Digital Grandstands: Understanding the Impact of Social Media Platforms in the Dynamics of Online Brand Communities of Formula One

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ABSTRACT

Online brand communities (OBCs) have increasingly been regarded as key spaces for cultivating consumer loyalty, advocacy, and a sense of identification in the digital era. However, to this day, limited research has been performed on this topic with regards to the sports marketing domain, specifically Formula One (F1). This study aims to address this research gap by exploring the impact of different social media platforms (Instagram, Twitter, TikTok, Reddit) on online brand advocacy (OBA), brand community identification (BCI), and brand loyalty (BL) within F1 OBCs. Following a quantitative methodological approach, four surveys were administered across the aforementioned social media platforms. The study collected and analyzed 220 total responses, 55 per platform, from the respective F1 OBCs in order to test four hypotheses.

The findings from this study suggest that the chosen type of social media platform has a significant positive effect on OBA, BCI, and BL in F1 OBCs. These results underscore the prominent role that the type of social media platform plays in fostering these dimensions of consumer-brand relationship engagement within online sports communities. Furthermore, this study found significant positive correlations between OBA and BL, OBA and BCI, and BL and BCI. Drawing on social exchange and social identity research, these results shine a light on the influence of brand advocacy in fostering private and public loyalty actions, and an increasing sense of community identification amongst fans. Moreover, they provide insights into how this enhanced sense of BCI can drive profound brand loyalty. Finally, this study found BCI to have a mediating role in the relationship between OBA and BL. This result provides insights into how the feeling of identification with a brand community plays a significant role in linking advocacy efforts by fans and the resulting brand loyalty that the brand can benefit from.

To conclude, this study takes key steps in extending OBC research further into sports marketing, and for the first time into F1. It furthermore contributes to existing research with new insights into OBA, BCI, and BL dynamics across Instagram, Twitter, TikTok and Reddit. As digital technologies continue to play an increasingly vital role in consumer-brand relationships, these findings offer guidance to sports marketers and media professionals on how to best harness digital engagement in their respective consumer-initiated OBCs, and extract positive private and public BL outcomes.

KEYWORDS: *online brand communities, online brand advocacy, brand loyalty, social media, formula one*

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PREFACE

It would be impossible for me to refrain from acknowledging the incredible support network which has propelled me this far, and which has contributed to this work in one way or another. First, words cannot express my gratitude for my supervisor, Alexandra Sierra Rativa, whose invaluable guidance, patience, and kind encouragement throughout this whole endeavor helped me achieve this milestone which once seemed impossible.

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List of Abbreviations

Abbreviation	Concept or name
BCC	Brand community commitment
BCE	Brand community engagement
BCI	Brand community identification
BL	Brand loyalty
E-WOM	Electronic word-of-mouth
F1	Formula One
OBA	Online brand advocacy
OBC	Online brand community
SET	Social Exchange Theory
SIT	Social Identity Theory
UGC	User-generated content

1. Introduction

The recent reinvention of Formula One (F1) and its rapid rise toward a mammoth global media presence present a fascinating backdrop for research in sports marketing and fan studies. As the premier motorsport category with a rich heritage, F1 has enjoyed an established and exclusive reputation throughout its existence. This has been continuously fortified by relatively limited accessibility in terms of a small number of annual events worldwide, high ticket prices, and a small number of athletes and teams (Shields & Reavis, 2020). Nevertheless, the sport appeared to be teetering on irrelevance amidst falling attendance numbers, insecure sponsors, and an inability to engage a younger generation. For this reason, following its purchase by Liberty Media in 2016, F1 has heavily relied on its live broadcasting and online communication to engage its global fan audiences (Richards, 2016; Shields & Reavis, 2020). Through complex media strategies, F1 has successfully navigated this challenge of inspiring and procuring a brand new generation of fans, resulting in financial growth. In 2022, the Formula One Group revenue amounted to $2.57 billion, and experienced a 333% growth in operating income (Brown, 2023). However, it has also cultivated and reaped a variety of benefits from thriving online brand communities (OBCs) with millions of active fans who not only engage with, but also advocate for the brand and its respective subbrands (Sylt, 2020). As such, F1's reinvention, through comprehensive digital media strategies centered on fan engagement, offers an interesting context to research consumer dynamics in online media spaces.

Fans of F1 nowadays take advantage of online networked spaces such as social media platforms to find like-minded individuals who share a passion for the same motorsport category, without the limitation of geographical separation. However, beyond building relationships with other fans, they also experience relationships with the brand itself. These represent vivid OBCs (Muñiz & O'Guinn, 2001; Mcalexander et al., 2002) and can be found in platforms such as Twitter (under hashtags such as #F1twt or #F1Twitter), Instagram (under hashtags such as #F1 or #Formula1), TikTok (as #F1tok or #F1TikTok), and Reddit (as r/Formula1 or other related subreddits). These communities are a type of consumer-initiated brand community (Wong & Hung, 2022), yet represent an environment where fans coexist with the official F1 brand and sub-brands, and related firms. Despite not being firm-initiated, F1 can leverage the interactions

and relationships within these brand communities on the various social media platforms to extract relational outcomes.

Based on consumer culture theory, research on OBCs and their relational outcomes has seen a growing interest from scholars in recent decades. In particular, recent literature has begun to explore the concept in relation to sports marketing, albeit with a couple of gaps. First, this existing research on sports marketing and OBCs has primarily focused on team sports such as football and basketball (Anagnostopolous et al., 2018; Annamalai et al., 2014; Filo et al., 2015; McCarthy et al., 2014; Popp et al., 2016; Popp & Woratschek, 2016; Vale & Fernandes, 2017; Wong & Hung, 2022). As such, the growing popularity of other team sports highlights a need to explore previously-overlooked sectors. Second, the majority of this sports marketing research has centered on platforms such as Facebook and Twitter, revealing a research gap as new generations of sports fans increasingly engage with other platforms such as Instagram, TikTok, and Reddit (Wong & Hung, 2022). Overall, research on the matter concurs that outcomes which can be extracted from OBCs play a key role in sports organizations' digital outreach to fans. For instance, scholars have found that OBCs in various contexts can serve as drivers for fan engagement (Annamalai et al., 2014; Vale & Fernandes, 2017), brand management (Anagnostopolous et al., 2018), brand advocacy development (Choi et al., 2021; Wong & Hung, 2022), and brand value co-creation (Wong, 2023). While comprehensive bodies of research have explored OBCs in the sports domain, further contributions can be made by exploring the outcomes that can be extracted from F1 OBCs, and whether the type of platform that the community exists in influences these outcomes.

This study aims to address the research gap by examining the impact of various social media platforms on the dynamics of online brand advocacy (OBA), brand community identification (BCI), and brand loyalty (BL) in F1 OBCs. It contributes to the growing body of research on consumer culture, OBCs, and fan engagement (Wong & Hung, 2022). Moreover, it broadens the scope of sports marketing research by exploring the relatively under-researched area of F1 and its OBCs. The research also responds to calls for wider investigations into the role of emerging social media platforms in sports marketing and fan engagement, and offers valuable insights that could, for instance, inspire future studies on this topic (Wong & Hung, 2022). Besides expanding the scope of sports marketing research and advancing academic understandings on emerging

social media platforms in relation to sports, this research offers a number of societal and managerial implications as well.

The findings from this research can be relevant to societal understandings of sports and fan dynamics, and to managerial insights on social media platforms and sports marketing. For instance, from a societal perspective, this study addresses the growing significance of online communities in the sports industry and the role they play in shaping fan experiences (Popp et al., 2016; Smith & Stewart, 2014). Through exploring the impact of various social media platforms on F1 OBCs, this research contributes to wider understandings of the ways in which fans consume and engage with sports in the digital era. Likewise, from a business perspective, this research is relevant to professionals in the media, entertainment and sports industries, as it provides insights into the effectiveness of different social media platforms for leveraging brand community identification, fostering advocacy, and cultivating loyalty in the F1 context. By understanding the nuances of various platforms, organizations can tailor their marketing and communication strategies to maximize fan engagement and loyalty, ultimately driving both brand and financial value (Anagnostopolous et al., 2018; Sylt, 2020). Furthermore, the findings may also be applicable to other organizations in the sports and entertainment industries that face similar challenges in engaging with their audiences through digital channels. In conclusion, the research aims to provide valuable insights for both scholars and practitioners in the fields of sports marketing, media, and business.

In line with the goals of this study, the following research questions are proposed:

RQ1: To what extent does the type of social media platform (Instagram, Twitter, TikTok, Reddit) influence the **Online brand advocacy** in the Online Brand Communities of Formula One?

RQ2: To what extent does the type of social media platform (Instagram, Twitter, TikTok, Reddit) influence the **Brand community identification** in the Online Brand Communities of Formula One?

RQ3: To what extent does the type of social media platform (Instagram, Twitter, TikTok, Reddit) influence the **Brand loyalty** in the Online Brand Communities of Formula One?

RQ4: What is the relationship between **online brand advocacy, brand community identification,** and **brand loyalty** in the online brand communities of Formula One?

In order to answer these research questions, this study utilized a quantitative research approach with four surveys as the data collection tool. In total, 220 responses, 55 for each platform, were collected and analyzed from the four F1 OBCs on Instagram, Twitter, TikTok, and Reddit. The following paper thus provides detailed insights into the background of this study and the methodological choices for research design and operationalization, prior to presenting and discussing the results. In order to do so, it is structured into six chapters, out of which this is the first. The remainder of this chapter will expand on the contents of each of the following chapters.

The second chapter provides context into the theoretical underpinnings of this study. It begins by providing a review of literature on sports marketing and branding. It then delves into the topic of brand architecture, in order to establish F1 as a sports brand and provide theoretical context as to its sub-brand structure and what it implies for its media dynamics. Next, this paper introduces the concept of brand communities and explores the literature on OBCs in relation to social media platforms. Having established the paradigm of sports marketing, the F1 brand and sub-brands, and OBCs on social media, this paper then links these areas of research to explore F1 OBCs. Specifically, it provides brief practical examples of the characteristics of the F1 OBCs on Instagram, Twitter, TikTok, and Reddit, in an effort to clarify any similarities and differences in their nature. Finally, it reviews existing literature on the remaining variables of this study (OBA, BCI, and BL), expanding on their conceptualizations, antecedents, and outcomes. Ultimately, this chapter concludes by introducing the hypotheses for this study. Following the establishment of the theoretical framework and the hypotheses, this paper then delves into the methodological choices undertaken for the design and operationalization of this research.

