

Social Media Data Analytics for Marketing Strategies

The Path from Data to Value

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Abstract: The analysis of social media data to extract new insights has attracted much attention, especially in the field of Marketing. Few researchers, however, have studied both the concepts of Social Media Data Analytics (SMDA) and Marketing Strategies. Previous publications have only focused on a particular technique or a well-defined Marketing Strategy in a specific context. To address this gap, this paper aims to explore how Social Media Data Analytics can guide and affect Marketing Strategies, and provide an overview of the range of Social Media Data Analytics techniques related to Marketing Strategies. We conducted a systematic review of 120 papers published between 2015 and 2021 on SMDA in Marketing. The findings are presented in terms of the main social media platforms, publication date, journal quality, social media data types, analytical techniques, fields of application, firm size, and related Marketing Strategies. The SMDA techniques are classified into six categories: Sentiment Analysis, Artificial Intelligence, Data Mining, Statistics, Coding and Modelling, and Simulation. A set of detailed Marketing Strategies guided by SMDA are also presented, as well as an integrative framework mapping how SMDA creates value. The results highlight several SMDA techniques that still lack exploration and outline their relevance.

Keywords: Social Media Data Analytics (SMDA), Marketing Strategies, Systematic Literature Review (SLR), Platforms, Techniques

Introduction

The enormous increase in the use of social media platforms in our daily lives has led to a rapid accumulation of heterogeneous and unstructured data, which shares multiple characteristics specifying Big Data ([Bazzaz et al., 2021](#)). To get new advantages and opportunities, researchers from different disciplines have tried to analyze data using several techniques. Today Social Media Data Analytics (SMDA) is becoming an emerging and topical research area ([Saggi & Jain, 2018](#)). The main problem facing analysts and practitioners is that traditional analytical

techniques have become inefficient and sometimes unable to manage this huge amount of data (Kaabi & Jallouli, 2019; Rusetski, 2014). This has created new opportunities, not yet fully exploited, to analyze Big Data in order to discover and extract information that can provide added value in different areas (Toivonen *et al.*, 2019). SMDA is defined as the process of using suitable analytical techniques, methods, and tools to collect and analyze social media data in order to solve specific problems and extract useful insights (He *et al.*, 2015; Wang *et al.*, 2020). Among different areas, the concept of SMDA is widely applied nowadays, remarkably, in the field of marketing (Rathore *et al.*, 2020; Wang *et al.*, 2020). Despite that, the marketing literature still lacks studies aimed at improving Marketing Strategies through SMDA. It is true that many researchers have tried to adapt and extend analytical methods and techniques for social media data to satisfy marketing purposes, but rarely with a clear outline about the advantages that can be offered by each technique. There is still an ambiguity on the best choice of techniques for each type of data and each Marketing Strategy specifically. Thus, the relationship between SMDA and Marketing Strategies has not yet been sufficiently investigated. This study consists of a systematic literature review aiming to understand how SMDA can create value and provide benefits to Marketing Strategies by answering the following research questions:

- Q1: What SMDA techniques and methods have been covered in previous research in the field of marketing?
- Q2: Which Marketing Strategies have been mostly guided by these techniques?
- Q3: What benefits does SMDA provide for Marketing Strategies?
- Q4: What are the most used platforms and data types in SMDA for Marketing Strategies?

This paper is organized as follows: The next section presents the concept of SMDA and its use in Marketing. The second section briefly describes the concept of Marketing Strategy as well as its relationship with SMDA. The third section explains the methodology of this study. The fourth section presents the main findings and results. Finally, in the fifth section, a brief conclusion, limitations and some suggestions for future research are presented.

