NOVA IMS Information Management School

MDDM

Master Degree Program in

Data-Driven Marketing

FROM TRACK TO DIGITAL PLATFORMS

Analyzing Fan Sentiment and Engagement in Formula 1 Teams

Beatriz Gil Custódio

Master Thesis

presented as partial requirement for obtaining a Master's Degree in Data-Driven Marketing

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Supervised by

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July, 2025

STATEMENT OF INTEGRITY

I hereby declare having conducted this academic work with integrity. I confirm that I have not used plagiarism, any form of undue use of information or falsification of results along the process leading to its elaboration. I further declare that I have fully acknowledged the Rules of Conduct and Code of Honor from the NOVA Information Management School.

Lisbon, 3 July 2025

Beatriz Gil Custódio

ACKNOWLEDGEMENTS

Começo por agradecer às três pessoas mais importantes da minha vida. Ao meu pai, Jorge, o meu maior exemplo de fé inabalável e resiliência, de quem recebo sempre toda a atenção do mundo e que, todos os dias, é um verdadeiro exemplo de *joie de vivre*. À minha Mãe, Maria João, que tem o dom, como ninguém, de mover montanhas sempre que lhe peço ajuda, e que está sempre disponível para me oferecer um abraço ou uma palavra carinhosa de consolo. Ao meu Irmão, João, que, tinha tanta curiosidade em saber o que eu iria me tornar quando crescesse, e que hoje caminha ao meu lado, acompanhando e aconselhando cada passo que dou. Obrigada por me terem aberto a porta principal. Obrigada por tudo, são a minha maior sorte.

A todos os meus amigos, que tanto estimo, deixo uma nota de gratidão. Guardo uma menção especial para os Condóminos – Joana, Conceição, Pinto, Malheiro, Henrique, Lages, Maria e Macedo — com quem tive a sorte de partilhar a vida ao longo destes anos e que têm sido uma presença fundamental em tantos momentos felizes. À Mariana, uma colega insubstituível neste mestrado e uma amiga de verdade, que tive a sorte de encontrar neste caminho. À Belz, que nunca deixou de estar disponível para me ouvir e confortar durante todo este percurso.

À minha orientadora, professora Manuela Aparício, por quem nutro uma profunda estima desde o primeiro ano da minha licenciatura. Agradeço-lhe toda a dedicação, o tempo e o apoio incansáveis que me ofereceu ao longo de todo este percurso.

Por fim, a todas as pessoas que, de alguma forma, fizeram parte deste percurso.

O meu mais sincero obrigada a todos!

ABSTRACT

Formula 1 has been focused on increasing fan engagement, recognizing the crucial role that fans play in the success of teams and the sport as a whole. Understanding fans' opinions, what they appreciate and criticize, through their mentions on social media, offers important insights into their feelings and perceptions, specifically about the different teams, revealing how fan sentiment varies across the Formula 1 grid. This research follows a Design Science Research methodology to develop an artifact capable of identifying and analyzing high engagement moments within social media mentions. The artifact (process) is based on a mixed-methods strategy. Quantitative data from social media metrics were used to measure sentiment levels, while qualitative analysis helped interpret the contextual factors behind the peak moments of fan interaction. The research reveals distinct patterns of fan interaction tied to moments related to Home Races Successes, Teams Joins Announcements, Notable Victories, and Controversial Moments. As a key outcome, a Design Science-based artifact was developed, offering a structured way to analyze and respond to fan engagement data. This represents a contribution by combining data-driven insights with a practical and adaptable in future similar research.

KEYWORDS

Sport Fan Engagement; Formula 1; Sports Fans; Sentiment Analysis; Social Media Listening

Sustainable Development Goals (SDG)

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LIST OF ABBREVIATIONS AND ACRONYMS

AI	Artificial Intelligence
API	Application Programming Interface
BIRGing	Basking in Reflected Glory
DSR	Design Science Research
F1	Formula 1
FIA	Fédération International de l'Automobile
GP	Grand Prix
LMC	Liberty Media Corporation
MSSC	Motivation Scale for Sport Consumption
NLP	Natural Language Processing
NSS	Net Sentiment Score
SFMS	Sports Fan Motivation Scale
SII	Sport Interest Inventory
SMA	Social Media Analysis
SML	Social Media Listening
SOV	Share of Voice

1. INTRODUCTION

1.1. CONTEXT

Formula 1 (F1) is the pinnacle of motorsport, regulated by the *Fédération Internationale de l'Automobile* (FIA). The racing competition has always been renowned for pushing the limits of technological innovation and human performance, on and off the track (Formula 1, 2020).

Since the foundation in 1950 (Formula 1, 2025), F1 has been home to diverse racing teams, some of which have been part of the sport's legacy from the very beginning, while others are more recent participants in the competition. In the 2024 season, ten teams competed in the world's most iconic tracks, showing engineering excellence alongside elite driving capacity. This season lineup of teams comprised: Aston Martin, (Aston Martin, 2025), BWT Alpine (BWT Alpine, 2025), Scuderia Ferrari (Scuderia Ferrari, 2025), Haas (Haas, 2025), Kick Sauber (Kick Sauber, 2025), McLaren (McLaren, 2025), Mercedes-AMG (Mercedes-AMG, 2025), Racing Bulls (Racing Bulls, 2025), Red Bull Racing (Red Bull Racing, 2025), and Williams (Atlassian Williams Racing, 2025).

For a long time, F1 was often perceived as an *"old boys club"* (Wood et al., 2023; p.43). This reputation was primarily caused by the organization's failure to adapt to the digital era, marked by no marketing investment and absolutely no efforts to engage younger fans (Wood et al., 2023). In fact, due to the restrictions imposed by the F1 management, younger generations of fans, who highly value emotional engagement, were unable to establish a connection with their favorite teams and drivers (Youssef, 2023).

The shift in the pinnacle of motorsport began in 2017 when Liberty Media Corporation (LMC), a media company, acquired the commercial rights of F1 (Wood et al., 2023). Since the beginning, LMC objectives for the sport have always been focused on recovering a competition that was facing a decline in fans and spectators (Palermo et al., 2023). To achieve that, the media company focused on boosting fan engagement, especially through sharing more content on diverse social media platforms (Palermo et al., 2023). As the F1 CEO, Chase Carey, emphasized, this commitment has placed their fans at the core of everything the sport executes, empowering F1 to be the "*greatest racing spectacle on the planet*" (Formula 1, 2020; p.18).

In fact, fans are fundamental to the existence of any sport, serving as its main consumers and thus representing essential stakeholders (Brumbeloe, 2022). As Otmar Szafnauer, former team principal of Aston Martin, assumed: *"(…) without fans the sport would be totally different. So we have to listen to them"* (Cooper, 2021). Therefore, listening to the fandom and valuing their feedback has become essential for shaping the F1 future and ensuring its ongoing success (Geach, 2021). As acknowledged by Lee (2018), social media listening enables organizations to gain real-time insights into audience conversations, thereby presenting an opportunity for F1 teams to better understand their audience.

1.2. MOTIVATION AND RELEVANCE

As the Global Sports Innovation Center by Microsoft emphasizes, the sports industry is digitally transforming, particularly in what drives every sport: the fans (Córdoba et al., 2021). In the past, sports conversation was primarily mediated by broadcasters, who framed the public perception of sports teams (Coutinho da Silva et al., 2017). However, nowadays, fans, using social media platforms, have redefined this, emerging as powerful content creators and dialogue leaders within the sports industry (Coutinho da Silva et al., 2017).

As the biggest motorsport competition in the world, F1 had to adapt to the new digital reality and adjust its approach to fan engagement. Today, F1 has grown into an entertainment industry (Formula 1, 2020), known for its ability to continuously innovate and evolve, adapting to fan expectations (Ma, 2023). After 2017, the sport adopted a corporate strategy structured around six strategic pillars. Among them, one fundamental priority stands out in involving the fans, translated into the "*Engage*" pillar (Formula 1, 2020).

F1 is a team sport (Formula 1, 2025). Composed of ten independent teams, each with its own unique brand identity and reputation. As has been recognized by some F1 team principals (individuals who lead and manage the teams), nowadays, it is imperative for these teams to also engage and actively listen to their fandom (Cooper, 2021). Indeed, these individuals represent the primary sports audience and are indispensable for the sustained success and existence of any team (Brumbeloe, 2022).

Social media continues to be one of the most important platforms for both sports teams and their fans (Hussain et al., 2021). Through the analysis of social media interactions, organizations can better understand what their customers want, how they feel, and how they behave (Fan et al., 2014). Since fans are sports essential stakeholders (Brumbeloe, 2022), listening to their conversations on social media is important to staying connected and responsive to their expectations. It is important to note that sports teams failing to listen to their fandom risk losing sales (e.g., merchandise or tickets) and damaging their brand image (Coutinho da Silva et al., 2017).

In light of this, studying fan sentiment and understanding what drives the most social media engagement not only helps teams identify what fans appreciate most, but also what they criticize. It is important to note that a strong emotional connection between fans and a team often results in predominantly positive sentiment, which increases the likelihood of fans demonstrating support through merchandise purchases, sport attendance, and spreading positive word-of-mouth (Wann et al., 2019). For F1 teams, understanding fan sentiment and what fans are saying on social media goes beyond simply measuring engagement. It is a crucial strategy for maintaining strong fan relationships and keeping pace with the ever-evolving digital landscape (Geach, 2021).

1.3. OBJECTIVES AND EXPECTED RESULTS

The principal objective of this research is to study in which manner F1 fans express themselves on social media platforms and understand their sentiment regarding the ten teams that were competing on the track during the 2024 season.

To carry out this study, the first step consists of monitoring conversations on social media, capturing the fans' conversations about each team. Based on this, the research will apply social media approaches, in particular, sentiment analysis, and explore some social media metrics (e.g., unique authors and total mentions), to understand how each team is perceived by their fandom. This team-by-team fandom analysis helps identify and group repeated event patterns to find the specific moments that generate the most fan engagement on social media.

To provide the most accurate and complete analysis, this study will be guided by the following research question: **How does fan sentiment vary across the F1 teams, and which type of moments drive the most fan engagement on social media?**

The following objectives have been determined to serve as a guide for the research:

1. **Propose an Artifact:** Propose and test an artifact (method) based on the Design Science Research methodology, to develop a social media listening and analysis theoretical framework that can be used as a baseline to guide a Social Media Listening process.

2. **Fandom Sentiment Analysis:** Conduct an in-depth analysis to identify the key factors driving peaks in positive, neutral, and negative sentiment within the fandom on social media conversations regarding the F1 teams, with a particular focus on platforms such as X, Instagram, and Facebook.

3. **Identify the Types of Moments that Drive High Engagement in Social Media:** Identify and categorize the key moments that triggered the highest levels of fan engagement on social media during the on and off season, and associate each moment with the sentiment previously identified through sentiment analysis.

2. LITERATURE REVIEW

2.1. FANS AND FANDOMS IN SPORTS

To study and understand the essence of a fandom, it is essential to first explore what it means to be a fan in this domain and why fans play such a crucial role in sports. As Wann et al. (2019; p. 13) explain, a sport fan can be defined as the *"individuals that are interested in and follow a sport, team, and or athlete"*.

Nevertheless, in sports, spectator and fan are often perceived as the same (Wann et al., 2019), even though their level of engagement sets them apart (Bang et al., 2022). Sports spectators are individuals who watch sports, either by going present or by following it on some source of media (Wann et al., 2019), which means, individuals who just perceive sports as a mere form of entertainment. On the other hand, fans are much more than just bystanders. In fact, the word fan comes from the term "*fanaticus"*, which originally referred to someone with extreme devotion or enthusiasm (Samra et al., 2014).

Despite sharing the fan label, this group is naturally heterogeneous, since the level of fan involvement varies (Bang et al., 2022). Nevertheless, the sentiment of regard transforms these individuals into a united fan base community, or sport fandom, as it is commonly termed. Fans are individuals who are willing to dedicate both emotional and financial resources to support their favorite team (Coutinho da Silva et al., 2017). Indeed, as being a sport fan involves experiencing a wide range of intense emotions, sport fandoms can be described as a profound emotional connection and ongoing commitment shared by a community of devoted individuals (Anders, 2021).

Regardless of the intensity of connection to the sport, the positive impact of being a sports fan is acknowledged. The Maslow Hierarchy of Needs is a renowned theory that organizes human needs into five levels, starting with basic physiological requirements to self-actualization desires (Woo, 2020). As Woo (2020) noted, being a sports fan can benefit individuals by satisfying some of these needs, particularly those associated with Love and Belonging, Esteem, and Self-Actualization.