The third chapter of this paper addresses the methodological choices that guide this study. First, the choice of a quantitative survey-based approach in order to tackle the aforementioned research questions and hypotheses is justified. Next, the chapter rationalizes the use of non-probability purposive sampling methods, with both homogeneous and heterogeneous approaches. It also explains the use of a survey-experiment with four surveys for data collection, and provides details into the procedure, along with an in-depth description of the sample. Additionally, this

chapter provides details into the operationalization of the OBA, BCI, and BL concepts and how these were measured. Finally, it concludes with insights into the methods used to analyze the data and test the hypotheses, such as ANOVAs, Pearson's correlations, and a mediation analysis via PROCESS Model 4.

The fourth, fifth, and sixth chapters of this paper refer to the results, discussion, and conclusion sections, respectively. The fourth chapter reports the results of the analysis and provides tables and figures to aid in visualizing the data. Subsequently, these results are then analyzed and expanded upon in detail throughout the fifth chapter. Overall, it aims at placing the findings into the context of the research questions of this study, as well as the previous academic research on the relevant topics. The sixth and final chapter summarizes the purpose and main findings of this research and provides insights into its limitations. Ultimately, it concludes by offering perspectives for future research.

2. Theoretical Framework

2.1 Sports Marketing

Sports marketing is an essential component of sports organizations. It can be defined as "all activities designed to meet the needs and wants of sports consumers through exchange processes" (Mullin et al., 2014, p. 11). It differs from other marketing fields as it proposes a unique blend of elements such as entertainment, emotion, and competition (Barr & Porreca, 2015). As a field, sports marketing has seen a significant evolution over recent decades, along with the growth of the sports industry, digitalization, and an increasing focus on audience – also referred to as fans – engagement and experiences (Filo et al., 2015; Schwarz & Hunter, 2010; Shank & Lyberger, 2014). Nowadays, effective sports marketing centers on fostering and leveraging strong fan relationships in order to drive financial stability and growth for sports organizations (Schwarz & Hunter, 2010; Mullin et al., 2014; Woratschek et al., 2014). This is mostly because fan relationships can have powerful outcomes in the shape of increased engagement, advocacy, loyalty, and support (Woratschek et al., 2014). Moreover, the growing ubiquity of social media and digital media coverage has amplified the ability to reach, engage, and immerse fans at a local and global level, catapulting the relevance that effective sports marketing can have towards sports organizations (Mason, 1999; Schwarz & Hunter, 2010). Overall, through prioritizing audience engagement and experiences, sports organizations can effectively use sports marketing, and its components, to generate growth and financial stability.

2.1.1 Sports Marketing and Sports Branding

Branding is a highly important and complex component of sports marketingwhich involves "decision-making at a number of levels, in a number of markets" (Mason, 1999, p .404 *as cited in* Kunkel, 2013). This is due to the meaning of a sport brand referring to both "sport brands in general, such as a league brand, a team brand, or an event brand" (Kunkel et al., 2013, p. 177). In the case of sports leagues, brand management is not only relevant to their development, but also in ensuring opportunities for franchise teams to develop and strengthen their own brands (Kunkel et al., 2013). To fully encapsulate the relationships of sports brands, it is important to first touch upon brand architecture literature.

Brand architecture, as defined by Aaker and Joachimsthaler (2000a) and as cited in Kunkel et al. (2013), refers to the hierarchical organization of a brand portfolio, and how these relationships may be perceived by consumers. By providing clear and consistent brand signals and associations, brand architecture can strongly influence consumer decision-making (Kunkel et al., 2013). In order to conceptualize the various types of brand architectures, Aaker and Joachimsthaler (2000a) developed a brand relationship spectrum. According to Kunkel et al. (2013) it is one of the most commonly used brand architecture taxonomies, and it involves four basic strategies and nine subcategories (Aaker & Joachimsthaler, 2000a). Out of these, one of the most common strategies involves a sub-brand strategy (Laforet, 2010). Here, brands exist within a framework of organization where master brands and subbrands exhibit vertical relationships. Connecting this back to sports branding, sports leagues exhibit subbrand strategies in which the master brand (league brand) is vertically related to its subbrands (team brands); (Kunkel et al., 2013). Likewise, descending another step in the hierarchy, a team brand can be considered a master brand in relation to its athletes, which would then be regarded as subbrands. These vertical relationships imply that management and marketing decisions can carry influence from master brand to subbrands, and vice-versa (Kunkel et al., 2013; Wong & Hung, 2022). Overall, the relationships within the various brand architecture strategies, such as the vertical relationships exhibited in subbrand strategies, can influence how consumers perceive the brand portfolio through a number of influences such as positive quality associations and attraction.

Connections between master brands and sub-brands – in the context of leagues, teams, and athletes – can imply positive associations with regards to quality (Doyle et al., 2020; Kunkel et al., 2013; Preble & Hoffman, 1994), as well as increased promotion and attraction. Depending on whether the fans are interested primarily in the league, the team, or an athlete, consumers will perceive an endorsed brand strategy. This strategy refers to subbrands which are endorsed by the respective master brand, and has been mostly researched in relation to American football and football (Du et al., 2020; Kerr & Gladden, 2008; Kolbe & James, 2000; Lock et al. 2009; Uncles et al., 1995). Nevertheless, these brand hierarchy relationships can be most easily visualized in a sport of a smaller size, such as F1. F1 holds only 10 teams containing two athletes each. Each team and athlete represent their own subbrands, totalling 30 subbrands in total associated to the F1 brand. The relationships in this hierarchy can be visualized in Appendix A. In order to

understand the benefits that can be extracted from connections in an endorsed brand strategy with relation to F1, this paper briefly provides context into the F1 brand and its subbrands.

2.1.2 Formula One and the Formula One Brand

The reinvention of F1 represents not only a giant feat in terms of sports management, but also a massive effort in terms of sports marketing, with branding and fan engagement at the core of its strategy. F1 is the premier open-wheel single-seater motorsport series, governed by the Federation Internationale D'Automobile (FIA) and commercially managed by the Formula One Group; (Shields & Reavis, 2020). Featuring the fastest, and most technologically-advanced single seater cars up to date, the FIA Formula One World Championship is widely considered the "world's most prestigious motor racing competition, as well as the world's most popular annual sporting series" (*2023 FIA Formula One World Championship*, 2023). Following the purchase of the F1 Group by Liberty Media in 2016, the sport experienced a notorious transformation (Sylt, 2019; Shields & Reavis, 2020). In an effort to tackle declining viewership rates and engage a new generation of fans, F1 turned to digital engagement practices and an overhaul of its media products, now being known for driving innovation at both a sport and media level (Shields & Reavis, 2020). This established its role as an entertainment giant and allowed it to expand its global audience footprint (Hülkenberg, 2022). Despite the sport currently experiencing an increased popularity and growth, its success as a sports brand is relatively recent.

As a sports brand, F1 experienced a troubled history. Under the previous direction of Bernie Ecclestone, the sport primarily sustained itself through broadcast and sponsorship deals, as well as live attendance revenue (Shields & Reavis, 2020). It held no business infrastructure, including no formal marketing, promotion, sponsorship and research departments (Shields & Reavis, 2020). This reflected its leader's vision, which saw no potential value in digital technology or younger generations of fans (Sylt, 2019, *as cited in* Shields & Reavis, 2020, p. 7). Ecclestone's perspective on the sport's future, media-wise, reflected in virtually no touchpoints for fans to engage with the sport beyond the racetrack (Shields & Reavis, 2020). Nevertheless, its failure to embrace the potential benefits that sports marketing could provide was drastically overturned following the purchase of the Formula One Group by Liberty Media.

Liberty Media's takeover of F1 was unique in that it recognized the value of placing fans at the center of its strategy. Its mission was to make the sport more friendly for fans, to strengthen the brand, and to integrate spectacle into the sport (Shields & Reavis, 2020). As broadcast, sponsorship, and attendance revenue streams hold fan viewership at its core, Liberty Media understood that without fans, there was no business. By establishing engagement as one of its key strategic pillars for growth and exploring other revenue streams, F1 was able to engage fans through both digital platforms – such as streaming and social media – in order to create digital pathways to bridge the F1 experience from the track to fans all over the globe, and further complement its traditional media strategy (Shields & Reavis, 2020). While some of the marketing initiatives to establish the presence and reach of the F1 brand include a Netflix show, a digital streaming service (F1TV), Esports leagues, and many other examples (Shields & Reavis, 2020), the most relevant to the present research is its use of social media.

As part of its digital-first strategy, F1 employed a complex strategy that makes use of the brand hierarchy relationships illustrated in Appendix A to engage with fans. Teams and athletes are encouraged to develop and nurture their social media presence in various channels, creating a landscape where fans can engage with the F1 brand and its sub-brands despite where they initially came from (i.e.: a driver's Instagram profile, a team's YouTube video, or F1's official livestream); (Shields & Reavis, 2020). However, the F1 social media landscape is not unique or limited to its owned media channels. In fact, these channels exist and operate within vibrant customer-initiated brand communities on social media platforms. Despite the massive traction the sport has garnered throughout the past decade, there is virtually no academic research onto its marketing, social media, and community strategies compared to other sports such as football (Anagnostopolous et al., 2018; Annamalai et al., 2014; Filo et al., 2015; McCarthy et al., 2014; Popp et al., 2016; Popp & Woratschek, 2016; Vale & Fernandes, 2017; Wong & Hung, 2022), American football, or basketball (Du et al., 2020; Kerr & Gladden, 2008; Kolbe & James, 2000; Lock et al. 2009; Uncles et al., 1995). This paper aims to bridge the gap between brand community research and F1, beginning with theoretical understandings of brand communities below.

2.2 Brand Communities

As initially defined by Muñiz and O'Guinn (2001) a brand community is a "specialized, non-geographically bound community, based on a structured set of social relations among admirers of a brand" (p. 412). Nevertheless, admirers, otherwise referred to as customers or consumers, are not the only ones present in brand communities – a number of entities, such as brands or firms can also exist within them (Coelho et al., 2019). As such, social relationships within brand communities can include customer-brand, customer-firm, customer-product, and customer-customer relationships (McAlexander et al., 2002). Brand communities contain three main elements: a shared consciousness, shared rituals and traditions, and a sense of duty or obligation towards community members (Muñiz & O'Guinn, 2001). Representing powerful socio-economic phenomena through the benefits that can be extracted from their social relationships (Arnould & Thompson, 2005; Stratton & Northcote, 2014), brand communities have been of particular interests to scholars in the domain of consumer culture.

