixture of various types of data that are not inherently owned by businesses. Data is currently accessible from a wide range of sources, from online public statistics services to marketplace data (Coleman et al., 2016). However, accessibility does not inherently combine with the usability of such data, as formats are often difficult to interpret in the latter. A wide variety of social and structured information can be obtained from multiple sources. It is difficult to say, which the most reliable source is (Kumar and Vidhyalakshmi, 2018). Thus, reliable social media analytics cannot be generated with respect to any information. This dynamic IT infrastructure necessitates a proficiency that can span from system setup and configuration to management of databases, programming, analytical, explanatory and creative skills. In large organisations and projects, these skills are distributed among quite a lot of individuals unlike small organisations which have smaller IT teams.

## 6 Conclusion

Businesses have taken up the social media platforms as a continuous, inexpensive and effective method of communication and advertisement. The long term and constant monitoring of data metrics can help companies, in gaining knowledge about the customers from different perspectives. This can further lead to high conversion rate and

the retention rate of the customers. However, this requires a careful understanding and choice of the social media analytics tools and the constant monitoring of social media platforms. Available social media analytics tools should be mapped to the specific knowledge needs of the organisation and they should be implemented and monitored accordingly. Outcomes from the social media analytical tools need to be well understood and combined into the business strategy to reap their actual benefits.

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