While being a fan offers benefits to individuals, sports fans are also essential to the success and growth of any sports organization (Córdoba et al., 2021). As McCaffrey et al. (2021; p.22) state, "*Sports have one of the largest megaphones available to reach: fans*". It is important to consider that fans are crucial stakeholders who, despite being outside the organization, are deeply affected by each decision and action (Brumbeloe, 2022). As highlighted by Gladden et al. (2001), fans with high levels of engagement are more likely to remain loyal to their favorite team even during poor performance times. So, it is evident that sports organizations must place fans at the core of their actions, making fan engagement a crucial strategy.

2.1.1. Driving Forces for Engage with Sports

Given what is known about fans, an additional question remains: what motivates individuals to engage with sports? (Wann et al., 2019). Like several authors mention, to identify what can truly be considered a motivation for being a sports fan, three approaches are often referenced in this field, namely, the Sport Fan Motivation Scale (SFMS) (Wann et al., 1999), the Motivation Scale for Sport Consumption (MSSC) (Trail et al., 2001), and the Sport Interest Inventory (SII) (Funk et al., 2001).

The SFMS, MSSC, and the SII frameworks propose eight, nine, and ten motivational factors, respectively (Wann et al., 1999; Trail et al., 2001; Funk et al., 2001). However, several of these motives are identical or closely related. Therefore, the first motivations to be considered in this literature will be those identified across the scales, as Wann et al. (2019) mention, specifically: Aesthetic, Entertainment, Escape, Eustress & Drama, Family, Group Affiliation, Self-Esteem & Achievement, and Sport Knowledge.

However, the SSI includes an additional motive which, while absent from the other frameworks, is also highlighted in Bang et al. (2022) study as a factor contributing to individuals engaging with sport. This motive is associated with National Affiliation. Providing support for athletes from our own country fosters a strong feeling of national pride and a sense of belonging (Seippel, 2017), an inherent characteristic in the reason mentioned above as Group Affiliation. This happens because, when forming our identity, we naturally categorize people into “our group” or the “other group” (Seippel, 2017). That is why we tend to support more athletes or teams who belong to our group, that is, those who share our nationality.

Broadly speaking, sports fans often feel a strong sense of shared success with the teams or athletes they support (Hirshon, 2020). Even without directly contributing to the result, fans experience a boost in self-esteem when their favorite team or athlete wins. This reaction is known as Basking in Reflected Glory (BIRGing), a psychological phenomenon where individuals align themselves with successful groups to feel proud (Cialdini et al., 1976). In moments of victory, fans feel part of something greater and shine through that association (Hirshon, 2020).

Therefore, for this research, nine key motivational factors will be considered as primary drivers of fan engagement in sport. Presented below, Table 1, outlines a description of the motivational factors considered in this study, adapted from the work of Wann et al. (2019) and Bang et al. (2022).

Table 1. Key Driving Forces for Becoming a Sports Fan

MOTIVATION	DESCRIPTION	BACKGROUND
Aesthetic	Fans value sport for the sense of beauty, dedication, and the skills inherent in it.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001.
Entertainment	Fans engage with sport because it offers an enjoyable leisure activity.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001. Bang et al., 2021.
Escape	Fans see sports as an outflow of their daily routines.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001.
Eustress & Drama	Fans derive positive stress (eustress) from the drama and uncertain outcomes of sports.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001.
Family	Fans perceive sport as a way to spend quality time with family and share common interests.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001.
Group Affiliation	Fans recognize sports as an important way to connect with others and strengthen their sense of belonging.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001; Bang et al., 2021.
National Affiliation	Fans engage with sport as a means of connecting with athletes or teams who share their national identity.	Funk et al., 2001; Bang et al., 2021.
Self-Esteem & Achievement	Fans follow sports to feel a sense of accomplishment and boost confidence when their favorite team or athlete succeeds.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001.
Sport Knowledge	Fans engage with sports to satisfy curiosity and deepen their sports understanding.	Wann et al., 1999; Trail et al., 2001; Funk et al., 2001.

2.2. THE PINNACLE OF MOTORSPORT

F1 leads as the highest tier in motorsport (Formula 1, 2025), renowned for its incredible speed, with drivers reaching up to 360 kilometers per hour in a single-seater (Wood et al., 2023), advanced motor engineering, and exciting race competition (Ma, 2023).

The nature of the sport calendar consists of several *Grand Prix* (GP) held worldwide. A typical GP took place throughout a weekend (Formula 1, 2025), beginning with practice sessions on Friday, followed by qualifying on Saturday, a crucial moment where drivers compete to determine their starting positions for the race (Shields et al., 2020). Finally, on Sunday, the race day happened. Teams, drivers, and fans engage in the excitement of an extremely challenging race (Formula 1, 2025). During the 2024 season, a total of 24 GP were held from 29th February 2024 to 8th December 2025 (Formula 1, 2024b).

To truly understand the evolution of F1, it is impossible to exclude the impact of the businessman, Bernie Ecclestone (Evens et al., 2023). From 1970 to 2017, Ecclestone took charge of F1 management (Wood et al., 2023). For almost 50 years, the businessman revolutionized the sport's global reach, turning F1 television broadcasting into a worldwide spectacle (Shields et al., 2020) and establishing it as the primary revenue source (Mourão, 2017). However, while Ecclestone excelled in traditional media, there were areas of the business he struggled to pilot (Shields et al., 2020). One of the most crucial examples was his unwillingness to embrace the digital age and recognize the growing importance of engaging younger audiences (Wood et al., 2019). As a matter of fact, Ecclestone has expressed a lack of interest in social media platforms such as X (Twitter) and Facebook, dismissing them as insignificant (Wood et al., 2019).

F1, as we know it today, emerged as a sports phenomenon in 2017, when LMC took over the management of the motorsport competition (Wood et al., 2023). As the sport evolves towards a more digital scenery (Evens et al., 2023), its strategic direction was clearly defined by a central objective to deliver an exceptional fan experience both on and off the track (Formula 1, 2020). Indeed, this strategic approach was not only a need of the time but also one requirement that pulled the sport closer to the fandom and kept it ahead of the changing market and fans' expectations (Ma, 2023).

The LMC social media efforts extended beyond the mere promotion of the sport. These initiatives also focused on providing fans with a deeper understanding of the teams and drivers, offering valuable insights into their favorite personalities (Wood et al., 2023). The social media strategy for F1 proved successful, as evidenced by the analysis from Buzz Radar (2023b), which demonstrates that from 2017 to 2021, F1 was the fastest-growing sport in terms of social media presence, with its fandom growing exponentially on multiple social media platforms.

It is also important to highlight that F1 drivers also supported these initiatives, maintaining a strong presence on social media. As Silva (2022) demonstrated, drivers significantly influence fan engagement through their social media activity, effectively serving as key influencers for F1. Finally, the teams also embraced this dynamic in a committed way to reinforce their connection with fans. As Wood et al. (2019) state, in terms of social media accounts, Instagram attracts the largest number of followers, followed by X (previously known as Twitter) and Facebook.

2.2.1. Behind the Scenes of F1

A study conducted by PwC has revealed an interesting trend. There has been a 75.7% increase in the fans' consumption of sports original content and documentaries in recent years (McCaffrey et al., 2021). As Goldman Sachs complements, this type of content, in a behind-the-scenes format, not only fosters a deeper connection between fans and sports personalities but also contributes to the financial success of the sport (Dase et al., 2024).

A real example of this is Drive to Survive, a Netflix series that offers an exclusive behind-the-scenes look at the world of F1 across multiple seasons (Soble et al., 2024). Drive to Survive constitutes another strategic engagement idea planned by LMC. As mentioned by the F1 Director of Media Rights, Ian Holmes, developing an original series positions F1 as a leading media and entertainment brand while helping to attract new audiences to the sport (Formula 1, 2019). Indeed, the expansion of sports fandom drives greater potential revenue in the industry (Dase et al., 2024), as a larger number of fans leads to increased commercial opportunities. For instance, Shah et al. (2024) analysis found that 66% of study respondents attributed their growing interest in F1 to Drive to Survive, showing how media content can effectively grow the fandom and, consequently, the sport's financial earnings.

To date, Drive to Survive has seven seasons. However, it is important to note that the first season in 2019 differs from the following seasons, primarily due to the absence of two well-known teams, namely Scuderia Ferrari and Mercedes-AMG (Soble et al., 2024). As revealed by Danne's (2022) research, this exclusion raised concerns among fans, affecting their perception of the series' authenticity. Therefore, it is possible to understand that the inclusion of all teams is vital to ensuring an authentic and complete picture of the championship for the fans.

Since the very beginning, F1 has been a stage for intense rivalries and dramatic moments that continue to shape the sport's identity. Nowadays, Drive to Survive functions as a key source of narrative content by amplifying controversial and dramatic episodes throughout each season, reinforcing these storylines. These moments of drama and rivalry are, in fact, the primary reasons behind arguments in negative online comments. As demonstrated by the Buzz Radar (2023a) report using data from the 2023 F1 season, the leading topic generating such negativity was precisely these moments of team and drivers' rivalry (32%), followed by controversial incidents (28%).

2.2.2. CONSTRUCTORS CHAMPIONSHIP IN 2024

F1 operates as a dual competition over the season, structured around two championships (Formula 1, 2025). The Drivers Championship, awarded to the driver who accumulates the most points over the season, and the Constructors Championship, granted to the team whose two drivers achieve the highest combined score (Shields et al., 2020). This format highlights the relationship between individual performance and collective team strategy, both of which are essential to success in F1 (Formula 1, 2025).

The table presented below shows the teams ranked in the 2024 Constructors Championship, along with all drivers who raced for each team during the season (Formula 1, 2024a).

Table 2. F1 Teams and Drivers in the 2024 Season Rank

POSITION	TEAM	DRIVERS		
1	McLaren	Lando Norris	Oscar Piastri	
2	Ferrari	Carlos Sainz	Charles Leclerc	
3	Red Bull	Max Verstappen	Sergio Pérez	
4	Mercedes	George Russell	Lewis Hamilton	
5	Aston Martin	Fernando Alonso	Lance Stroll	
6	Alpine	Esteban Ocon	Jack Doohan	Pierre Gasly
7	Haas	Oliver Bearman	Kevin Magnussen	
8	Racing Bulls	Daniel Ricciardo	Liam Lawson	Yuki Tsunoda
9	Williams	Alexander Albon	Franco Colapinto	Logan Sargeant
10	Kick Sauber	Valtteri Bottas	Zhou Guanyu	

2.3. Social Media Listening and Social Media Analysis

Social media has reshaped the traditional model of communication in the world of sports (Coutinho da Silva et al., 2017). One of the reasons for that is how social media platforms have revolutionized communication, making it easier to share and access user-generated content (Thackeray et al., 2008). Consequently, nowadays, sports fans not only follow their favorite athletes and teams but also use these platforms to generate and access information instantly (Hussain et al., 2021). Considering the growing significance of social media, analyzing data generated through these platforms has become a central focus in research (Khan, 2015). In this context, it is essential to define and distinguish two fundamental concepts: Social Media Listening (SML) and Social Media Analysis (SMA).

SML, or simply Social Listening, plays a key role in getting the online discourse. Therefore, it involves the systematic monitoring of conversations and interactions across social media to collect data related to a specific topic (Vogl, 2023). Once the conversations have been captured, the succeeding critical step is to analyze them and understand their meaning. According to Khan (2015; p.23), this form of analysis, named SMA, can be defined as the *"art and science of extracting valuable hidden insights from vast amounts of semi-structured and unstructured social media data to enable informed and insightful decision making"*. In the same publication, the author proposes some model questions that must be addressed for this type of analysis. Some of these include:

1. How active is social media, and how many people are connected?
2. What are individuals using social media saying?
3. Is the social media conversation positive, neutral, or negative?

Although many SMA approaches are recognized, sentiment analysis (or opinion mining) is the most commonly utilized in this field (Fan et al., 2014). Sentiment analysis is a Natural Language Processing (NLP) technique employed to assess the opinion expressed by individuals toward a specific topic (Brandwatch, 2012). The majority of sentiment analysis orders these into three main categories: positive, neutral, and negative. Sentiment analysis also offers a faster, more cost-effective alternative to traditional research methods, such as interviews and observations, while also providing real-time insights (Rambocas et al., 2013).