Previous research compares brand communities to subcultures of consumption and consumer tribes. For instance, it highlights the role that moral responsibility, social relationships, and emotional connections play in them (Arnould & Price, 1993; Caldwell & Henry, 2004; Cova & Cova, 2002; Fournier, 2008; Holt, 1995; Kozinets, 1997; McAlexander et al., 2002; Muñiz & O'Guinn, 2001; Schouten & McAlexander, 1995). Nevertheless, Stratton and Northcote (2014) highlight certain dynamics that might differentiate brand communities from subcultures or consumer tribes, namely: stability despite geographical distance, and the brand being central to the shared cultural elements, rather than values, interests, or lifestyles. A key similarity to note is that the wide majority of the aforementioned studies concur with Muñiz and O'Guinn's (2001) idea of brand community members specifically being admirers of a brand. Nevertheless, Luedicke (2006) posits that a multi-sided approach to brand communities – in which both admirers and non-admirers of a brand are considered – could lead to a better understanding, particularly in more reactive communities. While brand communities hold certain similarities to subcultures of consumption and consumer tribes, their key differences lie in the dynamics of participation, and the existence of both admirers and non-admirers.

Researchers have explored why individuals join and participate in these communities, rooted in a number of theories. For example, Bagozzi and Dholakia (2006) refer to Tajfel & Turner's (2004) social identity theory and posit individuals' need for belonging and identity as antecedents to participation in brand communities. Furthermore, individuals may find value in brand communities as a way to seek and share information about said brand (Wasko & Faraj, 2005). Drawing on social capital theory, Wasko and Faraj (2005) posit that this act of knowledge sharing is rooted in the potential value and benefits that can be extracted from these interactions in OBCs. Similarly, Preece (2001) suggests individuals can search for and access advice, as well as solutions to their problems. Emotional support and empathy may also influence their presence in brand communities, as individuals may feel inclined to voice their experiences or emotions towards a brand, and be met with understanding by other members of the community (Preece, 2001). Moreover, initial understandings of relationships within brand communities were thought to be mediated by a pre-existing BL (McAlexander et al., 2002), implying a strong relationship between an individual and brand to be an antecedent to their participation in a brand community (Algesheimer et al., 2005; Kumar & Kumar Nayak, 2018; Muñiz & O'Guinn, 2001; Tsai et al., 2012). Nevertheless, later advances in brand community research introduced the possibility for community member-based relationships to foster brand relationships (Bagozzi & Dholakia, 2006; Jang et al., 2008; Zhou et al., 2012; Raïes et al., 2015, *as cited in* Kumar & Kumar Nayak, 2018). Furthermore, the outcomes that these brand relationships can generate make brand communities, and the investment of resources into these, a priority in marketers' eyes.

Brand communities are of high importance to marketers for various reasons (Clark et al., 2017; Tiruwa et al., 2016). For starters, they offer brands the possibility to develop and nurture long-term relationships with their customers (Laroche et al., 2012). Nevertheless, beyond being able to reinforce these relationships, scholars have explored the role that these communities play in fostering outcomes such as: brand love (Coelho et al., 2019), trust (Carlson et al., 2008), satisfaction (Clark et al., 2017), loyalty and advocacy (Algesheimer et al., 2005; Bagozzi & Dholakia, 2006; Coelho, 2019). These outcomes represent benefits that brands can reap from brand community members, and which can translate into positive word-of-mouth (WOM) and consequently into the attraction of new customers (Clark et al., 2017). The benefits that brand communities can provide to its members and brands have been exacerbated in recent years, with the appearance of communities in online social environments, also known as OBCs.

2.2.1 Online Brand Communities

Having defined brand communities and explored its characteristics, antecedents and outcomes, it is important to mark the differences between brand communities and OBCs. OBC research draws on the conceptualizations and theoretical underpinnings of brand community research. In many studies, the terms brand community and OBC are used interchangeably. However, these two concepts hold a few differences, namely: the interaction medium, the accessibility, and the dynamics of communication.

OBCs, as the name suggests, take place in digital, online environments (De Valck et al., 2009). They differ from brand communities in the sense that brand communities can also exist in offline environments, such as in-person clubs or gatherings. As OBCs and brand communities are comprised of relationships that are not necessarily geographically-bound (Muñiz & O'Guinn, 2001), online environments such as websites, forums, or social media platforms offer conducive environments where OBCs can proliferate (De Valck et al., 2009). Thus, OBCs offer increasingly accessible and convenient environments for members, where digital communication between consumers and firms, or among consumers themselves can take place (Wong & Hung, 2022). Moreover, the dynamics of OBCs are particular in the sense that they move at a faster pace than traditional brand communities. OBCs can facilitate real-time interactions, and can therefore be highly responsive (De Valck et al., 2009). OBCs can also be further characterized by their creators.

OBCs can be classified into two types. These communities can either be consumer-initiated, or firm-initiated (Liao et al., 2017; Liao et al., 2021; Pedeliento et al., 2020). The former refers to communities created and managed on a voluntary basis by its members, while the latter refers to communities managed by a brand in order to establish and cultivate relationships with consumers (Liao et al., 2021; Pedeliento et al., 2020; Wong & Hung, 2022; Zhou et al., 2022). OBCs present a conducive environment for extracting a number of brand-related outcomes. For example, OBA is common (Wong & Hung, 2022), as members typically tend to exhibit trust, commitment, and engagement (Matute et al., 2019). Recent research on OBCs has heavily focused on social media platforms, particularly Facebook, Instagram, and Twitter (Velotsou & Liao, 2023). Nevertheless, OBCs exist across a plethora of platforms. Prior to discussing the

formation and operation of OBCs in the four platforms of interest in this research, the concept of social media platforms is explored below.

2.2.2 Social Media Platforms for Online Brand Communities

Understandings of social media platforms have evolved throughout the years, along with new developments, features, and affordances on these (Aichner et al., 2021). To account for their development against a rapidly-changing landscape, scholars have repeatedly discussed and attempted to refine and clarify the concept of social media. As a result, there is currently no single, universally accepted definition. However, this section will expand on some of the key discussions throughout the years.

Early discussions surrounding social media posit 'social network sites' as a part of social media platforms. Boyd and Ellison (2007) differentiate these social network sites from other types of online communities through a set of characteristics, such as the existence of individual user profiles and the role they play, as well as the possibilities and dynamics of connections with other users. In an attempt to create a more nuanced understanding of these characteristics of social media platforms and their implications, Kietzmann et al. (2011) proposed a framework to understand the 'building blocks' of social media. As Kietzmann et al. (2011) suggest, these blocks include "identity, conversations, sharing, presence, relationships, reputation, and groups" (p. 241), and the division of these allowed for a better understanding of the functions that affected user dynamics on social media. Nevertheless, Schneiderman et al. (2011) noted that these early conceptualizations of social media centered heavily on user-generated content (UCG), user connections, and interactions, and called for the use of computing research in order to realize the value of social media.

Later research on the concept of social media continued to build upon the definitions proposed by these earlier studies, while simultaneously adapting to the rapid development of social media platforms. For example, definitions began to account for the antecedents of the relationships forged on social media, and the outcomes that users could derive from these. Carr & Hayes (2015) suggested social media "allow users to opportunistically interact and selectively self-present, either in real-time or asynchronously, with both broad and narrow audiences who derive value from user-generated content and the perception of interaction with others" (p. 50). Other

definitions defined these interactions further. For example, a highly popular definition of social media amongst scholars presents it as Internet-based applications that allow users to create and exchange content (Kaplan & Haenlein, 2010). Nevertheless, Kapoor et al. (2018) present a more comprehensive understanding of social media, conceptualizing it as platforms that facilitate the distribution of content and creation of dialogue in order to communicate to broad audiences. With regards to its inception and its purpose, they state that social media platforms enable interactions to occur for both personal and professional purposes (Kapoor et al., 2018). The aforementioned definitions of social media are all applicable to the platforms which this study aims to look at: Instagram, Twitter, TikTok, and Reddit. As such, the following sections will briefly provide details into each platform, and what characterizes the F1 communities within them.

2.2.2.1 Online brand communities of Formula One

F1 OBCs on the four aforementioned platforms can be characterized by a number of traits. In particular, they are all consumer-initiated rather than firm-initiated. Nevertheless, the official F1 brand channels and official related sub-brand channels operate within them as well. This section explains the differences across the platforms, categorized into hashtag-based and forum-based.

In the hashtag-based platforms (Instagram, Twitter, TikTok), F1 OBCs can be found under general hashtags such as #F1, #FormulaOne, #Formula1. They can also be platform-specific, such as #F1Twitter or #F1twt on Twitter, or #F1TikTok or #F1tok on TikTok. Moreover, hashtags can be related to other brands within the brand hierarchy, such as the teams (i.e: #RedBullRacing or #RBR, #ScuderiaFerrari or #Ferrari, etc.), and drivers (i.e.: #lewishamilton, #landonorris, etc.). Finally, while not specifically branded such as the aforementioned hashtags, the community can also be found using the names of the events and tracks on the F1 calendar (i.e.: #AzerbaijanGP, #MonacoGP, #Monza, #Zandvoort, etc.). The content and interactions visible in these hashtags are ultimately representative of the wider F1 OBC, and more specific hashtags such as the latter are also used in combination with the general hashtags described above. This is slightly different to how communities operate in forum-based platforms.

In forum-based platforms, such as Reddit and Twitter (with the Communities feature), F1 OBCs offer a dedicated space which users can join and become a member of. These communities are

managed by fans who have specific roles (i.e.: admin, moderator, etc.) and also have a set of community rules which help guide the behavior within the community. On Reddit, F1 OBCs can be found under the general brand-related subreddit r/formula1, or related subreddits (i.e.: r/Formula1point5, r/F1Technical), sub-brand specific subreddits such as drivers and teams (i.e.: r/lewishamilton, r/RedBullRacing), and other miscellaneous brand-related topics (i.e: r/FormulaOneWallpapers, r/Formula1WAGs). On Twitter, F1 OBCs follow a more liberal naming scheme. For example, while the aforementioned types of names (general, sub-brand-related, event-related, and miscellaneous) are present, communities which are dedicated to the same topics often have humor-based names (i.e.: 'Max the toaster' for a community of Max Verstappen followers, or 'ferrari friends <3' for a community of Scuderia Ferrari fans). Ultimately, these communities are part of the wider F1 OBC on Twitter, and the content is directly related to sub-brands within the F1 sport brand hierarchy.

2.3 Online Brand Advocacy

Prior to understanding *online* brand advocacy, it is necessary to unpack its earlier conceptualizations. The concept of brand advocacy has been extensively researched in consumer-brand relationship literature (Kwon et al., 2017; Pourazad et al., 2019; Wong, 2023; Wong & Hung, 2022), and is commonly known as "the holy-grail of marketing" (Wilk et al., 2021). In this context, advocacy can be understood as consumers voluntarily dedicating time and effort to recommend, promote, or express support for a brand (Melancon et al., 2011; Stokburger-Sauer et al., 2012; Van Doorn et al., 2010, *as cited in* Wilk et al., 2021). It has been previously positively linked to BL (Munnukka et al., 2014; Coelho et al., 2019), purchase intentions (Bagozzi and Dholakia, 2006; Choi et al., 2021); and consumer-brand identification (Stokburger-Sauer et al., 2012). While earlier conceptualizations of advocacy are still relevant, the recent rise of social media in recent decades has strengthened the need to understand brand advocacy in online channels.