Social Media: Big Data, Analytics and Marketing

Social Media: A Big Data Generator

Social media allows users to spontaneously share unlimited data (information, images, videos, discussions, etc.) and generate a flow of very large data. For example, in 2021, every 60 seconds, 95,000 Stories were posted on Instagram, 500 hours of videos were uploaded on Youtube, and nearly 70 million private messages were added via Facebook Messenger and WhatsApp (Statista, 2021). Big Data originates from the dynamic and increased use of social

media and other different sources ([Gani et al., 2015](#)). Kitchin ([2014](#)) considered that social media data is a source of Big Data defined by a high rate of data accumulation, internal variability, variable veracity, and large volumes of data. In the same way, Bazzaz *et al.* ([2021](#)) indicated that social media data is characterized by the 5V's of big data: volume, velocity, variety, value, and veracity. In this context, researchers have generally referred to social media data as "Social Media Big Data" ([Lynn et al., 2015](#)). Social media are among the main generators of Big Data and the dependence of users on social media leads to a huge volume of data ([Laney, 2001](#)). Stieglitz *et al.* ([2018](#)) argued for their use of Big Data literature in social media research by the fact that the two concepts share multiple characteristics. So, to understand how to manage social media data, it is important to know and understand how researchers have analyzed Big Data. In this sense, several recent studies were developed in order to discover the analytical characteristics of social media data that differ from Big Data.

Social Media Data Analytics (SMDA): Definition and techniques

SMDA is the process of extracting intelligence to meet given requirements and goals, through the processing and development of techniques and tools allowing the collection, analysis, reduction, and visualization of social media data ([Lee, 2018](#); [Wang, 2020](#)). To analyze this huge data effectively, in order to obtain consistent results, it is important to make the right choice of analysis methods ([Lv et al., 2017](#)). Therefore, many new methods and techniques have been widely used in recent years, including artificial intelligence, machine learning, classification tree analysis, regression analysis, genetic algorithms, sentiment analysis, topic modelling etc. ([Amalina et al., 2020](#); [Chebil et al., 2021](#)). Based on Stieglitz *et al.* ([2018](#)), the main SMDA methods are statistical analysis, social network analysis, sentiment analysis, content analysis, and trend analysis. These methods cover a wide range of techniques that can be used separately or combined appropriately. Galetsi, Katsaliaki & Kumar ([2020](#)) have classified these techniques into eleven groups: Machine learning, modelling, social network analysis, optimization, visualization, simulation, data mining, web mining, text mining, forecasting, and statistics.

The application of these techniques to deliver useful information has become a challenge for researchers in several disciplines, especially in Marketing.

Social Media Data Analytics and Marketing

Among several disciplines, marketing is the most affected by the evolution of data ([Tdan, 2018](#)). This context has pushed academics and practitioners in marketing to analyze social media data using several analytical techniques. For example, Pepsi and McDonald's used SMDA to derive competitive advantages ([Grimes, 2013](#)). Marriott, the multinational hotel

company, analyzed their own tweets, Facebook posts and Instagram photos to improve their brand presence, as well as guest engagement ([Golden & Caruso-Cabrera, 2016](#)). Argyris *et al.* ([2020](#)) carried out a study aiming to increase consumer engagement with the brand using deep-learning algorithms to analyze data available on Instagram. Aswani *et al.* ([2018](#)) adopted SMDA to provide insights into customer perceptions from Twitter using network and content analytics. Benslama & Jallouli ([2020](#)) conducted a literature review to understand how social media data clustering techniques can help marketing decisions.