Typically, this technique employs two distinct approaches: quantitative and qualitative (Rambocas et al., 2013). Quantitative approaches involve using numbers to measure the emotions expressed in text (Chowdhury, 2024), for example, through sentiment scores or the percentage of sentiment distribution. On the other hand, the qualitative approach tends to be more interpretative (Rambocas et al., 2013) is strengthened through added clarity and providing a deeper understanding of individual sentiments (Chowdhury, 2024). Both approaches can be integrated to deliver a complete sentiment analysis (Rambocas et al., 2013), with qualitative insights providing valuable context to complement the quantitative results (Chowdhury, 2024).

2.3.1. FRAMEWORKS

The comprehension of the complex data produced by social media necessitates the implementation of structured frameworks that facilitate the organization and analysis. These processes are characterized by their inherent iteration and continuous evolution in response to the emergence of new social media platforms (Lee, 2018).

Following an extensive review of the existing literature, it became evident that no single, universally applicable methodology exists for conducting SMA. Consequently, various authors have proposed distinct methodological approaches, each designed to address specific research objectives and contextual requirements. However, it is important to note that despite their differences, these approaches fundamentally involve four essential steps, more specifically:

Figure 1. Social Media Analysis: Usual Steps

Therefore, Table 4 presents the different points of view on the necessary steps for conducting such analysis.

Table 3. Established Methodologies and Respective Phases

SOURCE	PHASES
Fan et al. (2014)	**1.** Capture (Input) **2.** Understand (Analysis) **3.** Present (Output)
Khan (2015)	**1.** Identification **2.** Extraction **3.** Cleaning **4.** Analyzing **5.** Data Visualization **6.** Interpretation
Lee (2018)	**1.** Develop Key Social Media Metrics **2.** Choose, Monitor, and Listen to Social Media **3.** Perform Social Media Analysis **4.** Build Social Media Intelligence
Stieglitz et al. (2018)	**1.** Discovery **2.** Tracking **3.** Preparation **4.** Analysis

1. Identification or Discovery

Discovering the topic is a key initial step in SMA frameworks. At this stage, it is important to define the essential components of the analysis, such as the research questions, the type of information required for data collection, and the identification of the most appropriate sources, that is, which platforms the data should come from (Khan, 2015). It is essential to understand which keywords and hashtags are associated with the specific research topic to use them effectively when tracking the data (McGuirk, 2021). Therefore, this phase necessitated that the researcher acquire a thorough understanding of the study's subject.

2. Tracking or Listening

At this point, the objectives are well defined, and so, it is necessary to collect the information required for the analysis (Fan et al., 2014). For tracking the data, two key decisions must be made regarding the method and the approach. First, the method refers to the specific technique or tool used to collect data. These methods may include Application Programming Interfaces (APIs), SML platforms, or other data collection methods (Stieglitz et al., 2018). Second, the approach defines the overall strategy behind the tracking process. Stieglitz et al. (2018) framework proposes three distinction approaches, precisely:

1. Actor-Based: Focuses on all content from selected social media profiles.
2. Keywords: Use specific words to find content related to a topic.
3. Web-Links (URL): Evaluating the content behind the mentioned links on social mentions.

3. Analysis or Understanding

This step aims to extract significant insights from the data collected (Khan, 2015). To achieve the objective, it is necessary to apply SMA methods and report some social media metrics to answer the primary question of the analysis (McGuirk, 2021). Approaches for this phase, such as sentiment analysis, are widely referenced as providing valuable insights into opinions and emotions expressed in social media mentions (Fan et al., 2014). However, other methods are also mentioned, such as content analysis or trend analysis (Stieglitz et al., 2018). The researcher is expected to carry out the analysis defined in step 1 to gain the necessary insights.

4. Present or Report

The final phase of any SMA framework is to summarize the data analysis and transform it into insights for business purposes (Fan et al., 2014). In this phase, human expertise is required to extract meaningful information from the data (Khan, 2015).

2.3.2. CHALLENGES AND SOLUTIONS (BRANDWATCH)

Social media data can be characterized by its enormous volume, the velocity at which it is generated, the variety of data formats (e.g., text, images, and videos), and its uncertainty in terms of veracity (McGuirk, 2021).

Therefore, social media data fulfills the four essential criteria typically associated with big data, commonly known as the 4Vs: volume, velocity, variety, and veracity (Taylor-Sakyi, 2016).

Big data refers to extremely large datasets that require advanced methods for storage, processing, and analysis (Taylor-Sakyi, 2016). These datasets are often heterogeneous, deriving from various sources (Dhawan et al., 2014). Here, data can be categorized as either structured data that is organized and easy to analyze (e.g., number of social media likes or followers) or unstructured data that lacks a predefined format (e.g., text, images, and videos). Consequently, when the subject is social media data, the predominant nature of unstructured data becomes evident (McGuirk, 2021). To simplify the collection, transformation, and analysis of this information, SML platforms can be employed (McGuirk, 2021). Although several platforms exist, this research emphasizes the importance of Brandwatch Customer Research (Brandwatch, 2025) as a prominent SML tool.

Brandwatch facilitates the monitoring of social media through key stages: Data Collection, Cleaning, Analysis, and Presentation. In summary, as Stavrakantonakis et al. (2012) explain, Brandwatch collects data from numerous social platforms and builds a database that can subsequently be cleaned by the elimination of spam content. Next, the relevant data is processed and analyzed. The final output is made available to users in several dashboard forms or even for download into database formats. One notable feature of Brandwatch, relevant to this study, is the Artificial Intelligence (AI) capability powered by GPT (OpenAI model) (Brandwatch, 2024). This functionality enables the platform to identify points in the mentions' volume by comparing individual data points to the overall average. Deviations from this average are automatically flagged as "peaks". Each detected peak is accompanied by illustrative examples of social media mentions selected from the 240 mentions with the highest impact scores (Brandwatch, 2024).

Finally, as this study makes use of Brandwatch, Table 4 describes the platform, sourced from its official website and authored by Maryam (2025).

Table 4. Brandwatch Social Media Metrics

METRIC	DESCRIPTION ACCORDING TO BRANDWATCH
Impact Score	Metric showing how visible and influential a mention is, based on views, shares, and reposts. It uses a logarithmic scale from 0 to 100.
Net Sentiment Score	Measure the sentiment by subtracting negative mentions from positive ones and dividing by the total of both.
Total Mentions	A metric showing the total number of times that something has been mentioned over a given period.
Unique Authors	A metric showing the number of different individuals who have mentioned the topic.

3. METHODOLOGY

In this SML platform, the sentiment analysis approach is divided into three main steps: knowledge-based, machine learning, and rules-based methods (Brandwatch, 2012). The knowledge-based classifiers are built on predefined rules developed by Brandwatch's sentiment analysis experts. The machine learning step uses algorithms that learn from data to automatically detect sentiment patterns. Finally, the rules-based approach allows users to define their own custom rules. It is important to note that sentiment analysis accuracy rarely exceeds 80%, whether performed by humans or machines (Brandwatch, 2012).

The exponential amount of digital information demands efficient methods for its organization and access (Rodrigues, 2018). Without such approaches, managing and utilizing this type of data becomes unfeasible. The Design Science Research (DSR) methodology has been identified as a potential solution to this challenge (Rodrigues, 2018).

As vom Brocke et al. (2020) describe, DSR is a problem-solving strategy that centers on the construction of artifacts to improve the current knowledge and to solve problems. This methodological approach consists of six phases that are revisited iteratively, allowing for continuous refinement throughout the process. Table 5, retrieved from Aparicio et al. (2023), outlines the DSR phases alongside the respective expected outcomes.

Table 5. Design Science Research Methodology

PHASE	OBJECTIVE	OUTCOME	NEXT PHASE
1	Motivation Identification	Problem and Motivation Statement	2
2	Objectives of a Solution	Objectives Statement	3
3	Propose an Artefact	Artifact Description	4
4	Demonstration	Artefact Implemented in Context	5
5	Evaluate	Tested and Valuated Artifact	3 or 6
6	Communication	Academic or Professional Publication	End

The first DSR phase involves identifying the problem by recognizing where the research issue lies and the potential value the proposed artifact can bring to the field of study (Aparicio et al., 2023). Therefore, effective execution of this step depends on insight into the problem context and the value of finding a solution (Peffers et al., 2007).

Succeeding, the objectives of the solution (artifact) must be identified in phase 2. These objectives may be quantitative, by demonstrating how a proposed solution improves existing ones, or qualitative, through outlining how a new approach could help address the problem (vom Brocke et al., 2020).

Phase 3 is the core of the methodology, as it involves the development of the artifact. A key point to consider is that these artifacts represent practical outcomes and may take the form of constructions (e.g., vocabulary or symbols), models (e.g., abstractions), methods (e.g., theoretical framework), or other feasible solutions (Aparicio et al., 2023).

In phase 4, the developed artifact is applied in an appropriate context to illustrate how it can effectively address the identified problem. Therefore, the key resource needed is the knowledge of how to effectively use the artifact in addressing the problem (Aparicio et al., 2023). Then, phase 5 covers the evaluation of the proposed artifacts, utilizing established methodologies (Hevner et al., 2004). If the evaluation reveals limitations, the process may return to phase 3 for refinement. If the artifact is satisfactory, the research advances to phase 6 (Aparicio et al., 2023). The table below summarizes this evaluation approach, sourced from Hevner et al. (2004).

Table 6. Design Science Research Evaluation Approaches

EVALUATION	APPROACHES
Observational	Case or Field Study
Analytical	Static, Architecture, Dynamic Analysis, or Optimization
Experimental	Controlled Experiment or Simulation
Testing	Functional or Structural Testing
Descriptive	Informed Argument or Scenarios

Finally, in phase 6, comprehensive information about the problem, the significance, and the artifact solution is communicated to the relevant stakeholders, such as through public or academic publications (Aparicio et al., 2023), and the public perception of this thesis.

To conduct this research, the DSR methodology will be applied to answer the primary question of the study. The resulting artefact solution will be a method, defined by Aparicio et al. (2023; p.7) as the *"procedures (including algorithms, principles, and practices) that are followed to complete a job*". As the initial phase (1). Motivation Identification has been addressed in previous chapters, the current focus shifts to phases 2 and 3.

It is important to highlight that the objective of this solution is to establish a replicable process that can be applied in similar studies and contexts, providing sports organizations with key indicators about the moments that drive most fan comments (engagement) on social media. While the specific categories of moments will be defined over this research, the central objective is to identify the key drivers of engagement and to analyze the sentiments associated with these occurrences.

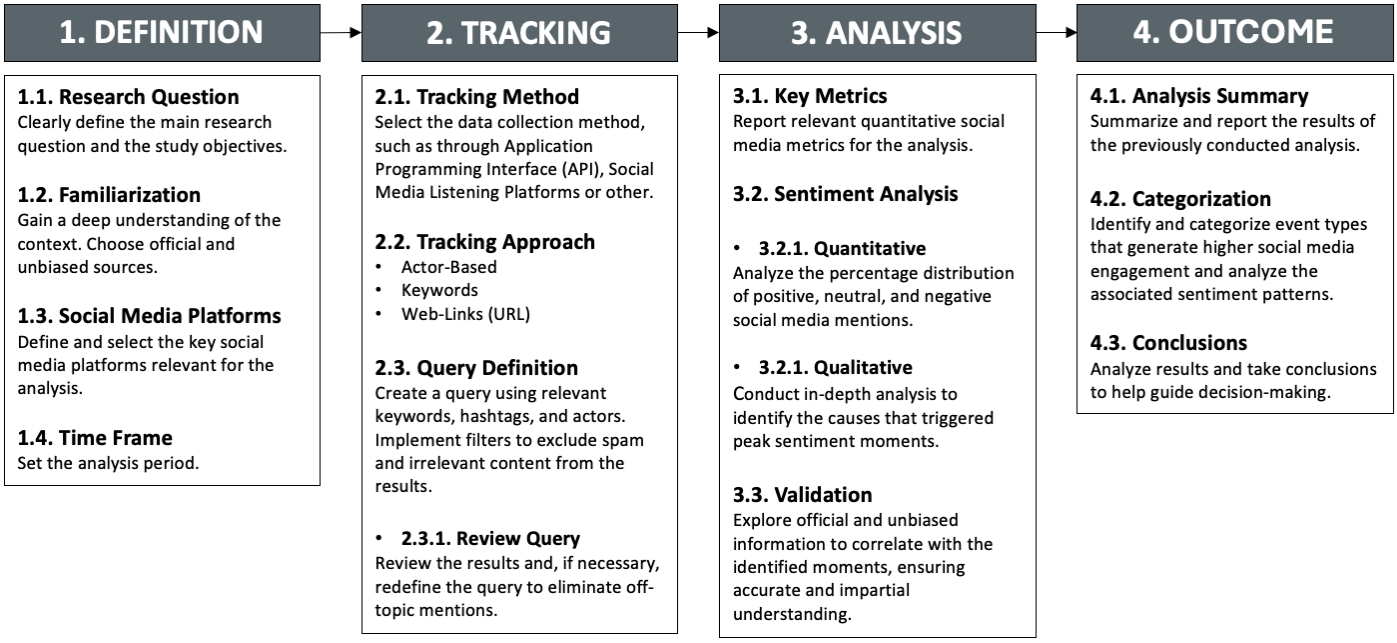

Figure 2. Social Media Approach for Analyzing Fan Sentiment and Engagement

1. Definition

The initial phase of this artifact must be the unambiguous definition of the study scope. This includes formulating the appropriate question and identifying the relevant data to be analyzed (Khan, 2019). As an initial step toward topic familiarization, a thorough review was conducted on the structure of the F1 championship, the format of GP events, and the results of the 2024 season. Although the research question and study objectives have already been defined, it is important to justify the decisions made regarding the selected social media platforms and time frame chosen for this analysis. Based on Wood et al. (2019) study, it was understood that the platforms with the most impact and highest number of followers for the F1 teams were primarily Facebook, Instagram, and X (Twitter) therefore, these platforms were selected. Regarding the time period, a length of 366 days was considered, from 28th February of 2024 to 28th February of 2025. This timeframe encompasses the entire 2024 F1 season, as well as the unveiling of the teams' 2025 single-seaters and their official presentations, in the F1 75 Live event.