Due to the proliferation of social media platforms, marketplace dynamics have shifted, placing the power back into consumers' hands, and making the existence of OBA a possibility (Hoffman et al., 2010; Kotler, 2017; Wilk et al., 2021). In social media environments, users can foster influential brand-related exchanges through user-generated content (UCG) and their relationships

with other users (Adjei, 2010; Aljarah et al., 2022; Keylock & Faulds, 2012; Wilk et al., 2021). OBA was first properly defined by Wilk et al. (2019) as a "strong, influential, purposeful and non-incentivized, online representation of a brand and that brand's best interest by a brand-experienced customer (either past or current), which includes standing up for and speaking on behalf of the brand" (p. 1997). Wilk et al. (2019) also noted its difference to brand advocacy in offline contexts due to a number of reasons such as multidimensionality, its aspects which are unique to online communication, a global reach, and permanence (Wilk et al., 2019). Together with the increase in social media platform usage, OBA has become a subject of interest for contemporary scholars, who have sought to establish more comprehensive understandings of it.

Recent research has identified and validated four dimensions of OBA, namely: brand defense, brand positivity, brand knowledge or information sharing, and positive virtual visual cues (Wilk et al., 2019; Wilk et al., 2021). These refer to different behaviors that consumers can perform while communicating digitally regarding a brand. First, brand defense refers to brand-protective behavior in the form of standing up for or defending a brand against negative information (Wilk et al., 2021). Brand positivity, in a similar vein, refers to positive communication and endorsement of a brand without a preceding need to defend it (Wilk et al., 2021). Brand knowledge, first defined by Wilk et al. (2021) – also referred to as information sharing by Wong & Hung (2022) and hereinafter referred to as information sharing – refers to insightful, intimate, or in-depth information that experienced consumers can provide and share. Finally, positive virtual visual cues pertain to positive visual demonstrations of brand support such as the use of emojis, emoticons, or lettering (exclamation marks). Nevertheless, there are other factors that continue to differentiate OBA from offline brand advocacy.

OBA is also characterized by its mutual benefits for consumers and brands, and a far higher reach. As Wilk et al. (2021) explain, OBA occurs organically and is mutually beneficial to both the consumers who give it and the brands who receive it. This is because in giving OBA, individuals simultaneously network and socialize, acquiring social benefits from the action (Lawer & Knox, 2006). Moreover, due to the online context in which it develops, the potential for exposure and reach is exponential. Whereas offline brand advocacy would typically take place in specific moments, such as a face-to-face conversation, OBA experiences an unlimited reach and a permanence of access which can only be attributed to online communication (Wilk et

al., 2019). This also implies that the effects of OBA can be almost immediate. For example, those looking for information on a brand can encounter OBA at any place and time provided they have access to a digital device and can also respond to this OBA rapidly (Wilk et al., 2021). However, before diving into the outcomes that responses to OBA can foster, it is important to distinguish OBA from other concepts which include aspects of brand positivity or online information sharing, and are often confused with OBA.

Electronic work-of-mouth and consumer-brand engagement are concepts that are similar to OBA, but hold important differences. Like both eWOM and CBE, OBA can be developed through social media activities such as UGC (Choi et al., 2021). However, OBA differs from eWOM as it reflects a deep integration of the brand in the advocate's life, rather than a simple recommendation or sharing of information (Hennig-Thurau et al., 2004 *as cited in* Wilk et al., 2021). It also differs from consumer-brand engagement (CBE) as it is not an engagement with a brand (Hollebeek et al, 2014). Instead, it conceptualizes prior brand engagement into online favorable behavior (Wilk et al., 2021). To this date, OBA is still a relatively under researched concept (Wilk et al., 2021). Nevertheless, a few studies have identified key outcomes of OBA that may encourage brands to nurture it in their online communications. Through authentic brand-related UCG, consumers can foster a number of behaviors and attitudes from others. For example, Wilk et al. (2021) find that OBA holds a reciprocal relationship to BL. Despite being similar to eWOM and CBE, the key differences in OBA imply a need for researchers to explore its antecedents in outcomes in various fields such as sports, in order to gain a better understanding of it.

OBA has been directly applied to the context of a sports OBC. For example, Pongsakornrungsilp and Schroeder (2011) propose that community members adopt different roles in the value co-creation process. Furthermore, as Wong & Hung (2022) detail, these roles can be directly related to the four dimensions of OBA originally suggested by Wilk et al. (2019). Experienced members may play a protective role, defending the brand and co-creating fan community traditions. In defending a team brand against fake news, threats from rival club fans, and fake fans, these experienced members will be engaging in brand defense (Wong & Hung, 2022). Likewise, those who engage in a moderating role may contribute information, in-depth analyses, foster discussions, and answer questions. Furthermore, they may create entertaining content featuring

positive virtual cues about the teams or individual athletes, and also share schedules (Wong & Hung, 2023). Moreover, these members might be dedicated towards saying positive things about the brand (brand positivity), mediating member conflicts, and enforcing community standards. While OBA has been previously related to BCE, and to brand community commitment (BCC) in a sports context (Wong & Hung, 2022), there is no research exploring its relationship to BCI.

2.4 Brand Community Identification

BCI is at the center of the relationships that consumers have with brands and communities. It is rooted in the broader concept of social identity theory (Tajfel & Turner, 2004), and delves into the relationship that individuals foster with the brand community they are a member of. The identification stems from two different aspects: members' cognitive awareness, and their emotional attachment towards the community (Algesheimer et al., 2005). Cognitive awareness, for example, relates to individuals' conscious categorization into in-group (i.e.: brand community members) and out-group (i.e.: non-community members). The latter refers to an emotional commitment towards the OBC that members can exhibit, which can further drive in-group favoritism (Ellemers et al., 1999). Scholars have found a number of antecedents of BCI. One of these is brand identification (BI), referring to the direct relationship between consumers and the brand (Algesheimer et al., 2005; Martínez-Lopez et al., 2017; Mills et al., 2022). This connection acts as the base of the relationship, in which consumers first identify with the brand, and can later identify with the OBC. As Muñiz & O'Guinn (2001) suggest, the norms, values, rituals, and traditions of the community also are key in creating and driving BCI. Furthermore, individuals who confirm to these norms and continue to engage with community traditions can enjoy a benefitted status within the group (Laroche et al., 2012). Beyond this, BCI also leads to notable outcomes for both community members and brands.

As suggested in previous research, BCI fosters brand loyalty demonstrations at a public and private level (Mills et al., 2022). Moreover, the sense of responsibility towards the community that members may exhibit, as discussed by Muñiz and O'Guinn (2001), is another outcome of BCI. This motivates members to promote and safeguard the community, contributing to its overall survival and success (Woisetschlager et al., 2008). Furthermore, BCI has been studied previously as a mediator in the relationship between BI and BL (Mills et al., 2022). Having

established the definition to BCI and its connection to BL, this paper will now proceed to define BL.

2.5 Brand Loyalty

BL has been widely explored by scholars, and can be understood differently in relation to various contexts. It has been a central focus in consumer-brand and consumer culture studies, and has been attributed to both online and offline behavior. Early conceptualizations defined it as a "biased behavioral response expressed over time by some decision-making unit, with respect to one or more alternative brands out of a set of such brands" (Jacoby & Kyner, 1973, p. 2). However, further conceptualizations of BL present it as both attitudinal, referring to a feeling of attachment to certain brands and companies, and behavioral (Huang et al., 2022; Watson et al., 2015; Zheng, 2015). BL has been found to bring substantial benefits for a brand that include sales, customer retention, brand reputation, positive EWOM, etc. (Odekerken-Schröder et al., 2003; Jahn and Kunz, 2012; Teng, 2018). Nevertheless, studies have also conceptualized BL in the field of professional sports citing attendance, purchase and wearing of merch, and information seeking through digital social media platforms as some of the actions that brands could extract from loyal customers (Mills et al., 2022). Following Ratner and Kahn's (2002) work on private versus public consumption, Mills et al. (2022) propose that behavior is altered when it is viewed compared to when it is private, and that impression management plays a key role in this behavior (Cheng et al., 2015, *as cited in* Mills et al., 2022). Therefore, they suggest two dimensions of BL, namely public BL and private BL, in relation to their behavioral outcomes. However, research on BL has also focused on its antecedents.

Researchers have found an important links between BL and a number of factors in OBCs. For example, as Huang et al. (2022) note, consumer satisfaction has been previously related to loyalty in various studies (Gwinner et al., 1998; Hennig-Thurau et al., 2002; Wang et al., 2006; Dagger & O'Brien, 2010; Fernandes and Moreira, 2019). Furthermore, they note that customer engagement within OBCs has been tied to increases in BL (Madupu & Cooley, 2010; Coelho et al., 2019, *as cited in* Huang et al., 2022), and so has the perceived brand value (Jang et al., 2008). Moreover, few scholars have empirically demonstrated that BL can be developed through BCE (Dholakia et al., 2004; Jang et al., 2008; Shang et al., 2006; Zheng et al., 2015). While BCE held

similarities to OBA, their differences mean that research on BCE and BL cannot be extended to OBA. Nevertheless, despite there not being extensive research on the relationships between BL, OBA, and BCI, it is possible to draw connections between them from a theoretical standpoint.

With regards to the theoretical underpinnings of BL, Social Exhange Theory (SET) and Social Identity Theory (SIT) can provide a better understanding. For example, SET proposes that human social behavior involves an exchange of resources that are determined to be valuable by the other (Markovsky & Cook, 2019; Wilk et al., 2021). In the context of OBA, can mean that the more that consumer becomes vocal about their relationship with the brand, the more they will reinforce said bond with the brand, and further increase their loyalty (Yan et al., 2016; Zheng et al., 2015; Wilk et al., 2021). At the moment, only one study has suggested a reciprocal relationship between OBA and BL (Wilk et al., 2021). On the other hand, as Mills et al. (2022) mention, SIT suggests that people's concepts of self are further reinforced by the identification they have with social indicators such as brands. Therefore, as identification with a community grows, the individual's sense of loyalty to it, as well as their need to be recognized as loyal, would grow as well. Therefore, those consumers who express OBA, and furthermore experience identification with the brand and its respective OBC, could potentially also experience increased BL (Tajfel and Turner, 2004; Bhattacharya and Sen, 2003; Ashforth and Mael, 1989; O'Connor et al., 2015; Wilk et al., 2021). Through valuable social exchanges which create value for both the individual and the brand, as well as an identification with the brand and the community, a link can be drawn between BL and OBA and BCI.