Social Media Data Analytics and Marketing Strategies

Marketing Strategies: Definition and classification

According to Ritonga *et al.* ([2018](#)), a company that does not properly study its marketing strategies risks losing its position in the face of difficult competitive conditions. Marketing strategies represent a path to achieve several marketing benefits ([Wong, 2007](#)). Several researchers have tried to find the most appropriate definition for the concept of “Marketing Strategy”. According to Elansary ([2006](#)), Marketing Strategy is a process that includes all the strategies of targeting, segmentation, differentiation and positioning, to create, communicate and propose an offer to a target market. Vincent ([2008](#)) defines Marketing Strategy differently: “Marketing Strategy is the analysis and selection of target markets with the development and maintenance of an appropriate marketing mix to meet the target market's needs”. Hong & Nguyen ([2020](#)) considered Marketing Strategies as a full plan consisting of all marketing goals. In recent years, several researchers have agreed that Marketing Strategies are not limited to the simple use of 4Ps, which must not operate in isolation, and that the Marketing Mix paradigm still remains valid for the Marketing Strategy concept but, at least, targeting, market segmentation or positioning must be included ([Campbell *et al.*, 2020](#); [Daniels *et al.*, 2021](#); [Wong, 2007](#)). In the same context, Armstrong *et al.* ([2014](#)) and Campbell *et al.* ([2020](#)) considered that Marketing Strategies are structured essentially around five categories: Targeting and positioning strategy; Product, service and brand strategy; pricing strategy; Channel and logistics strategy; and Communications and influence strategy.

In recent years, Marketing Strategy has evolved remarkably in three major directions: Digital, Data analytics, and Developing Markets. The use of new technologies, including SMDA, has profound effects on Marketing Strategies ([Grewal *et al.*, 2020](#)).

Impact of SMDA on Marketing Strategies

Using SMDA to improve Marketing Strategies represents an important challenge for researchers. Indeed, in the last decade several studies, in which the SMDA have been applied

to achieve Marketing Strategies objectives, have been published. To exploit competitive intelligence and to find market knowledge, Kim *et al.* (2016) analyzed textual data from Twitter using natural language processing and lexicon-based sentiment analysis. Pournarakis, Sotiropoulos & Giaglis (2017) analyzed Twitter data using data visualization (Word cloud), Latent Dirichlet Allocation (LDA), and Sentiment analysis to obtain inventory performance for Business-to-Business companies, and to help improve logistics strategy. Zhang, He & Zhu (2017) applied SMDA to identify useful customer knowledge. Marine-Roig *et al.* (2019) used Data Mining to analyze data extracted from travel sites in order to improve branding and positioning strategies in the field of tourism and destination. To help hosts improve their pricing strategies related to their property, Airbnb, the online marketplace, used Artificial Intelligence and Machine Learning techniques (Campbell *et al.*, 2020). In order to evaluate Marketing Strategies through social media, Yunus *et al.* (2020) used Krippendorff's Content Analysis to analyze two Instagram accounts of Grab, the most known online transportation provider application in Southeast Asia.

Although there are several articles talking about SMDA for a particular Marketing Strategy, the literature lacks studies encompassing the impact of SMDA on all types of Marketing Strategies and offering a global view of the analytical techniques that can ensure Marketing benefits. We attempt to fill this research gap through a Systematic Literature Review (SLR) on SMDA and Marketing Strategies.

Methodology

The SLR can identify research gaps and offer opportunities for future research (Paul & Rosado-Serrano, 2019). Such a review seems the most appropriate for the purposes of our study, thanks to its ability to produce a high-quality organization and synthesis of the literature (Wang & Chugh, 2014). The review process itself is "transparent, systematic, and reproducible" (Tranfield, Denyer & Smart, 2003). This review follows a three-step process: data collection, data analysis and data synthesis, as in Ng *et al.* (2020) and Vrontis *et al.* (2021).

Data collection

The search for articles was conducted in two major scientific databases: Science Direct and Emerald. This choice is justified by the fact that these databases offer the greatest coverage and are frequently chosen by state-of-the-art systematic reviews (Vrontis *et al.*, 2021). We identified a set of relevant keywords in relation to the key concepts of our study. Therefore, we used for article research a different combination between these keywords: "Marketing", "Social Media", "Data Analytics" and "Strategies". We limited our search to articles written in

English, published after 2015 (for topical articles), omitting conference proceedings, books, and other nonrefereed publications.