2. Tracking

Brandwatch Consumer Research (Brandwatch, 2025) was selected as the SML platform to track the social media mentions, as it aggregates data from the previously selected social media platforms and offers the essential metrics required to conduct this analysis. For tracking it was used keywords and an actor-based approach. A standardized query structure for tracking data, was applied across the teams, to ensure consistency and fairness in the data collection. The structure was adapted only as needed to reflect team-specific variations.

Each query included both the full name, and the most commonly recognized short name associated with the respective team. For instance, although the Williams team's official name is “Atlassian Williams Racing”, the query also used the individual term “Williams”. This was also implemented in other teams with the same characteristic. In addition to team names, the official social media usernames of the teams and the names of their drivers were included in the queries, as previous literature has highlighted the significant role drivers play in influencing fan engagement in F1.

The terms “Formula 1” and “F1” were also incorporated to ensure that mentions were related to the motorsport competition. This step was essential to ensure contextual relevance and to avoid collecting irrelevant data, particularly because many team names are also associated with unrelated F1 brands (e.g., energy drinks, regular cars, clothing brands). The Brandwatch AI Entities (Brandwatch, 2024) feature was used to identify specifically the teams and drivers. To ensure greater accuracy, it was using the Brandwatch option of exclusion spam content. For this exclusion to be effective, and to maintain the quality of further analysis, only comments in English were considered.

3. Analysis

To establish a focused analysis, the three sub-questions guiding this research were adapted from Khan (2015), with adjustments made to align with the specific context of this case. These adapted questions serve as intermediate steps that ultimately lead to answering the study's main research question. The present below are the guiding questions, as well as the approach used to answer each of them.

1) **How active is social media in the F1 team, and how many fans are connected?**
    - Social Media Metrics
2) **Is the social media conversation about the F1 team positive, neutral, or negative?**
    - Quantitative Sentiment Analysis
3) **What are fans using social media saying about the F1 team?**
    - Qualitative Sentiment Analysis

Given the niche focus of this study and the need to stay accurately informed about the events referenced by the different fans, the official F1 website was also utilized as a key source of information.

4. Outcome

At this stage, the results will be presented, starting with a summary of the analysis. Next, the key moments most frequently mentioned by fans will be identified and categorized to uncover emotional patterns driving engagement on social media. Understanding these emotional triggers can help teams and sponsors tailor their communication strategies, enhance fan experience, and optimize timing for content release.

4. EMPIRICAL STUDY

This chapter provides a detailed analysis of fan sentiment for each F1 team. Beyond reporting social media metrics, this section also includes a qualitative investigation into the moments that triggered peaks in social media engagement. Alongside using Brandwatch AI (Brandwatch, 2024) feature, which provides summaries of the most relevant mentions, official sources were also consulted to ensure an unbiased interpretation of the events.

Therefore, this section's main goal is to understand what led fans to express themselves more actively on social media and what forms of sentiment were associated with those moments. By examining the ten teams, this specific analysis allows for the identification of recurring patterns in both key moments and the sentimental reactions they generated among different teams' fandoms.

4.1. ASTON MARTIN

Aston Martin (Aston Martin, 2025) received approximately 414.000 social media mentions from around 117.000 different authors. The team received a net sentiment score of 2,7 out of 5. As expected, the majority of comments were classified as neutral (80%), while 16% expressed a positive sentiment and only 4% negative sentiment.

Figure 3. Aston Martin Sentiment Over Time (Source: Brandwatch)

As illustrated in Figure 3, the moments with the highest number of mentions were also the peak moments preserved as neutral. While these three moments occurred at different times, they were all influenced by a common factor: the team announcements for next season.

The month of April (point C) was marked by the renewal of the contract of the driver Fernando Alonso. While the Aston Martin fandom has highlighted Alonso's ability to compete for victories despite the competition from younger drivers, the broader F1 community has recognized his long-lasting presence in the sport since 2001. Then, September was marked by the peak of online conversation, with one particular moment standing out as the most mentioned (point A). The signing of Adrian Newany, a F1 engineer, was met with great enthusiasm by the fans, who labelled this announcement as a "*new era for Aston Martin*". Adrian has been involved in F1 for over 40 years and has played a pivotal role in the development of innovative single-seat components that have a significant impact on aerodynamics and active suspension (Straw, 2024), essential components of a successful single-seat.

Although this moment was detected as also positive and negative moments by Brandwatch, these sentiment peaks appear to be driven primarily by a high volume of comments during the moment, rather than by any concrete reasons that would genuinely justify such reactions from fans. The third and last neutral peak moment (point D) occurred in February 2025, overlapping the F1 event that brought together all the teams to present their single-seaters for the season. Aston Martin fandom expressed positively (point B) on social media, showing enthusiasm for the single-seat design, particularly its iconic shade of green and the shiny, aggressive styling details that reflect a modern aesthetic.

It is important to note that a key moment of negative sentiment for Aston Martin fans was linked to the renewal of Lance Stroll (point E). This announcement triggered a moment of negative sentiment, with many fans interpreting the decision for the driver as nepotism rather than sports merit. Additionally, two other sentiment spikes (points H and I) were detected in Figure 3, however, no clear events or announcements were identified to explain these shifts, suggesting Brandwatch misclassification.

4.2. BWT ALPINE

During the period of analysis, Alpine (BWT Alpine, 2025) has accumulated approximately 630.000 mentions across the different social media platforms, from nearly 194.000 different people. From the data available, Alpine fandom sentiment was predominantly neutral, with 74% of mentions falling into this category. This is followed by positive sentiment (17%) and negative sentiment (9%). This gives Alpine a net sentiment score of 1,6 out of 5.

Figure 4. Alpine Sentiment Over Time (Source: Brandwatch)

The Alpine fandom perspective on the team's prospects for the 2024 season was expressed with concern (point I). Among the comments posted on social media, it was clear that these concerns included the unexpected abandonment of one of the drivers, Pierre Gasly, from the first GP of the season in Bahrain, without scoring any points for the Constructor or Drivers Championship.

Although sentiment expressed by the fans demonstrated stability until the middle of October, in August, the announcement of Jack Doohan as a new driver for the 2025 season (point J) made fans feels excited. Alpine fandom has utilized social media platforms to state their anticipation for Doohan's favorable performance, with a notable emphasis on the aspiration to see the legacy of his well-known father, Mick Doohan, a former motorcycle World Champion.

The final months of the season proved to be a period of notable events for the team, characterized by a range of sentiments. In November, fans were eager to experience the excitement of their two drivers achieving second and third place on the podium at the São Paulo GP (point A). Although a negative point was detected during the same period (point E), linked to the same double victory, fans expressed deep emotional reactions. This happens again in point G, which was characterized by amazement rather than displeasure after an amazing result from Pierre's qualification at the Las Vegas GP. Some examples of expressions used by fans in X social media were: *"Pierre Gasly P3?? What has happened to the Alpine? Hello?"* or *"DID THAT JUST HAPPEN?! P3 BABY!!* (crying face emoji)*"*. So, it is important to note that these two moments likely point to a misclassification in Brandwatch sentiment analysis, where strong emotional engagement was mistakenly interpreted as negative sentiment.

In December, the second major volume of mentions was characterized by neutral and negative sentiment (points B and H). During the final GP at Abu Dhabi, the confirmed driver for 2025, Doohan, ended up on the starting line and replaced the current driver, Esteban Ocon. F1 fans have a strong emotional connection to the drivers (Wood et al., 2023), and their reactions are influenced not only by their actions on the track but also by their personal experiences in the teams. Therefore, the unanticipated removal of Ocon from the last GP has an impact on the emotional response of the fans, leading to a sense of collective disappointment. At the end of the season, a significant increase in mentions was observed again, and reflected the 3 sentiments (points D, F, and G). Franco Colapinto, an Argentine racing driver, was at the center of this moment. Alpine announced that Colapinto had signed a multi-year deal to become their test and reserve driver for the next season, which generated mixed reactions among fans

4.3. SCUDERIA FERRARI

Scuderia Ferrari (Scuderia Ferrari, 2025) is more than just a team, it is an essential part of the F1 legacy. As Sebastian Vettel (former F1 driver) once said, *"Everyone is a Ferrari fan, even if they say they are not",* a statement that effectively summarizes the universal admiration the team has garnered within the F1 community. This legacy is evident in the numbers presented during the period of the analysis. Ferrari was mentioned 3.600.000 times by over 551.000 different authors.

Figure 5. Scuderia Ferrari Sentiment Over Time (Source: Brandwatch)

When analyzing sentiment, it is essential to highlight that Ferrari has 24% positive, 5% negative, and 71% neutral mentions and a net sentiment score of 3,2 out of 5.

The season started in a relatively stable way, as evidenced by the absence of peaks in sentiment. The first positive peak moment (point C) detected was in the middle of May, matching with Charles Leclerc's triumph in his home GP. Although both Ferrari drivers made it to the podium in Monaco, the conversation focused entirely on the Monegasque driver, Leclerc, whose victory at this circuit was a long-standing goal for him and all his fans.

Another notable positive moment for the Ferrari fandom occurred at the beginning of September (point A), marking another remarkable home victory for the team. Although Leclerc was the winner of the race, the real highlight of the moment was the GP location at Monza. Ferrari fandom, typically known as *Tifosi* (Flavio, 2024), undoubtedly plays a significant role in the sport. For these *Tifosi*, winning the Italian GP means achieving victory in their home. This moment of fan euphoria was the only case during the season when positive sentiment significantly exceeded neutral sentiment, making this event a noteworthy occurrence in terms of fan sentiment analysis.

In October, another positive moment was highlighted (point D) after a one-two finish for the team at the United States GP. The outcome of the race was noteworthy for the remarkable performance demonstrated by both Ferrari drivers throughout the race weekend. This attracted considerable attention from fans and provoked supportive comments on social media, as expected.

As shown in Figure 5, the only period of the season marked by a rise in negative sentiment (point F) aligns with the final GP. The spike in negative sentiment was largely driven by Carlos Sainz's last race for Ferrari, which marked an emotional moment for fans. Particularly, both positive (point B) and negative responses were tied to this same key event, while the goodbye generated unhappiness, the Ferrari's strong performance in securing second place in the Constructors Championship generated a wave of positive sentiment among the *Tifosi*.

The Ferrari's biggest moment in terms of mentions came after the 2024 season ended, in January (point E). The moment caught the attention not only from the team fandom but also from the overall F1 community. The publication that confirmed a historic change was marked by a very symbolic photograph, where the seven-time world champion, Lewis Hamilton, posed in front of Enzo Ferrari's iconic home in Maranello. It is important to highlight that this publication quickly achieved the status of the most popular F1-related post on Instagram, setting a new record for interactions on the platform. In less than one day, the publication received over 4.8 million likes (Veiga, 2025), reflecting the huge influence of Hamilton as a central driver and figure in the sport.