Despite the aforementioned links, there is limited research on OBCs which links all three concepts. Moreover, there is no research that places these concepts into the context of F1 OBCs, or that attempts to explore whether the type of social media platform in which the community takes place has an influence on the level of advocacy, community identification, or loyalty that an individual experiences. For this reason, and in relation to the aforementioned constructs, the hypotheses for this study were formulated as follows:

2.6 Hypotheses

*H1: There is a statistically significant difference in **Online brand advocacy** when examined by the type of social media platform (Instagram, Twitter, TikTok, Reddit) used for Formula One online brand communities.*

*H2: There is a statistically significant difference in **Brand community identification** when examined by the type of social media platform (Instagram, Twitter, TikTok, Reddit) used for Formula One online brand communities.*

*H3: There is a statistically significant difference in **Brand loyalty** when examined by the type of social media platform (Instagram, Twitter, TikTok, Reddit) used for Formula One online brand communities.*

*H4a-c: There is a relationship between **a) Online brand advocacy**, **b) Brand community identification**, and **c) Brand loyalty** in Formula One online brand communities.*

*H4d: **Brand community identification** mediates the relationship between **Online brand advocacy** and **Brand loyalty** in Formula One online brand communities.*

3. Method

The present chapter addresses the methodological choices that guide this research. This study aimed to explore the impact of the various social media platforms such as Instagram, Twitter, TikTok, and Reddit on OBA, BCI, and BL in F1 OBCs. First, the choice of a quantitative survey-based approach in order to tackle the aforementioned research questions and hypotheses will be justified. Next, the chapter will delve into the methods used for sampling, data collection, and data analysis. Additionally, this chapter will also provide detailed explanations on the operationalization of the theoretical concepts used, and the procedure followed in order to measure these.

3.1 Method definition and justification

In order to measure the impact and relationships between OBA, BCI, and BL, a quantitative research approach was chosen. Quantitative research allows the researcher to explore the relationships and the extent of effects between independent and dependent variables (Holton & Burnett, 2005). Furthermore, it facilitates the investigation of potential mediating effects – in this case the investigation of whether BCI mediates the relationship between OBA and BL. As this study aimed at researching the specific phenomena of fan behavior in F1 brand communities on four different social media platforms, a quantitative approach also enabled observations at a larger scale, which could later be generalized to reflect a larger population (Matthews & Ross, 2010). Following the quantitative methodology and in line with the research questions, four hypotheses were developed. These were tested through the use of four quantitative surveys.

The choice of a survey as the tool for data collection as it provided the possibility of gathering factual, structured, and standardized data at a large scale (Babbie, 2016; Groves et al., 2011). This method was further chosen in order to simplify statistical analyses (Matthews & Ross, 2010). In this study, the aim was to determine correlations rather than causalities. As surveys commonly rely on self-reported data and are cross-sectional, they can often be biased or present inaccuracies; for this reason, surveys are not appropriate in studies that seek to examine causalities (Groves et al., 2011). Nevertheless, surveys are seen as more appropriate for studies that seek to reveal correlations (Groves et al., 2011). In this case, biases and inaccuracies in

responses can be minimized through the appropriate use of previously-validated measurements and scales (Neuman, 2013). In line with the data collection tool and the aim of this study, non-probability purposive methods were selected in order to sample the population.

3.2 Sampling strategy

This research made use of non-probability purposive sampling methods, which allow the researcher to select the sample based on elements that are deemed appropriate to analyze the effect under study (Sarstedt et al., 2018). In particular, it used a combination of heterogeneous and homogeneous sampling methods. This accounted for participants who were commonly interested in F1 (homogeneous), but also consume/interact with F1-related content in one or more of the four different platforms of interest: Instagram, Twitter, TikTok, and Instagram (heterogeneous). Utilizing a combination of purposive sampling strategies such as the aforementioned can provide certain advantages to the study, such as the ability to explore commonalities within a specific population while also exploring divergences in different contexts (Patton, 2015). The combination can also assist in achieving a broader understanding of the phenomenon (Palinkas et al., 2015). Nevertheless, it is important to note that the choice of a non-random sampling strategy does limit the generalizability of the study (Groves et al., 2011). As a defining feature of OBCs is that they are non-geographically bound, this study did not employ any exclusion criteria based on nationality or location. The study also did not include any other excluding criteria such as age or gender limits. Nevertheless, in order to comply with the guidelines of the Code of Conduct for Research Integrity, as set forth by the Netherlands Association of Universities (VSNU), this research focused collecting data exclusively from adult participants.

3.3 Data collection and Procedure

To collect data, four surveys were created and hosted on Qualtrics – one for each of the platforms (Instagram, Twitter, TikTok, Reddit). All four surveys consisted of the same 16 questions and 1 video, the only exception being the platform that was used in the questions which was shown in the video. The surveys were pilot-tested among 10 respondents. Subjects

were asked to provide feedback on readability, the duration, and the general ease of understanding.

The surveys were published on April 11th, and the data collection period lasted around four weeks. It was distributed through social media platforms, including the 4 platforms of interest, as well as LinkedIn and Facebook. In some platforms, participants were easier to reach given the dynamics of the platform itself. For example, in platforms where groups/forums were available, such as LinkedIn, Reddit, or Facebook, the survey was distributed to groups which were related to motorsport and F1. In other platforms, such as Twitter and TikTok, the link was posted in the comment sections of F1-related content. Alternatively, individuals who were active in the respective communities (*F1Twitter* and *F1TikTok*) were approached via direct messages. On Instagram, the survey was posted to the researcher's public stories. However, it was also shared by the profile @formulacareers_, a page dedicated to help individuals who are interested in careers in the wider motorsport industry. This profile had 7,540 followers at the time of writing. In all posts and communications regarding the survey, participants were told the purpose of the survey, the expected time of completion, and that their participation would be completely voluntary and anonymous.

Participants were able to access the questionnaire through any device with an internet connection, and at any time. The survey utilized anonymous links, meaning that identification of the data was not possible after the response was recorded. Once participants accessed the survey, they were able to view an introduction including general information about the survey, the purpose, the estimated completion time, and the general content of the survey. They were also provided with a comprehensive explanation about their informed consent, their data privacy rights, the voluntary nature of their participation, as well as their right to abort their participation at any time without any explanation needed. Furthermore, the contact details of the researcher and the supervisor were provided. After confirming their informed consent, participants were asked questions about demographics. These included questions about their age, gender, and nationality. Furthermore, the survey aimed to collect data on the participants' self-reported level of knowledge of F1, whether they had previously encountered and interacted with a F1 community online, their platform usage, and their interest in participating in a community in one of the four aforementioned platforms. Following this section, participants were asked to watch a

short, 2-minute video about F1 OBCs in the platform that the survey was about. This video included the definition of an OBC, examples of the type of content that is posted in the F1 OBC, the features for interaction that are available in the platform, examples of interactions, examples of the subbrands or subbrand-related content, and finally, examples of both fan and firm-created content. For illustration purposes, these are summarized in Figure 1, depicting examples of how these videos differed per platform. Additionally, more frames of these videos are displayed in *Appendix B*. After watching the video, participants were then asked to fill in the remainder of the questionnaire based on the video they had seen, as well as their own experiences. The order of these questions was 1) OBA, 2) BCI, and 3) BL. Once participants finalized the survey, they were led to a final screen that thanked them for their participation, and provided the contact details of the researcher and supervisor in case of any comments or questions.

Figure 1

Summary of the four platform videos used in the surveys
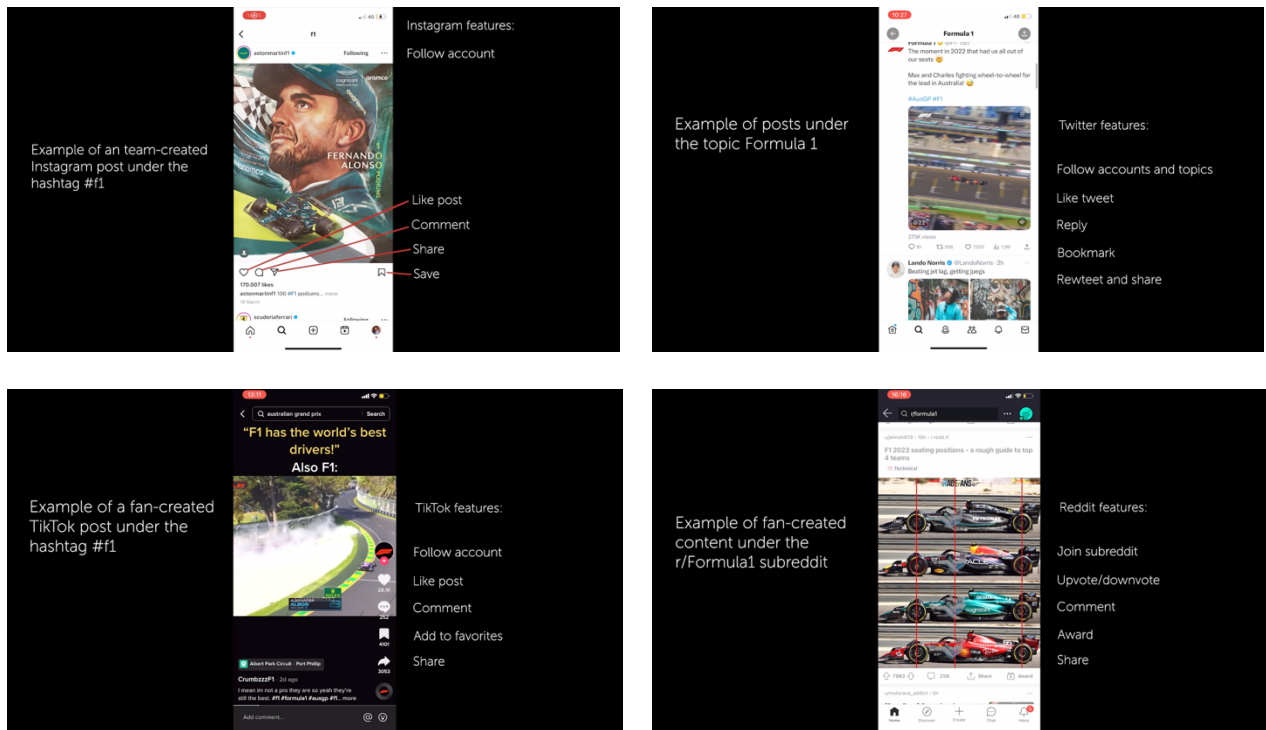
Note: The four screenshots from the platform videos (top to bottom, left to right: Instagram, Twitter, TikTok, and Reddit) refer to the 'Example of content' section of the videos, and contain video screen recordings about the type of content that can be viewed in the platform, the features of the platform, and the type of search classification (i.e.: hashtag, subreddit, topic).