Then, as widely used in systematic reviews of the literature ([Vrontis et al., 2021](#)), we read carefully the titles and abstracts of all identified papers. The review focused only on papers that (1) Mainly discussed SMDA; (2) Were in the context of Marketing and Strategies; and (3) Indicated the used SMDA method or technique. Papers that did not meet one of these criteria were excluded from this review. This step yielded 120 papers.

Data analysis

After filtering and selecting papers, we read the content of each paper in order to extract useful information for our topic ([Danese, Manfè & Romano, 2017](#)). For each article, we extracted and specified the used SMDA technique/method, the studied Marketing Strategies, as well as the Marketing advantages offered by the SMDA.

Synthesis

In this step, the extracted data were grouped into eleven background variables: title, author, year of publication, journal, field, firm size, Social Media Platform, Data type, Analytical technique/Method, Marketing Strategy, and major findings. In addition, the obtained Marketing Strategies from the previous step were classified, based on [Armstrong et al. \(2014\)](#) and [Campbell et al. \(2020\)](#), into five groups of strategies. Likewise, SMDA techniques were categorized into seven groups according to their nature.

Main Results and Discussion

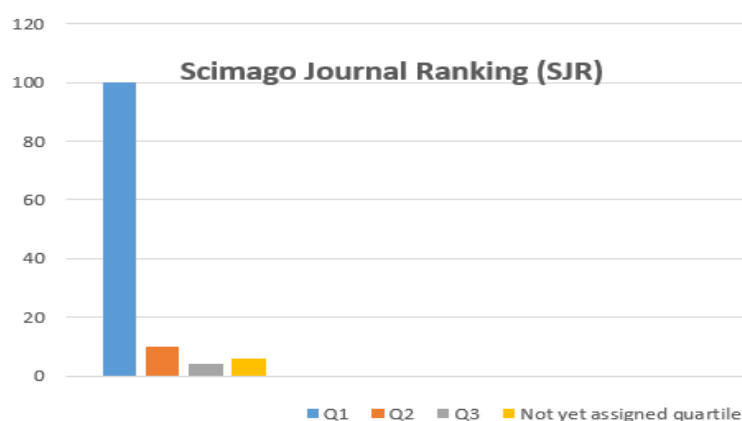


Figure 1. SLR Quality Assessment (Classification of journals according to their SJR)

The distribution of the journals present in our SLR database according to their classification on the Scimago Journal Ranking (SJR) permits us to check the quality of our obtained database ([Figure 1](#)). SJR classifies the journals into quartiles, with the first quartile (Q1), which includes journals with excellent and very high impact, and the last quartile (Q4) which

contains the journals with poor and very low impact. Therefore, we can confirm that our database is of very high quality, since 92% of the journals belong to the first two quartiles (Q1: 100 papers, Q2: 10 papers).

Regarding the size of the studied firms, of the 120 reviewed articles, only 40 indicated the size of the firms, and large companies significantly outperformed SMEs (small and medium-sized enterprises) in the use of SMDA for marketing purposes (89%).

In what concerns the publication date of the retrieved papers, results show that the topics of SMDA and Marketing Strategy won the greatest consideration in 2019 (31 papers), followed closely by 2020 (24 papers). Between 2015 and 2017, there was an upward trend with a slight decrease in the number of articles in 2018 (16 papers). The year 2021 displays a good number of articles although only five articles were found, since we only reviewed articles published during the first three months of the year (Table 1). These results show that SMDA and its impact on Marketing Strategies is an emerging issue that still needs more publications.

Table 1. The number of articles per year

YEAR	2015	2016	2017	2018	2019	2020	2021	TOTAL
FREQUENCY	9	13	22	16	31	24	5	120

The classification of articles according to the fields shows that the most concentrated fields on the application of SMDA for Marketing Strategies are successively: "Tourism, Destinations, Hotels, and restaurants", "Media, Marketing and Advertising Services", "Technology" and "Agri-business and food industry". The other fields are not yet well involved in this process, especially the fields of "Real estate", "Bioenergy", "Entrepreneurship, Start-ups, Employability and recruitment", and "Medicine, health and pharmacy".