4.4. HAAS

According to the data collected, the most recently formed team on the grid, Haas (Haas, 2025), has amassed approximately 473.000 mentions across the three key social media platforms from different 118.000 participants in the conversation.

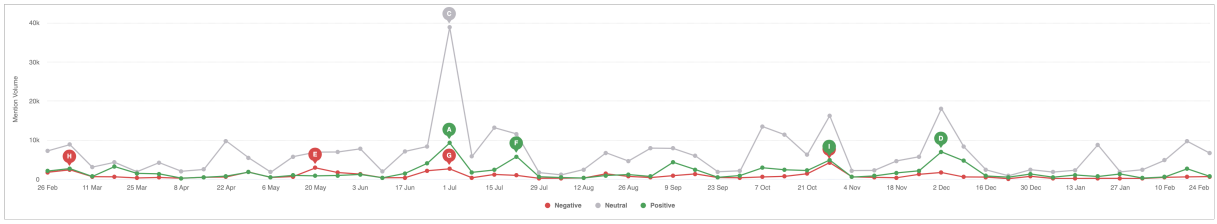

Figure 6. Haas Sentiment Over Time (Source: Brandwatch)

While the Haas fandom demonstrated a predominantly neutral position, with 71% of mentions falling into this category, the team garnered a proportion of 20% positive sentiments and 9% negative sentiments. This results in an overall net sentiment score of 1,8 from 5.

The 2024 season was met with a sense of dissatisfaction among the Haas fans (point H). The underlying reason for this occurrence was the performance of one of the team's drivers, Kevin Magnussen. The Haas fandom quickly posted comments on social media about Magnussen driving unsafely and defensively during the first season GP. In X, some examples of these comments were: *"Magnussen is an example of dangerous driving that could lead to a major accident someday"*. In May, the Haas fandom was still posting negative comments on social media about unsafe driving by Magnussen (point E).

The Haas moment that received the highest number of mentions during the season (points A, C, and G) was the replacement of the driver, Magnussen, who had given rise to a significant degree of concern until this moment in the season. The team chose Ollie Bearman, a 20-year-old driver who had demonstrated extraordinary skill in Formula 2 (the lower-tier category of F1). This was noticed by some excited mentions that fans made on X about Bearman, like: "*Ollie Bearman Will Race for Haas in 2025!! Completely 100% deserved. Has impressed every time he's stepped into an F1 car, cannot wait to see him on the grid next year!"*.

A similar announcement was made soon, although, as can be observed in Figure 6 (point F), the impact was not as significant as the previous announcement. The strategic decision by Haas to agree to Esteban Ocon for a multi-year contract has been met with a positive reception by the fandom. As some fans mention, Ocon becomes the "*first F1 race winner to join the team*", bringing not only valuable experience but ambition for Haas.

The following moment is worthy of remark due to the overlap of positive and negative emotions exhibited. The positive reaction was driven by Magnussen's performance, finishing 7th at the Mexican GP, his best result of the season. However, despite the achievement, his performance also generates debate, as many fans still question his place in the team, making the moment both celebrated and polemic.

Finally, Alpine's confirmation that Ocon will skip the season finale at the Abu Dhabi GP (point D) has opened the door for the driver to join Haas early for post-season testing. For many Haas fans, it was an enjoyable surprise, offering an early sign of Ocon's focus and commitment to the new team, even before the 2025 season started.

4.5. KICK SAUBER

Although this team has been on the grid for a long time, it has changed its name over the years. In the 2023 season, the team was named Alfa Romeo, and currently it competes as Kick Sauber (Kick Sauber, 2025). From the data available, the team has collected approximately 124.000 mentions from almost 54.000 unique accounts.

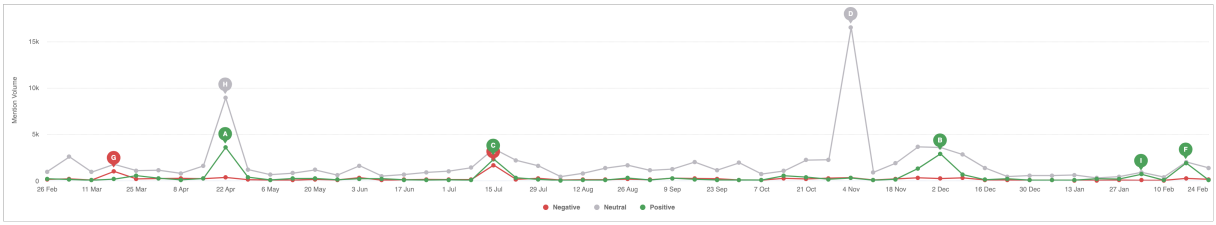

Figure 7. Kick Sauber Sentiment Over Time (Source: Brandwatch)

It should first be noted that the majority of sentiment was neutral (75%). Additionally, 17% of the mentions were classified as positive, while the remaining 8% were categorized as negative. This resulted in a sentiment score of 1,7 out of 5.

The season begins with one of the two high points of negativity (point G), triggered by a pit stop problem, which became a major theme of frustration for the fandom. The incident in question happened at the Australian GP when a wheel nut (a fastener that secures the wheel to the F1 car) came loose and rolled into the pit lane. As a result of this mistake made by a pit staff member, the race officials considered the situation to be potentially dangerous, and so, the team not only suffered a financial penalty but also received a time penalty for both drivers.

The next important moment came in April (points A and H) when the F1 driver, Nico Hülkenberg, was announced, signing with the Kick Sauber team for the 2025 season. Fans have been very enthusiastic about the entrance of an experienced driver to the team, believing that his background could mark a turning point in the team's performance. Many fans speculate that this change could bring the team closer to the podium more often and bring a new dynamic and ambition to the races. Despite the lack of a specific triggering event, in July, the split in opinions seems to result from a Brandwatch misclassification of sentiment on social media.

As it is evident, in Figure 7, the most significant episode for Sauber was on the 4th of November (point D). This neutral sentiment peak was attributable to the surprise announcement that Gabriel Bortoleto, a Brazilian driver of considerable renown in Formula 2, has signed a multi-year contract with the team. The excitement of having a Brazilian driver back on the grid was evident among many fans, and the memory of Ayrton Senna, an undisputed F1 legend, was brought to the social media conversation. The end of the analysis period revealed three moments of great happiness from the fans. Two key moments brought joy to the fans. First, at the Qatar GP, near the end of the season, the Haas driver, Zhou, finished in 8th place, securing the team's first point of the year.

It is interesting to note that the second-to-last peak moment occurred in the context of a publication made by the official F1 Instagram account, which focused on a driver who was driving for Ferrari, Charles Leclerc. The content of the publication highlights that the driver has risen to a considerable level within the sport, moving from a rookie in 2018 in a Kick Sauber car to his current admirable reputation within Ferrari. Lastly, in February 2025, during the F1 75 Live event, Kick Sauber fandom expressed their excitement upon seeing the new car design. In fact, the green and black colors were met with enthusiasm, with many fans appreciative of the clean and shiny aesthetic.

4.6. McLaren

McLaren (McLaren, 2025) is one of the most legendary teams in the F1 legacy and remains remembered by many fans for having had the F1 greatest icons behind their wheel, Ayrton Senna. In the 2024 season, McLaren secured their first Constructors Championship in 20 years, and their success was reflected in the buzz with the team being mentioned over 2.200.000 times on social media. Approximately 391.000 fans participated in the social conversation.

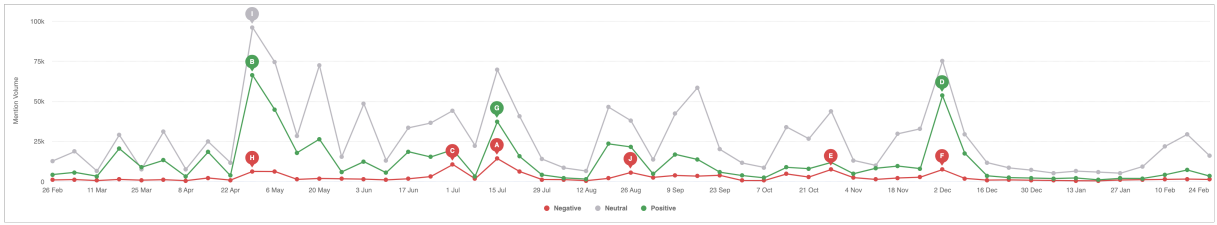

Figure 8. McLaren Sentiment Over Time (Source: Brandwatch)

Based on the data, McLaren received a net sentiment score of 3,3 out of 5. In terms of sentiment analysis, 29% of mentions exhibited a positive tone, while 6% were found to be negative, with the remaining 65% exhibiting a neutral sentiment.

The first moment under consideration occurred at the beginning of May, which was not only the moment that received the highest number of mentions, but also the moment that received the most positive mentions (points B and I). This moment was highlighted by McLaren driver Lando Norris, who secured his first-ever GP victory in F1, a significant milestone after a winless previous season. This was not just a personal achievement for Norris, but it was also a moment of pure excitement for their fans, who had long expected his place at the top of the podium. In addition to this celebration, this victory meant a deeper significance for the team and their fandom, it indicated a revived sense of competitiveness and the resurgence of McLaren in F1. Although a point of negativity is detected, it likely arises from a potential misclassification by Brandwatch, given that the number of mentions reached unusually high levels at this moment.

In July, history repeated itself as McLaren's youngest driver also secured his first F1 GP victory. This significant achievement marked a milestone in Oscar Piastri's career in the sport. With both McLaren drivers claiming two of the top three positions, this moment was a clear sign

for the fans of the team's growing strength. Despite the dominant positive sentiment, it is crucial to acknowledge the significant contribution of the negative reaction at this moment. In F1, calling a driver into the pits refers to the team instructing them to enter the pit lane. In this case, McLaren's decision to put Norris in boxes ahead of Piastri created an uncomfortable situation for the team, since this decision forced Norris to swap positions with his teammate, consequently "offering" him this victory. The fans did not fail to observe this, and the sense of easy victory for Piastri was a topic of discussion amongst them. Mentions on X, such as "*this was supposed to be magical for Oscar to win his very first f1 race and now he's just saying: I'll enjoy the win when I can" and apologizing for winning. McLaren What Have U Done"*, demonstrated that the fans would have preferred a different race strategy.

After the excitement of Lando and Norris' first victories, McLaren fans had another historic moment to celebrate as the season ended. For the first time in 26 years, the team secured the Constructors Championship, marking a triumphant end to the season. Norris's exceptional performance was instrumental in securing a decisive victory in the Abu Dhabi GP, marking a pivotal moment for McLaren as they made a long-awaited return to the top.

Although points C, J, and E were not triggered by any specific event, they simply reflect moments where fans were generally discussing criticisms regarding McLaren's race strategy rather than the drivers themselves. While these are not cases of Brandwatch misclassification, it is not possible to categorize any of these moments due to the lack of a defined context or event linking the mentions.

4.7. MERCEDES-AMG PETRONAS

Mercedes-AMG (Mercedes, 2025), always have been a huge dominant force in F1, with 8 consecutive Constructors Championships from the 2014 to 2021 seasons. Regardless of the team's reduced success in recent seasons, Mercedes remains a topic of considerable discussion, with around 1.900.000 mentions from 331.000 fans around the world.

Figure 9. Mercedes-AMG Sentiment Over Time (Source: Brandwatch)

The sentiment analysis data shows that 23% of the mentions express a positive sentiment, 8% reflect a negative sentiment, and the remaining 69% as neutral. Consequently, the Mercedes net sentiment score is 2,4 out of 5.

As illustrated in Figure 9, the fans' emotions have exhibited relative stability throughout the season, with only two moments worthy of note. The first moment is characterized by an

emphasis on positive and neutral sentiment (point A), while the second moment (point B, C, and D) is characterized by neutral, positive, and negative sentiment.

The central figure behind these moments of success was the Mercedes driver, Lewis Hamilton, who has won eight Drivers' Championships with the team in recent years. However, it has been known since the start of the season that Hamilton will not be driving for Mercedes in the upcoming 2025 season, bringing an end to a significant chapter in the team and driver history.