3.3.1 Sample

Following the data collection period, a total of 478 responses were collected across all 4 surveys. Per survey, the collected responses were the following: 206 for Instagram, 80 for Twitter, 101 for TikTok, and 91 for Reddit. Subsequently, this data was cleaned, and incomplete responses were excluded. In order to make the sample of equal proportions, all sample sizes were shortened to 55 responses, as this was the highest number of valid responses for the Twitter sample following the data cleaning process. For the remaining platforms, these responses were randomly excluded to ensure there was no bias. Therefore, a total of 220 ($N = 220$) responses were included in the further analyses, with 55 ($n = 55$) for each condition.

As illustrated in Table 1, the final sample consisted of 151 females (68.6%) and 68 males (30.9%), while the remaining participant (0.5%) identified as non-binary or another gender. The majority of participants were aged between 18-24 (70%), followed by 25-34 (22.3%), then 35-44 (4.5%), 45-54 (1.8%), and 55-64 (0.9%). No participants reported being 65 years of age or older. A total of 47 different countries were indicated as the participants' nationalities, with the majority of participants being from the United Kingdom (13.6%), followed by the United States (10.0%), then Spain (8.6%), and an equal percentage coming from the Netherlands and India (7.3%). When participants were asked to rate their knowledge of F1, the majority self-reported as having '4 - a lot of knowledge' (40.9%), followed by '3 - a moderate amount of knowledge' (29.1%), and '5 - a great deal of knowledge' (26.8%). Only 7 participants indicated that they have '2 - a little knowledge' of the sport (3.2%), and no participants indicated that they had '1 - no knowledge at all'. Furthermore, almost the entire sample indicated that they had encountered a F1 community on Instagram, Twitter, TikTok, or Reddit (98.2%), and that they had previously interacted with content on one of these communities (96.4%). All participants were asked to indicate which platforms they regularly use, out of which 202 reported that they use Instagram (91.8%), 150 use Twitter (68.2%), 148 use TikTok (67.3%), and only 73 use Reddit (33.2%). Finally, participants were asked to share how interested they would be in actively participating in a F1 community on each of the aforementioned platforms. For Instagram, it appeared that participants expressed a moderate to high interest in participating in the F1 community ($M = 3.43$; $SD = 1.33$). Participants showed a moderate interest in two platforms: Twitter ($M = 3.09$; $SD =$

1.53), and TikTok (M = 3.10 ; SD = 1.52). Ultimately, participants showed a slight interest in participating on a F1 community on Reddit (M = 2.36 ; SD =1.44).

Table 1

Demographic data of the participants (N = 220)

Variable	Value	Frequency	Percent
Gender	Female	151	68.6%
	Male	68	30.9%
	Non-binary/Other	1	0.5%
Age	18 - 24	155	70.0%
	25 - 34	49	22.3%
	35 - 44	10	4.5%
	45 - 54	4	1.8%
	55 - 64	2	0.9%
Nationality	United Kingdom	30	13.6%
	United States	22	10.0%
	Spain	19	8.6%
	Netherlands	16	7.3%
	India	16	7.3%
	Other	117	53.2%
Knowledge of F1	A little knowledge	7	3.2%
	A moderate amount of knowledge	64	29.1%
	A lot of knowledge	90	40.9%
	A great deal of knowledge	59	26.8%
Community Encounter	Yes	216	98.2%
	No	4	1.8%

Community Interaction	Yes	212	96.4%
	No	8	3.6%
Platform use	Instagram	202	91.8%
	Twitter	150	68.2%
	TikTok	148	67.3%
	Reddit	73	33.2%

Interest in participating in a Formula One community	Platform	*M*	*SD*
	Instagram	3.43	1.33
	Twitter	3.09	1.53
	TikTok	3.10	1.52
	Reddit	2.36	1.44

3.4 Measurements

This study measured the concepts of OBA, BCI, and BL. To operationalize these concepts, this survey drew upon established scales from relevant academic research. In addition, it also gathered data on relevant demographic variables. The following section presents the conceptual framework, and the operationalization of these concepts and variables (Figure 2).

Figure 2

Conceptual framework
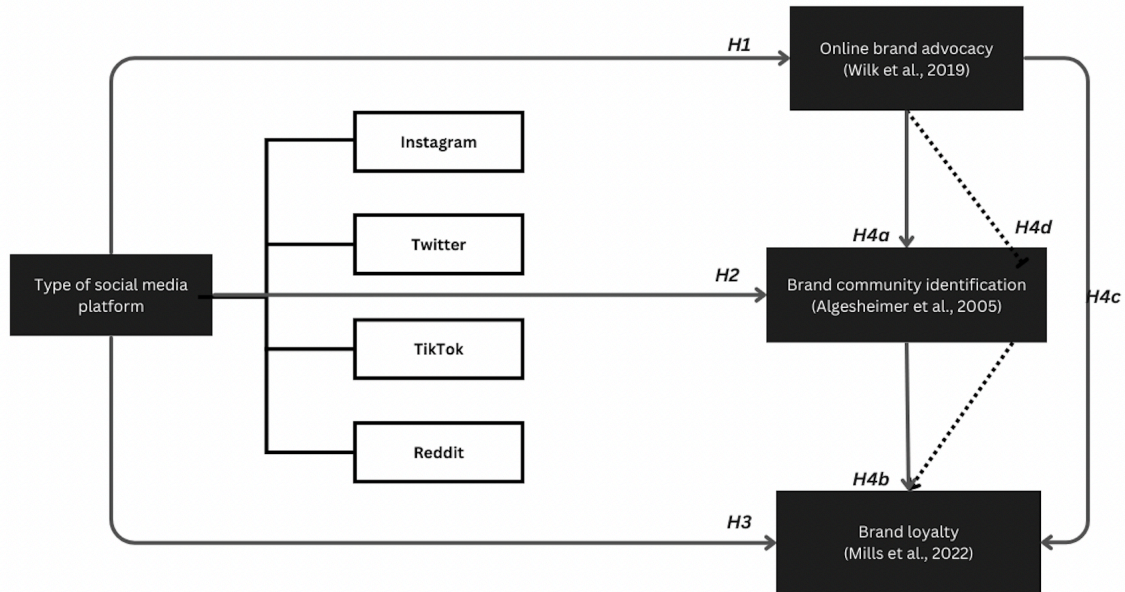
3.4.1 Online brand advocacy.

Online brand advocacy (OBA) was taken from Wong & Hung (2022), which itself was an adaptation of the original OBA scale created and validated by Wilk et al. (2019; 2021). The scale measures 4 dimensions of OBA, namely: brand defense (5 items), brand positivity (4 items), information sharing (4 items), and positive virtual visual cues (3 items). The adaptations made by Wong & Hung (2022) adjusted the items to better fit the context of a sports brand, in their case, the Liverpool football club brand. This study borrowed from the items and adapted them to fit the F1, and the respective platform contexts. Examples of the statements which participants were asked to indicate their position included "I would defend the Formula One brand when others talk it down on Instagram" for brand defense, "I would say positive things about the Formula One brand on Instagram" for brand positivity, "I would provide details about upcoming races and available merchandises related to the Formula One brand on Instagram" for information sharing, and "I would use visual symbols (e.g. emoticon, emoji, exclamation, or capital lettering) on Instagram" for positive virtual visual cues. The scale utilizes a 5-point Likert scale ranging

from "strongly disagree" to "strongly agree", and was found to be highly reliable (Chronbach's α = .95).

3.4.2 Brand community identification.

Brand community identification (BCI) was adapted from Algesheimer et al. (2005), and included 5 items (Chronbach's α = .88). The scale utilizes a 5-point Likert scale with anchors ranging from "strongly disagree" to "strongly agree". The items were adapted in terms of the statements, to account for the context of F1 and the platform it was currently testing. An example of the items measured in this scale is "I would see myself as a part of the Formula One fan community on Instagram".

3.4.3 Brand loyalty.

Brand Loyalty was adapted from Mills et al. (2022) and included 8 items that measure 2 dimensions of BL, namely: public BL (4 items) and private BL (4 items). The scale uses a 5-point Likert scale ranging from "strongly disagree" to "strongly agree", and was found to be reliable (Chronbach's α = .87). These items were also adapted to include the context of the F1 sport, and the platform of interest. Some examples of the items were "I would recommend Formula One to other people" for public BL, and "I would continue to think of myself as a loyal supporter of Formula One" for private BL.

3.5 Data analysis

This study aimed to to explore impact of the type of social media platform on the dynamics of OBA, BCI, and BL, and the relationships between these variables. As stated in Chapter 2, the hypotheses proposed that the type of social media platform would exert a statistically significant effect on OBA, BCI, and BL *(H1, H2, H3),* and that statistically significant relationships would exist among these variables *(H4a-c).* Additionally, it was hypothesized that BCI would mediate the relationship between OBA and BL *(H4d).* In order to test these hypotheses, a series of tests were conducted using the IMB SPSS Statistics software, version 28.0.1.0, and the PROCESS macro version 4.3 by Hayes (2013). The following section presents an overview of the analyses performed.

This study first made use of Chronbach's Alpha tests to ensure the reliability of the scales used to measure the concepts. Subsequently, a series of analysis of variance (ANOVA) tests were performed in order to test the possible influence that the type of platform could have on OBA, BCI, and BL. In order to account for slightly non-normalized data, both Pearson correlations and Spearman rank-order correlation tests were performed. Ultimately, in order to test for a potential mediation, this study followed the process outlined by Hayes (2017) using PROCESS Model 4. Prior to doing so, the data was evaluated to check whether it met the assumptions of multiple regressions. This was assessed through linearity checks on scatterplots, the Durbin-Watson statistic in order to examine the interdependence of errors, and the normal distribution of errors through histograms and P-P plots of standardized residuals. Heteroscedasticity was also assessed, and finally, the multicollinearity was assessed through the variance inflated factor (VIF). The following section presents the results from these aforementioned tests.