Regarding the most used platforms for marketing data analysis, we find in the first place, Twitter, which is used by 60 articles, followed by Facebook (37) and Instagram (13). The other platforms and their frequencies of use are displayed in detail in Figure 2. It is important to draw attention to the fact that the famous professional site LinkedIn was not used by any study in this review.

Figure 2 shows that textual social media data is the most analysed data type with a frequency of 99 out of 120. This shows that other types of data require more attention from researchers studying SMDA and Marketing Strategies. This may be explained by the lack of analysis capacity of other types, such as videos, or by limited knowledge concerning the types of analytical techniques and their ability to provide useful knowledge.

Figure 2 brings together a detailed and rich list, extracted from our SLR, of SMDA techniques that have been used in providing important Marketing information. Future research can

combine or apply these techniques separately on different types of data according to their requirements in order to discover new insights.

The most driven marketing strategies by SMDA are Targeting and positioning strategy (78), followed by Communications and influence strategy (23), Product, service, and brand strategy (17), Channel and logistics strategies (5), and Pricing Strategy (1). Our SLR identified, for each type of Strategy, the main Marketing advantages offered by the application of SMDA techniques, obtained from the 120 studied articles (Figure 2). In addition, the content analysis of SLR articles indicates that, unlike the rest of the strategies, the Targeting and positioning strategy takes advantage of TripAdvisor more than Instagram.

We have classified the different techniques used for each type of marketing strategy. Results show that Sentiment Analysis and Artificial Intelligence techniques are the most applied techniques for SMDA to provide knowledge to “Targeting Strategy and Positioning”, and “Channel Strategy and Logistics”, while Coding and Modelling algorithms are the most adopted by analysts for other types of Strategies (Table 2).

Table 2. Crossing of Marketing Strategies and Methods

		Social Media Data Analytics Methods							Total (Strategies)
		Sentiment Analysis	Data Mining	Statistics	Coding and Modeling	Visualization	Artificial Intelligence	Simulation	
Marketing Strategies	Targeting and positioning strategy	28	22	11	15	3	27	0	78
	Communication and influence strategy	4	3	7	8	0	4	1	23
	Product, service and brand strategy	5	3	2	7	1	4	0	17
	Pricing strategy	0	0	0	1	0	0	0	1
	Channel and logistics strategy	4	2	0	0	1	4	0	5
Total (Methods)		38	29	19	30	5	37	1	120

The results illustrated in Table 3 demonstrate that to extract knowledge for Marketing Strategies, Sentiment Analysis is most applied in the following fields: "Agri-business and food industry", "Transport, air transport and airport", "Commerce and trade", "Automotive industry", "Media, Marketing and Advertising Services", and "Technology". Data Mining is also widely used in the sectors of "Commerce and trade", "Education and Culture", and "Tourism, Destinations, Hotels, and restaurants".

In addition, Coding and Modelling ranks first in the following fields: "Banking, Financial Sector and Insurance", "Education and Culture", "Politics and government", and "Media,

Marketing and Advertising Services". The use of artificial intelligence dominates in these fields: "Education and Culture", "Entrepreneurship, Startups, Employability and recruitment", "Automotive industry", "Media, Marketing and Advertising Services", "Medicine, health and pharmacy", and "Clothing, Fashion and Beauty".