Nevertheless, what stood out in the July moment was how Mercedes fans continue to celebrate the victories tied to Hamilton. In this moment, the prevailing sentiment is moderately more positive than it is neutral, which is not the common observation. The reason for this was Hamilton's emotional victory at his home GP in Silverstone, which was also Mercedes' home race. This marked his last win at Silverstone while driving for the team, adding further significance to the moment. The moment with the most mentions during this period was due to the Abu Dhabi GP weekend, as it marked the end of the season and, consequently, Hamilton's final race competing for the team. Mercedes said goodbye to the driver, and in an emotional moment, Hamilton touched the fans as he said goodbye to his car, leaving an unforgettable mark in F1 history.

4.8. Racing Bulls

During the Racing Bulls (Racing Bulls, 2025) 2024 season, Yuki Tsunoda and Daniel Ricciardo were the official drivers for the team. Nevertheless, despite Ricciardo's status as a popular figure among fans, a strategic decision resulted in his replacement, allowing Liam Lawson to assume the position (Formula 1, 2025). This is particularly relevant to mention, because, in this case, the query to extract the social media data includes mentions of these three drivers alongside the team. During the analysis period, the team recorded approximately 398.000 mentions across social media platforms from a total audience of 82.000 different fans.

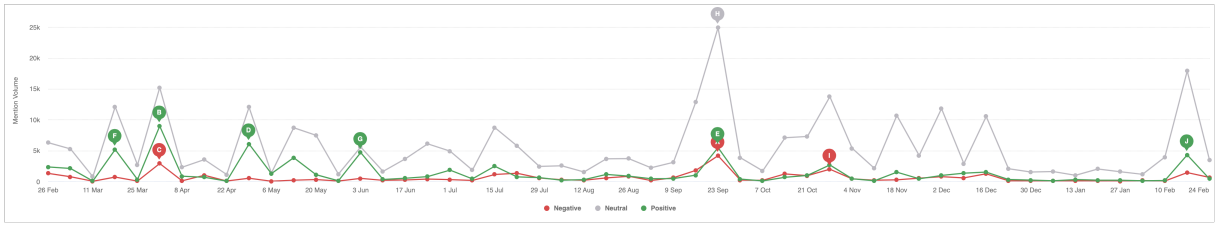

Figure 10. Racing Bulls Sentiment Over Time (Source: Brandwatch)

In the context of sentiment analysis, the Racing Bulls net sentiment score was found to be 1,9 out of a maximum of 5. The conversation over time was predominantly neutral, accounting for 74% of mentions, followed by positive (18%) and negative (8%) sentiments, respectively.

The season for Racing Bulls started with positive sentiment expressed by the fandom. This surge of enthusiasm was triggered by the exceptional performances of Tsunoda in consecutive GPs. In the third round of the championship at the Australian GP (point F), the Racing Bull driver scored the team's first point of the season. Tsunoda followed that up with another

impressive race at the Japanese GP (point B). The driver not only added more points for the Drivers and Constructors Championship but also had the chance to celebrate the moment in front of his home crowd. The team fans responded with support, submerging social media with enthusiastic mentions. However, while fans congratulate the dedication shown by Tsunoda, concerns continue to be expressed about his teammate, Daniel Ricciardo (point C). An example of this observation made in X by fans was: *"Ricciardo needs to be pushed out".* This indicated that Ricciardo's performance did not meet the standards expected of a Racing Bull driver and also expressed a certain degree of concern about the team's future.

In May, the Miami GP gives fans a double reason for joy (point D). Firstly, the team presented fans with a new car design. These types of moments, where the team changes the single-seat original design at different points in the season, are commonly referred to in F1 as Livery. The exclusive design of the car was inspired by the colors associated with the host city and the vibrant tones of the Cash App Visa Chameleon Card, the main sponsor of the team. The Racing Bull livery has attracted a great amount of attention from fans on social media, due to its appearance and distinctive features.

At the same GP, Ricciardo also provided the fandom another source of optimism. Ricciardo's standout performance secured him 4th place in qualification. This moment also made the team elevate to 5th place in the championship standings. Nevertheless, in harmony with the predictions of the fans, with only six races remaining, Ricciardo has been replaced by the team with the newcomer, Liam Lawson, taking his position in the cockpit. As anticipated, this decision attracted significant attention from the fandom, who expressed their discontent through comments (point H) such as: "*Shameful decision*".

The Racing Bulls' final peak sentiment moment coincided with the F1 Live event, a promotional initiative by F1 planned to present all teams' single-seaters to the fans. The unexpectedness of the single-seater's new design, in combination with the creative and frequently humorous content disseminated on the Racing Bulls' official social media platforms, has resulted in a stronger sense of community among the team fandom.

4.9. RED BULL

In recent F1 seasons, Red Bull (Red Bull, 2025) has established a strong presence in the Constructors' Championship, consistently finishing among the top teams. In addition, this team has been home to the leading World Champion, Max Verstappen, for the past seasons (2021-2024). During the period under analysis, Red Bull was referenced approximately 2 o00.000 times across the different social media by a total of almost 395.000 different fans worldwide.

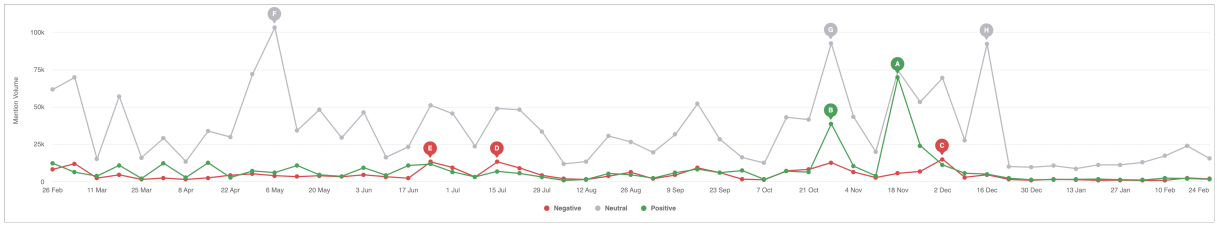

Figure 11. Red Bull Sentiment Over Time (Source: Brandwatch)

The data collected from social media platforms shows that the majority of Red Bull fandom sentiment was considered mainly neutral (75%), followed by positive (16%) and then negative (9%), giving the team a net sentiment score of 1,4 out of 5.

The first season moment to generate a peak in Red Bull mentions was driven by an external factor unrelated to race performance. In April (point F), during the Miami GP, a globally renowned singer and rapper, Lalisa Manoba, appeared in the Red Bull paddock alongside the drivers. Her presence, alongside other prominent cultural figures, generated the highest peak in mentions of the team, highlighting the GP's dual impact, both as an entertainment spectacle and sports event.

As shown in Figure 11, the next two moments were marked by negative mentions from the Red Bull fandom. The first one (point A) was triggered by the collision between Max Verstappen and the McLaren driver, Lando Norris, at the Austrian GP. At that time, both drivers were strong contenders for the 2024 Drivers' Championship. Therefore, fans expressed disappointment since Verstappen had the potential to earn the maximum of 25 points for a race win but ended up with only 10 points after finishing in 5th position.

At the Hungarian GP in July, a negative reaction occurred again (point D). With the championship on the line, Verstappen made it clear that the Red Bull team needs to improve its race decision-making. Verstappen also highlighted McLaren's growing dominance on podiums, emphasizing the urgent need for a team change. The fandom criticism of decisions impacting driver performance is evident in the consistent negative sentiment and commentary observed across fan interactions.

In São Paulo GP (points B and G), the World Champion lived up to his title with an outstanding track performance. Starting the race from 17th position, the driver crossed the finish line in first place. As expected, this moment generated huge excitement and joy among Red Bull fans, who took to social media in force to celebrate Verstappen's achievement. This moment was not only the second most mentioned overall, but also the second most positively received in terms of fan sentiment.

The Red Bull fandom reached a high positive point (point D) in the succeeding race, which was held in November at Las Vegas. Although Max Verstappen did not make it to the podium and finished once again in 5th, the points Verstappen had accumulated to that GP secured him the ultimate victory, the Drivers World Championship title. The quote "*Max Verstappen, you are*

the 4-time World Champion" echoed across social media and F1 news, marking a moment of celebration and pride among fans.

As the season approached its end, there was still time for two key moments. The first was a negative moment (point C), following a scandal involving Red Bull driver Verstappen and the Mercedes driver, George Russell. After a controversial incident during the Qatar GP, Verstappen publicly expressed his disregard for Russell, stating that he had lost all respect for him. In response, Russell criticized Verstappen's aggressive driving style, sparking a tense exchange between the two drivers in the media.

Finally, the last moment in the analysis (point H) is neutral and relates to two key announcements about the 2025 season. On 18th December 2024, Red Bull confirmed that their driver, Sergio Pérez, would not be part of the lineup for the upcoming season. However, this announcement contradicted an earlier statement, in which the team had affirmed that Pérez would remain. Just two days later, the team announced that the rookie, Isack Hadjar, would take over one of the team's race teams. This has created not only speculation but also enthusiasm among fans for the new driver joining the team.

4.10. WILLIAMS RACING

Despite the recent lack of success on track, Williams has a significant history in the sport since 1977 (Atlassian Williams Racing, 2025). This team has had the privilege of hosting some of the most legendary F1 drivers in history, such as Ayrton Senna and Alain Prost. During the analysis period of time, the team was mentioned around 961.000 times by 189.000 different fans. As the data indicates, Williams received a total of 71% neutral mentions, 22% positive, and 7% negative, and a net sentiment score of 2,6.

Figure 12. Williams Sentiment Over Time (Source: Brandwatch)

At the Australian GP in mid-March (point D), the team faced a complex situation that generated negative sentiment among the fandom. Following an incident during the practice session, Williams driver Logan Sargeant was required to concede his single-seater to teammate Alex Albon. This event occurred due to Williams' lack of an extra chassis, something rare in F1 that also reflects the team's financial and logistical difficulties in the 2024 season. This case was met with criticism from fans, who condemned the team's decision, as the rookie Sargeant was left without a race car for the GP, disallowing him the opportunity to accumulate points in the Drivers' Championship.

From the perspective of the fandom sentiment analysis, the two most mentioned moments (points F and C) were perceived as neutral and were related to the driver announcements for the 2025 season. In July (point F), Carlos Sainz, who had driven for Ferrari until then, was confirmed as a Williams driver for the 2025 season. Although Sainz is highly regarded by all fans in F1, and the decision to sign him reflected a calculated choice to position the team for a potential resurgence next season, the announcement was perceived as neutral.

Following, the biggest moment in mentions (points C, A, and H) occurred when Williams announced that Logan Sargeant would be replaced by another rookie driver, Franco Colapinto, for the remainder of the season. This announcement, while presenting a new driver, ignited an immediate sentimental reaction among fans, with many expressing a wide range of sentiments. While some showed strong support for the decision, where the positive sentiment is detected, the choice to promote Colapinto over more established names, such as Mick Schumacher, also ignited debate within the motorsport community, showing negative sentiment. A closer look reveals that the other peaks in negative sentiment, despite occurring at different times, exhibit a shared pattern. In both cases (points H and G), the reactions were driven by concerns over driver performance, particularly related to Alex Albon and Colapinto.

On the other hand, the other positive moments (points B, J, and E) come from Williams' overall success. During those moments, fans were quick to celebrate, with comments like: *"Williams scored 10 points today - their biggest points haul since the 2021 Belgian GP (…)"* and *"Thanks to all the mechanics for always having the car ready for each race. they are heroes thank you thank you thank you"*, showing how much the team fandom appreciated the functioning during the season. In these moments, it was not only the drivers who assumed the role of primary significance. The entire organization, including the engineers and mechanics, should be commended for their efforts. Their work behind the scenes was of great importance to Williams' success, and the fans have expressed their gratitude for it.

4.11 Analysis Summary

One of the final steps in the proposed DSR artifact, and thus, in this analysis, is to present the results and subsequently draw conclusions. Accordingly, Table 7 and Figure 13, below, provide a summary of the results for each F1 team during the analysis period.

Table 7 is a key component of this step, as it consolidates crucial social media metrics, including the total number of mentions, the total number of unique authors who participated in the discussions, and the number of emotional engagement peaks. Only the peak moments that were properly identified and explained are included in this analysis summary. Following this, Figure 13 visually illustrates the distribution of sentiment percentages for each team. The detailed conclusions will be presented in the subsequent chapters. However, this analysis summary establishes the foundation for understanding how each team is perceived by the fandom on social media.