4. Results

The aim of this research was to explore the impact of different social media platforms (Instagram, Twitter, TikTok, Reddit) on the dynamics of OBA, BCI, and BL within F1 OBCs, as well as the relationships between these aforementioned variables. The following chapter presents the results from the analysis, and concludes with a summary of these results.
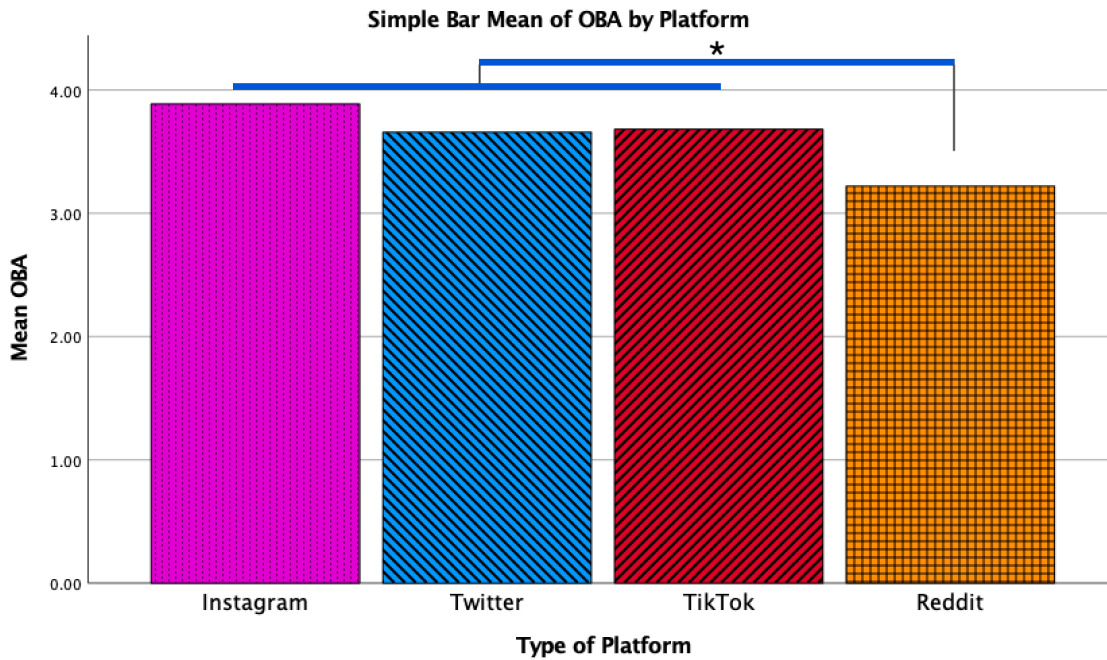
4.1 Influence of the platforms

4.1.1 Influence of the platforms on online brand advocacy

To measure the potential impact of the type of platform on OBA (H1), a univariate analysis of variance (ANOVA) was conducted. The effect was found to be statistically significant: $F(3, 216) = 5.50$, $p = .001$.

Follow-up comparisons indicated a significant difference between the level of OBA on Instagram ($M = 3.88$, $SD = 0.58$) and the level of OBA on Reddit ($M = 3.22$, $SD = 1.09$), $p = <.001$, as well as a significant difference between OBA on TikTok ($M = 3.68$, $SD = 0.90$) and OBA on Reddit, $p = .035$. Furthermore, a significant difference was also found between the level of OBA on Twitter ($M = 3.65$, $SD = 0.88$) and Reddit, $p = .050$. However, there were no significant differences between the OBA levels on Instagram and Twitter, $p = .528$, Instagram and TikTok, $p = .618$, and TikTok and Twitter, $p = .999$ (Figure 3).

Figure 3

Impact of the platforms on OBA

Note: * Indicates a significant effect with p < 0.05
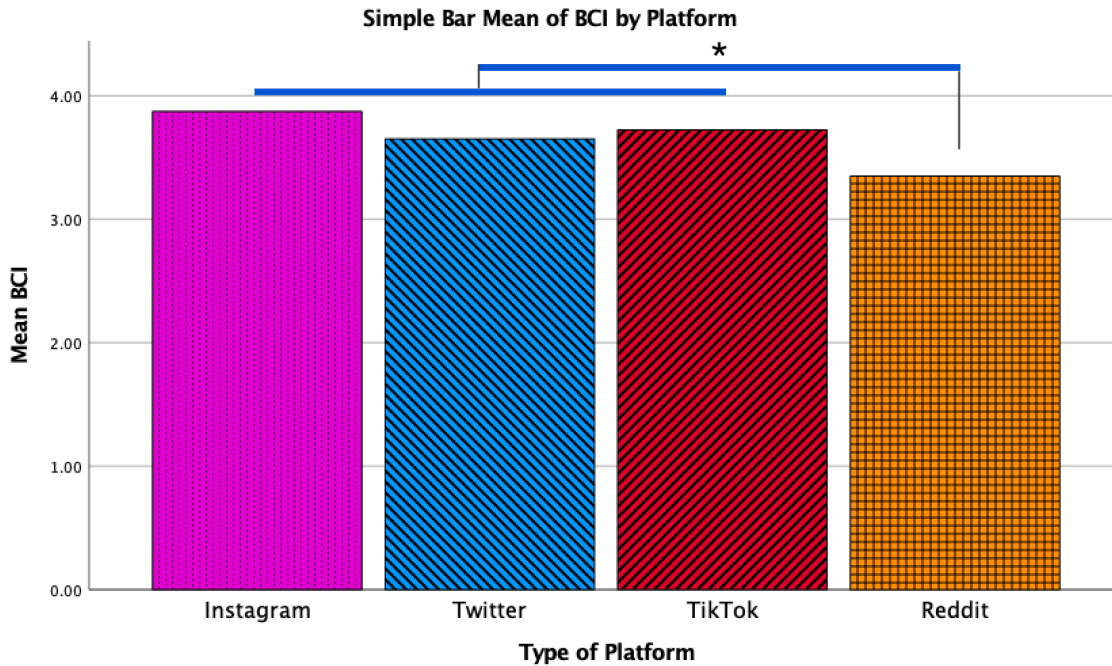
4.1.2 Influence of the platforms on brand community identification

To measure the potential impact of the type of platform on BCI *(H2)*, a univariate analysis of variance (ANOVA) was conducted. The effect was found to be statistically significant: $F(3, 216) = 2.87$, $p = .037$.

Follow-up comparisons indicated a significant difference between the level of BCI on Instagram ($M = 3.87$, $SD = 0.75$) and the level of BCI on Reddit ($M = 3.64$, $SD = 0.97$), $p = .025$. However, no significant differences were found between the level of BCI on Instagram and Twitter ($M = 3.65$, $SD = 1.13$), $p = .623$, Instagram and TikTok ($M = 3.68$, $SD = 0.90$), $p = .849$, Twitter and TikTok, $p = .979$ and TikTok and Reddit $p = .177$ (Figure 4).

Figure 4

Effect of the platforms on BCI

Simple Bar Mean of BCI by Platform

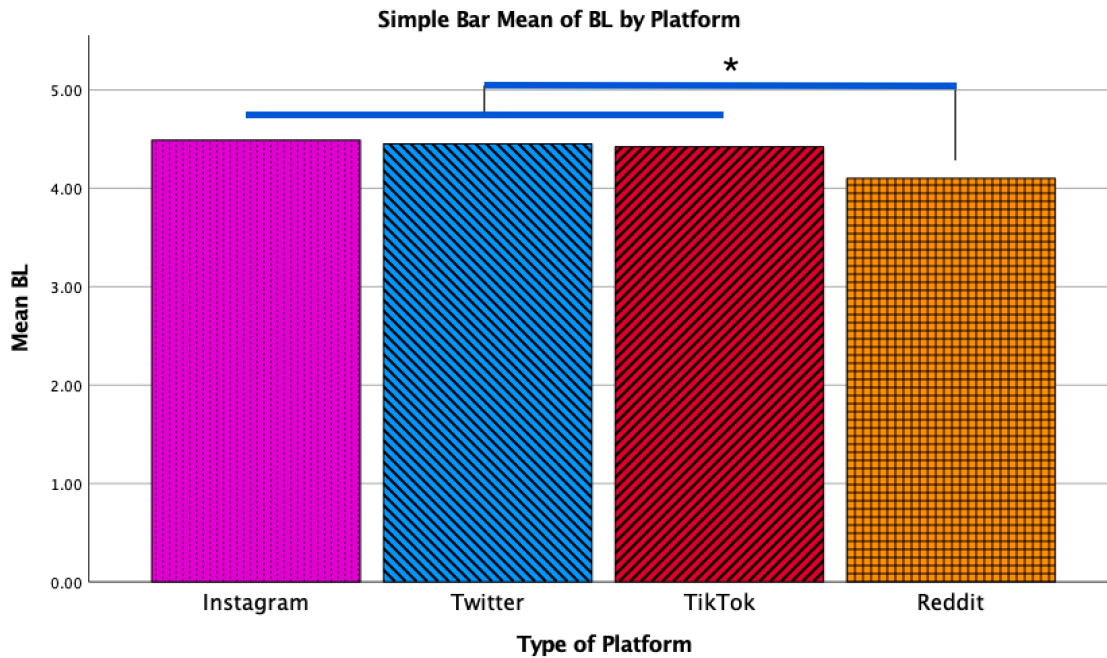*Note:* * Indicates a significant effect with p < 0.05

4.1.3 Effects of the platforms on brand loyalty

To measure the potential impact of the type of platform on BL *(H3)*, a univariate analysis of variance (ANOVA) was conducted. The effect was found to be statistically significant: $F(3, 216)$ = 4.117 , p = .007.

Follow-up comparisons indicated a significant difference between the level of BL on Instagram (M = 4.49, SD = 0.45) and the level of BL on Reddit (M = 4.10, SD = 0.77), p = .011, as well as a significant difference between BL on Twitter (M = 4.45, SD = 0.64) and BL on Reddit, p = .028. However, there were no significant differences between the BL levels on Instagram and Twitter, p = .990, Instagram and TikTok, p = .947, and TikTok and Twitter, p = .052 (see Figure 5).

Figure 5

Effect of the platforms on BL

Simple Bar Mean of BL by Platform

Note: * Indicates a significant effect with p < 0.05

4.2 Correlations

In order to explore the potential relationships between OBA, BCI, and BL (H4a-c), a Pearson's correlation analysis was performed. A significant high positive correlation was found between OBA and BCI, $r(218) = .740$, $p = <.001$. Furthermore, significant moderate positive correlations were found between OBA and BL, $r(218) = .619$, $p = <.001$, and BCI and BL, $r(218) = .526$, $p = <.001$ (Table 2). Furthermore, due to the non-normal distribution of the data, a Spearman rank-order correlation test was also performed. The Spearman's rho values yielded similar results, and confirmed the significant relationships between the variables found in the Pearson correlations. It identified a strong positive correlation between OBA and BCI with $rs(218) = .712$, $p = <.001$. Furthermore, it identified a moderate positive correlation between OBA and BL, $rs(218) = .619$, $p = <.001$, and BCI and BL, $rs(218) = .556$, $p = <.001$.