Table 3. Crossing of Fields and Methods

	SOCIAL MEDIA DATA ANALYTICS METHODS							Total (FIELDS)
	Sentiment Analysis	Data Mining	Statistics	Coding and Modeling	Visualization	Artificial Intelligence	Simulation	
FIELDS Agri business, food industry	7	3	1	5	1	5	0	17
Banking, Financial Sector and Insurance	2	1	1	4	0	2	0	7
Commerce, trade	5	5	1	3	1	4	0	12
Transport, air transport and airport	4	3	0	2	2	2	0	8
Education and culture	1	3	1	3	0	3	0	8
Entrepreneurship, Startups, Employability and recruitment	1	0	1	0	0	2	0	2
Tourism, Hotels, and restaurants	5	8	7	6	1	5	0	25
Automotive industry	4	2	0	3	1	4	0	8
Media, Marketing and Advertising Services	8	2	3	8	2	8	0	23
Medicine, health and pharmacy	0	1	0	0	0	2	0	3
Politics, government	2	2	1	8	0	2	0	13
Technology	12	3	0	2	2	9	1	18
Clothing, Fashion and Beauty	2	1	2	1	1	5	0	8
Others (Real Estate 1+ Bioenergy)	1	0	0	1	0	0	0	2
Total (METHODS)	38	29	18	30	5	37	1	119

Finally, the results show that the use of several analytical methods and techniques in many fields is still very poor, maybe not used at all, like Visualization in the field of "Banking, Financial Sector and Insurance", and Statistics in the field of "Technology" (Table 3).

To provide an overview of the SMDA process for marketing strategies, Figure 2 proposes an integrative framework mapping these research findings about how SMDA create value to marketing strategies including methods and techniques. Figure 2 also shows, in a global way, the steps of SMDA starting with Social Media platforms going to the marketing decisions and advantages obtained thanks to SMDA.

The global view of the studied process makes it possible to understand, in a simple way, the contribution of our SLR and facilitates the observation of several important results.

For example, by taking a look at [Figure 2](#), we can quickly notice that Targeting and Positioning Strategies are the most guided strategies by SMDA compared to the strategies of the marketing mix elements. The same remark goes for SMDA methods. It is clear that some methods are negligible in terms of their use compared to others, such as Simulation Vs Artificial Intelligence.

Conclusion, Implications and Perspectives

This study aims to provide a useful piece of research on the use of SMDA in future marketing studies. Through a systematic review and a comprehensive view of the key aspects of SMDA, this paper encapsulates the majority of analytical techniques to support all types of marketing decisions. In addition, this study expresses that, once SMDA techniques, Data types, and platforms are chosen effectively; and challenges are well defined, the use of SMDA will maximize Marketing Strategies' value. The results of the SLR answered our research questions by providing a wide selection of effective SMDA techniques, as well as a detailed list of the Marketing Strategies' benefits provided by these techniques.

The implications of this study are that practitioners and researchers can quickly choose, according to their Marketing objectives, the suitable Social Media platform, the most correct type of data, and the most appropriate analysis technique. Another contribution is that this research represents a map that can inspire and guide researchers seeking to know the most used analysis techniques and understand what Marketing Strategies these techniques could guide. Therefore, this study generates knowledge in the area of SMDA and Marketing Strategies and provides directions for future researchers. Indeed, this study suggests that future researchers conduct more empirical and systematic studies on the SMDA and Marketing Strategies to explore more insights that may support a company to amplify the adoption of SMDA for the improvement of Marketing Strategies.

The results of this study show that the rate of use of SMDA for the benefit of pricing strategies, channel and logistics strategies is very low. Then, more studies on these topics should be conducted. In addition, the SMDA is poorly used by SMEs. Future studies could focus more on the factors that may assist SMEs to adopt SMDA. Moreover, the classification according to the fields indicates that a concern with SMDA for Marketing Strategies has been lacking in several critical areas, such as Bioenergy, Entrepreneurship, Start-ups, and Medicine and pharmacy. That result may encourage companies and researchers in these fields to take an interest in SMDA for marketing decisions.

Finally, the content analysis of articles in this SLR was carried out manually; thus, future research may use automatic analysis of articles through analysis software to make it possible

to process a greater number of papers and foster larger SLRs to shed more light on the role of SMDA for Marketing Strategies.