Table 7. Summary of Social Metrics and Sentiment Peak Detection per Team

Team	Total Mentions	Total Unique Authors	Peak Detention		
			Positive	Neutral	Negative
Aston Martin	414.145	117.254	2	3	1
BWT Alpine	628.578	193.845	3	2	3
Ferrari	3.598.252	551.475	4	1	1
Haas	473.470	118.269	4	1	3
Kick Suber	123.702	53.994	4	2	1
McLaren	2.207.358	390.849	3	1	4
Mercedes	1.954.602	331.325	2	2	1
Racing Bulls	397.591	82.215	6	1	2
Red Bull	1.993.854	394.560	2	3	3
Williams	961.406	189.193	4	2	3

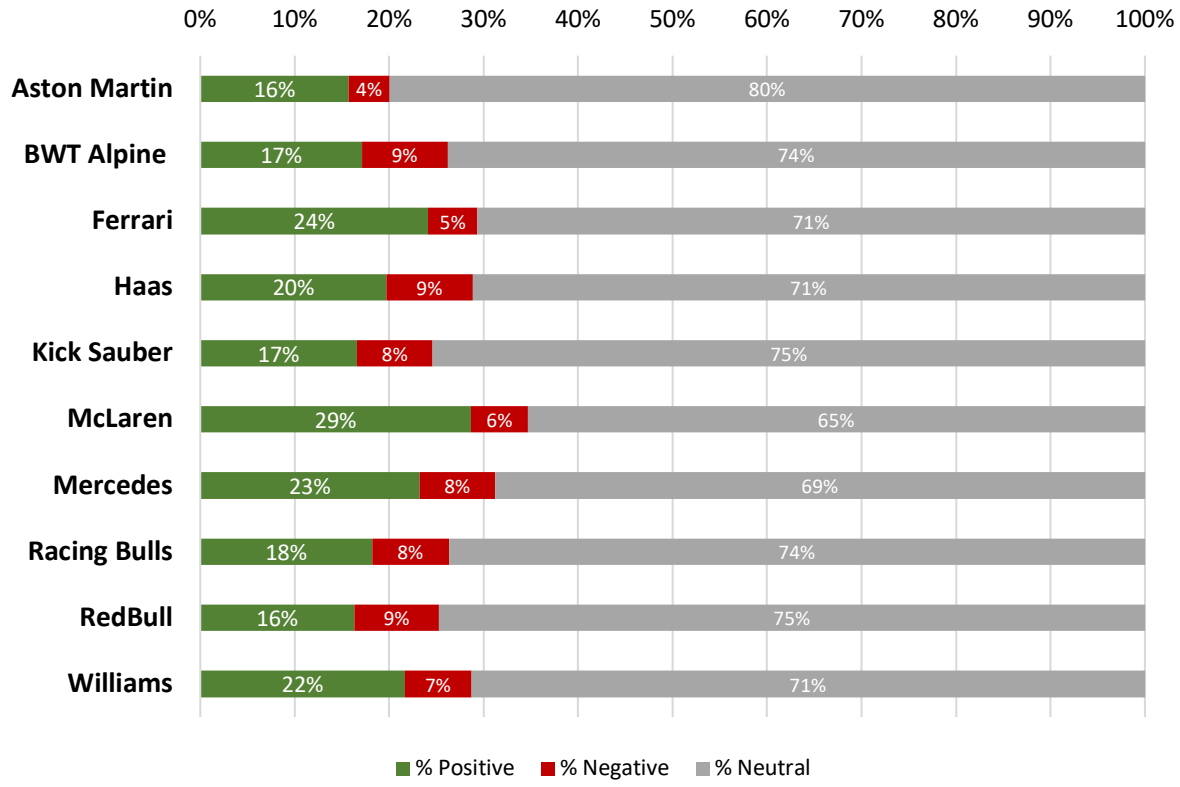

Figure 13. Fandom Sentiment Distribution per Team

5. RESULTS AND DISCUSSION

Based on the team-level analysis described in the previous chapter, this section explores fan perceptions of each team and aims to uncover patterns of engagement shared across the different F1 teams' fandoms. To achieve that, this chapter is divided into two parts. First, it examines how each team is perceived, comparing metrics such as 2024 Season Position, Share of Voice (SOV), and Net Sentiment Score (NSS). Second, it categorizes the types of moments that generate the highest levels of fan engagement across all teams by analyzing peaks in sentiment, measured through social media mentions.

5.1. Fan Perception of Teams

The table below presents the quantitative results of the analysis, providing key insights into team performance on track, social media visibility, and fan sentiment. Therefore, Table 8 summarizes the results of the final 2024 Constructors Championship standings alongside each team's SOV, representing their proportion of total media mentions, and NSS, which quantifies the overall tone of social media conversation, ranking on a scale from -5 (extremely negative) to +5 (extremely positive). Together, these metrics offer a broad perspective on the relationship between on-track results and fans' perception.

Table 8. Team Performance and Fandom Sentiment in the 2024 Season

TEAM	2024 SEASON POSITION	SHARE OF VOICE	NET SENTIMENT SCORE
McLaren	1º	**17,3%**	**3,3**
Ferrari	2º	**28,2%**	**3,2**
Red Bull	3º	**15,6%**	**1,4**
Mercedes	4º	**15,3%**	**2,4**
Aston Martin	5º	**3,2%**	**2,7**
Alpine	6º	**4,9%**	**1,6**
Haas	7º	**3,7%**	**1,8**
Racing Bulls	8º	**3,1%**	**1,9**
Williams	9º	**7,5%**	**2,6**
Kick Suber	10º	**1,0%**	**1,7**

● High ● Moderate ● Low

The 2024 season was a complete success for McLaren, both on and off the track. This team not only secured the Constructors Championship title but also achieved the highest NSS among all teams. With the second-highest SOV, McLaren stands out as a prime example of a team that balances track performance, social media presence, and fandom sentiment. Nevertheless, Ferrari captured the spotlight more than any other team. With almost 30% of the total SOV, Ferrari dominates public conversation on social media. Interestingly, the NSS closely matches the first team position, highlighting not just a high social media attention but also a positive perception from fans.

Despite ranking third in both the Constructors Championship and SOV, Red Bull recorded the lowest NSS among all teams. While the team's performance remained strong, especially with the leading World Champion driver in their lineup, this disconnect between visibility and sentiment suggests a potential challenge for the team. Red Bull must carefully manage controversies, as high visibility combined with negative sentiment can pose a team's reputational risk. Regarding Mercedes, this team continues to demonstrate a solid presence in social media, ranking 4th in SOV. However, its moderate NSS suggests a modest fan perception. Turning this social visibility into more positive fan dialogue will be an important step for strengthening the team and fan relationship in future seasons.

Aston Martin and Williams stand out as unique cases in this analysis. Aston Martin, in 5th championship position, exhibits one of the lowest SOV. However, its NSS ranks among the highest, suggesting that, even though the team receives fewer social media attention, the conversation surrounding it is mainly positive. On the other hand, Williams, despite occupying the second-to-last position in the Constructors Championship, maintains a relatively high SOV combined with the 4th higher NSS. This indicates that Williams has succeeded in fostering a strong emotional connection with its fandom that transcends the on-track performance.

Alpine, Haas, Racing Bulls, and Kick Sauber show the lowest levels of NSS, highlighting challenges in fandom perception. Simply put, these teams have not stood out either on the track or in social media conversations. Alpine, ranked 6th in the championship, has a moderate SOV but one of the lowest NSS, indicating that while it generates some social discussion, overall fan sentiment is less favorable. Haas and Racing Bulls maintain low social media attention and low positive sentiment, reflecting a small and dissatisfied fandom. Finally, Kick Sauber faces a challenge, holding the lowest SOV while also maintaining one of the lowest NSS.

5.2. MOMENTS CATEGORIZATION

The detailed qualitative sentiment analysis previously conducted for each F1 team highlighted specific moments that generated higher levels of fan engagement within their respective fandom. However, when comparing across teams, it becomes evident that certain types of moments consistently drive more mentions on social media.

This pattern suggests the existence of common trigger moments for online engagement that go beyond individual team contexts, reflecting broader reactions.

These categories of moments can be classified as follows:

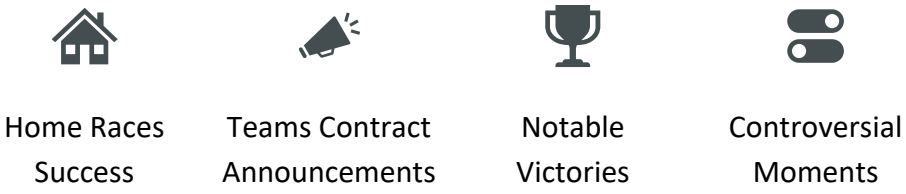

Figure 14. Moments Categories Driving High Fan Engagement

To facilitate a clearer understanding and visualization of the results, Tables 9 and 10 summarize the team-by-team analysis by identifying, for each team, the moments corresponding to the event categories mentioned in Figure 14. Each moment is associated with the predominant sentiment expressed by the fandom on social media, as detected at the peak of sentiment response captured by Brandwatch.

Table 9. Categories and Sentiment by Teams

CATEGORY	SENTIMENT		
	POSITIVE	NEUTRAL	NEGATIVE
	Ferrari Mercedes Racing Bulls	Mercedes	-
	BWT Alpine Haas Kick Sauber Williams	Aston Martin BWT Alpine Ferrari Haas Kick Sauber Red Bull Williams	Aston Martin BWT Alpine
	BWT Alpine Ferrari Kick Sauber McLaren Racing Bulls Red Bull	Haas McLaren Red Bull	-
	-	BWT Alpine	BWT Alpine McLaren Racing Bulls Red Bull Williams

Table 10. Analysis Summary per Team

TEAM	MOMENT	SENTIMENT			CATEGORY
Aston Martin	**Driver Contract -** Alonso and Stroll	NEU		NEG	
	Engineer Contract - Adrian	NEU			
BWT Alpine	**Driver Contract -** Doohan and Colapinto	NEU	POS	NEG	
	Race Win - Double Podium (1-2 win)		POS		
	Polemic Decision - From team to driver	NEU		NEG	
Scuderia Ferrari	**Driver Home Race -** Monaco GP		POS		
	Team Home Race - Monza GP		POS		
	Race Win - Double Podium		POS		
	Driver Contract - Hamilton	NEU			
Haas	**Drivers Contract** - Ocon and Bearman	NEU	POS		
	First Points - Magnussen	NEU			
Kick Sauber	**Driver Contract -** Hülkenberg	NEU	POS		
	First Points - Zhou		POS		
McLaren	**Driver First Win** - Norris and Piastri	NEU	POS		
	Race Win - Double Podium (1-2 win)	NEU	POS		
	Controversial - Team Decisions			NEG	
	Championship - Constructors		POS		
Mercedes	**Driver Home Race** - Silverstone GP	NEU	POS		
Racing Bulls	**Controversy** - Team decision			NEG	
	Driver Home Race – Japan GP		POS		
	Notable Victory – Ricciardo		POS		
Red Bull	**Championship** - Drivers		POS		
	Notable Victory - Brazil GP	NEU	POS		
	Controversy - Verstappen			NEG	
	Driver Contract - Perez and Hadjar	NEU			
Williams	**Controversy -** Team decision			NEG	
	Driver Contract - Sainz	NEU	POS		
Neutral (NEU) – Positive (POS) – Negative (NEG)					

a) Home Race Success

Throughout the race calendar, some drivers and teams have the opportunity to drive on their homeland, competing in front of a local crowd. From the analysis, it was possible to understand that, in the 2024 season, Ferrari and Mercedes were the only teams to achieve success in these GPs. Ferrari held the first place on the podium at the Monza GP, also known as the Italian GP, the home race for all the *Tifosi*. It is important to note that, at this particular moment, positive sentiment had slightly exceeded neutral sentiment, an outcome that was rarely observed. On Mercedes's side, the victory was celebrated not only because it took place on the team's home soil, but also because it was delivered by a driver who shares that same nationality. Once again, the positive sentiment was slightly superior to the neutral sentiment.

The analysis shows that more drivers had the opportunity to achieve some kind of success at their home GP. The Racing Bull driver, Yuki Tsunoda, although he did not secure a podium place at the Japanese GP in April, the notable performance generated considerable fan engagement across social media. These mentions reflect the deep support Tsunoda felt from the fandom, emphasizing how a driver's home race successes can increase enthusiasm in online mentions regardless of the final race outcome. In May, Charles Leclerc achieved his much-anticipated first victory on his hometown streets in Monte Carlo. Finally, in July, the Silverstone GP was a moment of immense joy for Mercedes fans, as Lewis Hamilton stood on the top step of the podium, celebrating an emotional home victory in his homeland.