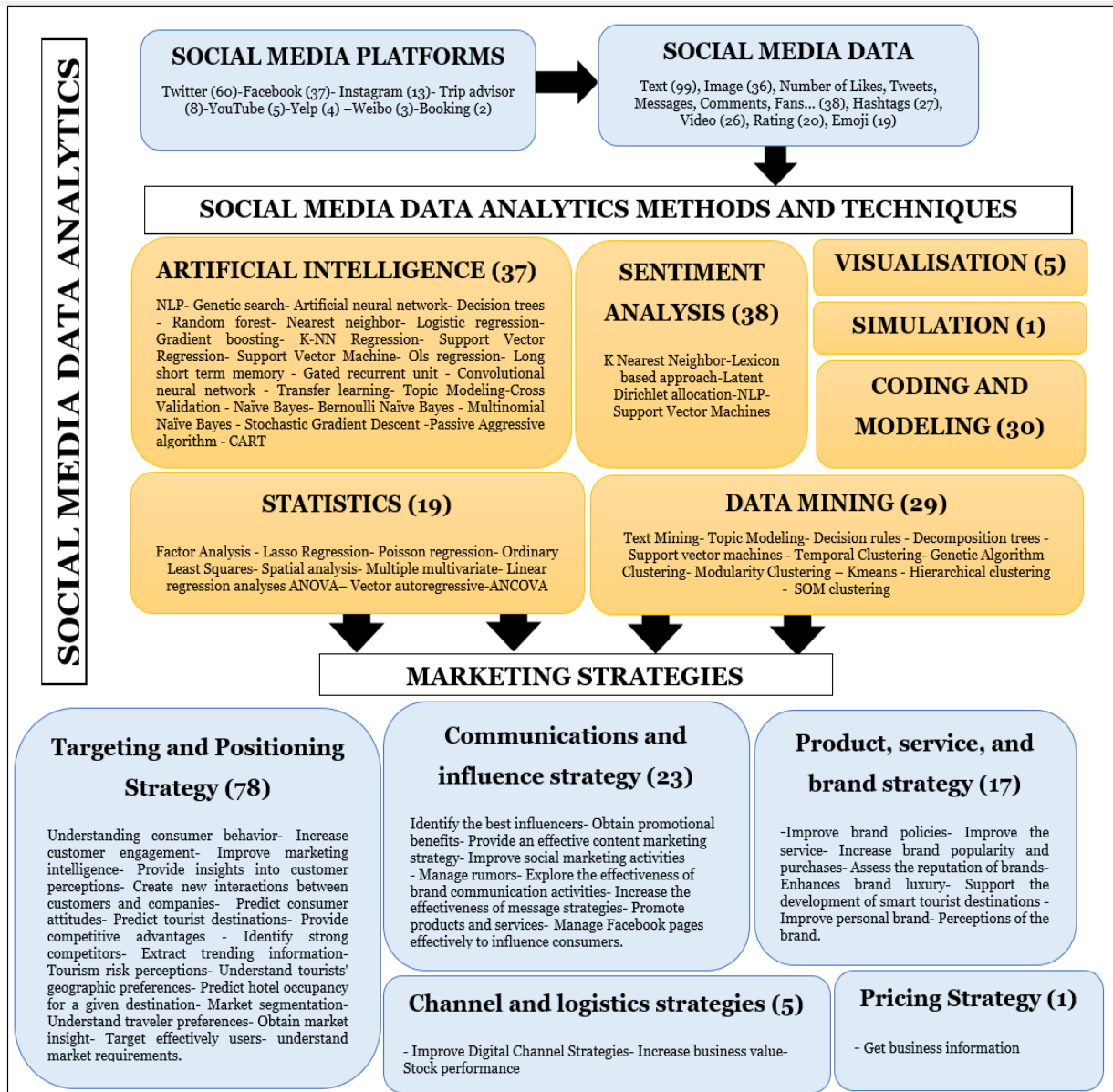


Figure 2. Social Media Data Analytics for Marketing Strategies: Theoretical Framework

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