Therefore, these moments elicited that were performed well at a home GP, whether by a driver or a team, represent a significant milestone in terms of fan engagement on social media. This moment aligns with key reasons why fans engage with the sport. Starting from when a team or driver wins their home race, fans experience an increased sense of group affiliation, feeling deeply connected to their community. As Bang et al. (2022) mentioned, fans are strongly influenced by the presence of an athlete from their own country. In fact, this connection also fuels BIRGing, since fans enhance their self-esteem by associating themselves with the success of their team or driver (Cialdini et al., 1976). By celebrating a victory on home soil, fans not only share in the collective pride but also experience personal validation, as the win reflects positively on their own identity (Self-Esteem).

b) Teams Contract Announcements

Through the sentiment analysis, it is evident that all fandoms demonstrate a high level of engagement with official announcements on social media. From the ten teams analyzed, seven recorded significant sentiment peaks at times associated with these announcements.

However, these types of events did not generate identical sentiment reactions. While the majority of fans' social media mentions reflected a neutral posture, variations occurred depending on the context. Considering the drivers' contracts, it is noteworthy that fans tend to express a combination of positive and neutral positions in response to these.

However, it is important to note that only one contract was associated with negative sentiment. This moment was related to the agreement of Lance Stroll with Aston Martin. Although F1 has changed from being an exclusive to a more merit-based sport, perceptions of favoritism persist in this case. Stroll's lack of consistent results over the last seasons and their connection to the team through his father, an Aston Martin co-owner, emphasize the idea of nepotism, and fans have not demonstrated a willingness to provide support. The analysis also showed that Aston Martin was the only team where the announcement of hiring a staff member other than a driver generated a substantial level of fans' engagement. Although the fandom perception was predominantly neutral, this event was the most discussed moment within the team.

These types of announcements can be extremely significant moments for the fandom, as they trigger crucial motivation for sports consumption. The first motivation, and the most evident, related to this topic, is the Acquisition of Knowledge. This type of social media interaction made the fans feel more informed about the future of their favorite teams. Additionally, as Wann et al. (2019) noted, this is subtly linked to the Self-Esteem motivation, as this type of news increased understanding of the team can serve as a status symbol among other fans, helping to affirm their identity within the fandom. A further potential explanation for fans engaging more in these announcements may be found in the motivation of Eustress and Drama. These informative publications on social media introduce an element of uncertainty about the team's future, while at the same time raising expectations about possible changes in the results.

c) Notable Victories

As mentioned previously, fans follow sports events not just for the entertaining value, but also because sports make them feel part of something bigger. In fact, this idea is related to the concept of BIRGing, which explains how sports fans feel emotionally rewarded even though they had no direct impact on those victories (Cialdini et al., 1976). Nevertheless, this is closely tied to Self-Esteem motivation, which helps explain both why individuals become sports fans and why specific types of victories are celebrated with more intensity, since notable victories have also been identified as provoking strong emotional responses and enthusiasm among fans. Among these victories, two main types stand out, specifically, the one-two finish and the championship win.

In the F1 context, when both drivers from the same team stand on the podium is considered a one-two finish. Unsurprisingly, this moment represents one of the greatest moments for that fandom. This happiness occurs because this type of success not only secures more points for the team but also is an infrequent occurrence in F1. Consequently, when this happens, fans tend to react very enthusiastically. For instance, the analysis revealed that Alpine (mid-tier team) one-two finish in the Brazil GP generated the highest levels of positivity among their fandom on social media.

While up to three drivers from different teams can step onto the podium in each GP, by the end of the season, only one team and driver are crowned as World Champions, and so, only their fandom gets the opportunity to celebrate that major achievement. In the 2024 season, Max Verstappen, driving a Red Bull single-seat, won the Driver Championship for the 4th consecutive time. Meanwhile, McLaren amazed the whole F1 community by winning the Constructors Championship, a title the team had not claimed in many seasons, marking a historic comeback for one of the most iconic teams on the grid. As expected, both of these milestones were highlighted by the fans on social media. These events generated a significantly high volume of mentions, predominantly characterized by a neutral and positive sentiment.

d) Controversial Moments

From the beginning, F1 has been closely tied to the real-life drama that fuels the excitement the sport thrives on. Several episodes in the 2024 season illustrated how F1 team decisions could generate strong reactions among fans. For instance, Williams drew attention when it chose to reassign the single-seat from one driver to another after a crash, raising questions around fairness and internal team dynamics. Similarly, McLaren generated controversy by instructing one driver to give up position on the track for the teammate. Nevertheless, controversies were not limited to team instructions. Race incidents and polemic moments between drivers also emerged as topics that fans reacted negatively to. From criticism of more aggressive driving styles, as seen in the Haas team, to controversies involving scandals between drivers from different teams, such as the conflict between George Russell, a Mercedes driver, and the Red Bull driver, Max Verstappen, these moments sparked negative reactions from fans.

These topics align closely with the results from Buzz Radar (2023a), which indicate that the main motives of negative fan sentiment are rivalries between teams and drivers. It is also important to recognize that such controversial moments reflect two other key reasons why people consume sport. First, they serve as moments of entertainment, both on and off the track, as the effects often extend far beyond the race itself, through media attention, debates, and public reactions. Secondly, these moments can be understood in the context of Eustress and Drama, which refers to intensely emotional narratives that captivate audiences. Dramatic moments in F1 trigger strong emotional responses, encouraging fans to actively engage, express their views, therefore, driving meaningful conversations and interaction across social media platforms.

6. CONCLUSIONS AND FUTURE RESEARCH

The main objective of this research was to investigate how fans perceive each F1 team and to identify the moments that drive the most fan engagement on social media platforms. In alignment with the main research objective, an additional aim was formulated, to develop a DSR artifact. Therefore, a process was designed to meet the contextual requirements of this study, while simultaneously offering a framework that can be adapted in future research with similar goals.

To achieve the study objectives, all stages of the DSR methodology were carefully followed. The process began with the identification of the research problem and the motivation behind it, followed by the formulation of the research question. Next, the objective of the solution was defined, in this case, the development of a process that not only addresses the goals of this study but also offers possible of replication. The proposed artefact was based on similar existing SMA frameworks. All steps and decisions were thoroughly documented to ensure clarity, ease of interpretation, and adaptability in the future. The artefact was then demonstrated and implemented, with the application presented in chapters 3 and 4. These include detailed team individual analyses as well as the conclusions drawn from them. Finally, the artefact enabled the research question to be effectively answered. Since no major revisions were needed after its development, the study proceeded to the final DSR stage, in which the artefact is communicated in a way that allows it to be replicated by both organizational entities and academic researchers.

In the context of fan perception of teams, the data demonstrate that on-track performance is not the only factor influencing team social media attention or positive fan perception. In the 2024 season, McLaren leads the Constructor Championship and holds the highest NSS (3,3), indicating strong fan support. However, Ferrari holds the largest SOV with almost 30% of the total. Nevertheless, Ferrari has a slightly lower NSS (3,2) compared to McLaren, showing that greater visibility does not necessarily equate to stronger fan positive sentiment. Red Bull and Mercedes both maintain moderate SOV, with 15,6% and 15,3% respectively. However, Red Bull NSS is the lowest at 1,4, indicating predominantly negative fan reactions despite its strong visibility. Mid-tier teams, such as Alpine, Haas, and Racing Bulls, exhibit both reduced visibility on social media and levels of fandom sentiment. However, Aston Martin, with 3,2% of SOV, achieves a relatively high NSS of 2,7, indicating a gladder fandom. Notably, Williams, ranked 9th in the championship, surprisingly holds a 7,5% of SOV and a strong NSS of 2,6, tending to reflect positive narratives around the team. Finally, Kick Sauber, positioned last in the Constructor Championship, has the lowest SOV (1,0%) and one of the lowest NSS (1,7), highlighting both minimal social visibility and fan enthusiasm.

Through qualitative sentiment analysis, this study concludes that the moments that drive the most fan engagement through social media mentions are: Home Race Success, Team Contract Announcements, Notable Victories, and Controversial Moments.

Home Race Success tends to incentivize strong engagement, especially because teams or drivers perform well in front of their local crowd. Team Joins Announcements, such as new driver signings, generate excitement and speculation among the fans. Notable Victories, such as championship wins or one-two victories, tend to generate massive enthusiasm and attract substantial social media attention. Lastly, Controversial Moments, including incidents, controversial decisions, or polemics, often fuel debate and generate negative reactions.

Regarding the construction of the DSR artifact, it is important to note that this process holds particular academic value. Theoretically, it advances the understanding of how fan sentiment can be analyzed and compared in sports contexts by integrating SML and SMA. Practically, it delivers a detailed process with guidelines that assist researchers to assess and compare how fans perceive different teams, supporting data-driven conclusions. This research also contributes by adapting the DSR methodology to the development and validation of artifact focused on fan engagement and sentiment in sports contexts, providing a reference model for future studies in similar domains.

In addition, the Social Media Approach for Analyzing Fan Sentiment and Engagement offers practical insights for sports organizations. By understanding which moments drive most online fan engagement, sports organizations can develop more effective strategies and foster stronger relationships with fans. A key recommendation for less visible teams (e.g. Alpine, Haas, Kick Sauber, and Racing Bulls) is to invest in SML as a strategic tool to boost fan connection. Without strong on-track results, understanding online fan sentiment becomes essential, since positive fandom engagement can sustain brand visibility, support sponsor value, and demonstrate long-term relevance within the industry. Nevertheless, for teams with lower NSS (e.g., Red Bull), actively listening is also crucial. This approach can reshape perception and build stronger loyalty in a digital and non-digital environment. This is particularly important, as positively engaged fans are a key driver of a sports organization's long-term growth and stability.

As with any research, this study faces some limitations that should be acknowledged. First, it is not possible to ascertain the extent to which social media mentions are specifically made by individuals considered as fans. Therefore, this approach does not ensure that the collected data exclusively reflects the perspectives of actual fans, since mentions may also come from general spectators. While social media mentions offer valuable insights into public perception, they present limitations for research. Social media privacy policies and data access restrictions limit the ability of even advanced SML tools (such as Brandwatch) to capture all mentions. Consequently, certain fan mentions remain inaccessible, introducing potential gaps into the data.

Sentiment analysis is naturally limited, as informal language, sarcasm, and emojis hinder accurate interpretation. Despite Brandwatch's advanced NLP algorithm, some misclassifications were observed. For instance, emojis like the "crying face" can sometimes be interpreted as expressing sadness, when in context they reflect emotional joy, as was possible

to see in the Alpine analysis. Additionally, some sentiment spikes were detected, even though they were not associated with any specific events. These Brandwatch misclassifications underscore the importance of incorporating a qualitative layer into the analysis.

Taking these limitations into consideration, a recommended data-driven approach for F1 teams would be to establish fan communities as organized channels for SML. While F1 Fan Voice, the F1 official online platform, already allows fans to participate in surveys, polls, and forums, teams should consider creating their online fandom forums. By establishing these dedicated spaces, teams can foster deeper engagement, allowing fans to share opinions, exchange ideas, and connect more directly. Unlike regular social media platforms, these forums would filter out noise from non-fans and offer teams access to more high-quality data. By building and maintaining these forums, teams could gain a reliable data source, free from the limitations of traditional social media tracking. This recommendation would not only provide valuable fan insights but also strengthen the relationship between teams and their fans, which means a double win for teams.

For future research, it would be advantageous to use data from other SML platforms besides Brandwatch or explore different methods of gathering social media data, such as API, web scraping, or other data providers. Ensuring that the data comes from verified fans would also allow for more accurate analysis. This increases the understanding of audience engagement by removing no-fan mentions, allowing researchers to focus on the feelings of official fans. Additionally, given the similar competitive nature but significantly different scale and public impact, it would be particularly interesting to apply the same type of analysis to F1 lower-tier championships, specifically Formula 2 and Formula 3. Such a comparison could reveal whether fan engagement patterns observed in F1 are consistent across the other levels of the motorsport competition.

APPENDIX

The data collected from Brandwatch is available in Excel format to support consultation and further analysis. All documents can be accessed via the following link: https://liveeduisegiunl-my.sharepoint.com/:f:/g/personal/r20201633_novaims_unl_pt/ErOJWAGwBp1Iv2wLRKKlwEcBGTJhn8_cnEsm1sdKXacuZQ?e=fGjfCv

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