Table 2

Pearson's correlation of measures

Variable	1	2
1. Online brand advocacy	—	
2. Brand community identification	.740**	—
3. Brand loyalty	.619**	.562**

Note. M and SD are used to represent mean and standard deviation, respectively. ** Indicates that $p < .01$. The Pearson values are similar to Spearman correlation measures.

4.3 Mediation effect of brand community identification

4.3.1 Tests of assumptions for multiple regressions

Prior to conducting the mediation analysis, it was important to evaluate the assumptions for multiple regressions. First, linearity was assessed by checking the scatterplots between OBA and BL, and BCI and BL, which appeared to be linear. Next, the independence of residuals was examined through the Durbin-Watson statistic. The data met the assumption of independent errors (Durbin-Watson value = 2.04).

The histogram of standardized residuals indicated that the data held approximately normally distributed errors. Likewise, the normal P-P plot of standardized residuals showed points that were not completely on the line, but close. However, the scatterplot of standardized residuals showed that the data appeared to be heteroscedastic. Nevertheless, as PROCESS Model 4, which will be utilized for the mediation analysis, does not rely on the assumption of homoscedasticity (Hayes, 2017), this was not a cause for concern. Finally, tests to check if the data met the assumption of collinearity indicated that multicollinearity was not a concern (OBA, Tolerance = .453, VIF = 2.21; BCI, Tolerance = .453, VIF = 2.21).

Given these results, it was concluded that the assumptions of multiple regression were sufficiently met to proceed with the mediation analysis.

4.3.2 Mediation analysis

To explore the potential mediation effect of BCI on the relationship between OBA and BL (*H4d*), a mediation analysis was performed with PROCESS Model 4 (Hayes, 2017). Overall, the results show that the indirect effect "a x b" of OBA on BL through BCI, estimated with 5000 bootstrap samples, was significant, with the 95% confidence interval excluding zero (a x b = .124, 95% CI = [.03 to .25]. Therefore, the mediation hypothesis H7 is supported.

Moreover, the results from the two regressions underlying the mediation results are reported. First, a regression of OBA on BCI was estimated. The results showed that OBA significantly increased BCI (a = .78, t(217)=16.20, *p* =<.001). Secondly, a regression on BL with OBA and BCI as the independent variables was estimated. The effect of BCI was positive and significant (b =.15, t(217)=2.96, *p* =.003<.05). Moreover, the results showed that OBA significantly increased BL (c =.32, t(217)=5.78, *p* =<.001). This last result indicates partial mediation.

In conclusion, all hypotheses were accepted, indicating that the type of social media platform used for F1 OBCs positively affects OBA, BCI, and BL. Moreover, these variables are positively correlated, and positively affect one another (See Table 3).

Table 3

Summary of the hypotheses testing results

Hypotheses	Statistical Test	Significant value	F-statistic/ Correlation coefficient	Results
H1: There is a statistically significant difference in **Online brand advocacy** when examined by the type of social media platform (Instagram, Twitter, TikTok, Reddit) used for Formula One online brand communities.	One-way ANOVA	.001	5.50	Accepted
H2: There is a statistically significant difference in **Brand community identification** when examined by the type of social media platform (Instagram, Twitter, TikTok, Reddit) used for Formula One online brand communities.	One-way ANOVA	.037	2.87	Accepted
H3: There is a statistically significant difference in **Brand loyalty** when examined by the type of social media platform (Instagram, Twitter, TikTok, Reddit) used for Formula One online brand communities.	One-way ANOVA	.001	4.11	Accepted

H4a-c: There is a relationship between **a) Online brand advocacy**, **b) Brand community identification**, and **c) Brand loyalty** in Formula One online brand communities.	Pearson correlation	<.001	a-b) .740 a-c) .562 b-c) .619	Accepted
H4d: **Brand community identification** mediates the relationship between **Online brand advocacy** and **Brand loyalty** in Formula One online brand communities.	PROCESS via Bootstrap	LLCI: .03 ULCI: .25	.124	Accepted

5. Discussion

The aim of this study was to investigate if the type of social media platform in which the OBCs of F1 take place had an effect on the level of OBA, BCI, and BL of its members. Furthermore, it aimed to explore the relationships between the three variables, and the potential mediating role of BCI on the relationship between OBA and BL. No previous study explored the effects of the types of platforms on these variables, as well as whether BCI has a mediating effect on OBA and BL. Moreover, no studies have been done on the dynamics of F1 communities. This study therefore aimed at filling these research gaps, potentially allowing sports marketing professionals to determine which platforms are more viable for extracting particular outcomes, and whether focusing on cultivating BCI can lead to better outcomes of BL.

5.1 Online brand advocacy

The first question in this study sought to determine whether the type of platform used for F1 OBCs had an influence on OBA. This study found that H1 was retained, signifying that there is a statistically significant positive effect from the type of social media platform on the level of OBA. Out of the four platforms which were explored, Instagram, Twitter, and TikTok appeared as the ones which are more effective in promoting OBA in comparison to Reddit. These findings align with the multidimensional OBA model first-proposed by Wilk et al. (2019, 2021), and later validated and placed into a sports context by Wong & Hung (2022), suggesting that brand defense, brand positivity, information sharing, and positive visual cues can be more effectively conveyed through platforms which support a wide array of content formats (i.e.: images, videos, short- and long-form text, etc.) which Instagram, Twitter, and TikTok provide.

On an interesting note, no significant differences were found between the levels of OBA on Instagram, Twitter, and TikTok. This could indicate that, despite the unique characteristics, features, user-interfaces, and content algorithms each platform possesses, their overall effectiveness in fostering OBA within the context of F1 OBCs is similar. Nevertheless, despite being a popular for its in-depth discussion dynamics, Reddit seemed to have significantly lower levels of OBA in comparison to the other platforms. One reason for this could be the text-dominant nature of Reddit, which might limit the possibilities for virtual visual cues, a key

dimension of OBA. Similarly, a significant positive effect was found between the type of social media platform and brand community identification.

5.2 Brand community identification

The second question in this study sought to determine whether the type of platform used for F1 OBCs had an influence on BCI. This study found that H2 was retained, signifying a statistically significant positive effect from the type of social media platform on the level of BCI. As previously presented in Chapter 4, a significant difference was found between the levels of BCI on Instagram and the lower ones found on Reddit. This could potentially imply that the characteristics of the social media platform of choice may influence the strength of identification with the brand community. Drawing back to previous research, the findings of the present study can be interpreted in light of the influence that the social surroundings have on BCI. As Muñiz & O'Guinn (2001) suggested, the norms, values, rituals, and traditions of a community can significantly affect aspects of the community. Thus, it could be that the various platform-specific features and affordances, together with the community dynamics they foster, might shape these aspects differently. This would subsequently result in varying degrees of BCI per platform. For example, with a primarily visual approach and features that encourage real-time interactions, Instagram might offer a more conducive environment for the development of norms, values, and rituals that encourage stronger identification with the F1 brand community.

It is necessary to point out that that the differences in BCI levels between Instagram, Twitter, and TikTok were not significant. This suggests that, while the type of platform can indeed have an effect on the level of BCI, the characteristics of the aforementioned three platforms do not necessarily account for significant differences on the level of BCI that can be developed. This is relevant as it provides managers with the security that community management efforts on each of those platforms could lead to similar levels of BCI. In similar fashion to OBA and BCI, this study further found a difference between BL levels on the various platforms.

5.3 Brand loyalty

The third question in this study sought to determine whether the type of platform used for F1 OBCs had an influence on BL. This study found that H3 was retained, signifying a statistically

significant positive effect from the type of social media platform on the level of BL. The primary finding here is that Instagram, Twitter, and TikTok all appear to cultivate higher degrees of BL when compared to Reddit within the context of F1 OBCs. These findings are relevant in light of several theories which were discussed earlier. For example, Social Exchange Theory, which highlights reciprocal relationships between brands and consumers (Ku et al., 2018; Coelho et al., 2019) might point to why BL is higher on Instagram, Twitter and TikTok. As these platforms offer spaces for highly engaging audiovisual content, as well as facilitate communication and a feeling of intimacy, they provide more favorable environments for social exchanges. Brands that harness these features to create value for their customers can drive satisfaction with the brand, thus boosting loyalty (Gwinner et al., 1998; Hennig-Thurau et al., 2002; Wang et al., 2006; Dagger & O'Brien, 2010; Fernandes & Moreira, 2019).

In contrast, the structure of Reddit, which resembles a forum and includes less curated content, might not serve to cultivate a sense of connection or identification with the F1 brand that is as robust as the other platforms, leading to lower BL. This finding supports the significance of BCE and BI, as suggested by Wilk et al. (2021) and Mills et al. (2022) in enhancing BL. Beyond exploring the role of social media platforms in affecting the aforementioned variables, it is also important to consider the relationships between these variables. This leads us to the final research question, which will be discussed in light of the remaining four hypotheses, respectively.

5.4 Relationships between online brand advocacy, brand community identification, and brand loyalty

The fourth question in this study sought to determine whether OBA, BCI, and BL exhibited relationships. In total, these were divided into components within the same hypothesis.

5.4.1 Online brand advocacy and brand loyalty

This study found that H4a was retained. There was a moderate positive correlation between OBA and BL in F1 OBCs. This goes in line with Wilk et al.'s (2021) suggestion regarding the importance of OBA in fostering BL in OBCs. In a practical setting, this implies that when fans actively display behaviors of advocacy towards the F1 brand and its sub brands online - whether it is by defending the brands from criticism, speaking positively about them, or engaging with

the brand-related content - they are likely to then exhibit increased BL. Naturally, it is important to contextualize what this increased brand loyalty could look like regarding F1 fans.

As Mills et al. (2022) proposed, brand loyalty can be exhibited by fans in various manners. Privately, for example, this loyalty could translate into consistently tuning in to watch the races via broadcasts, actively searching for information about F1 on the various platforms, or frequently purchasing merchandise. On the other hand, public expressions of BL could be interpreted as individuals attending F1 races, wearing branded merchandise in public, discussing F1 with their friends, or sharing brand-related content on their personal social media platforms (Mills et al., 2022). This finding can also be related to Social Exchange Theory and Social Identity Theory. In the context of F1 OBCs, fans can perceive their OBA activities as social exchanges with the brand, and with other fans. As Wilk et al. (2021) mention, OBA offers benefits to both the giver and the receiver. Therefore, benefits such as social recognition, enhanced self-identity, and access to exclusive content, could foster fans' commitment and loyalty to the brand (Coelho et al., 2019; Ku et al., 2018; Tajfel & Turner, 2004). The relationship between OBA and BL proves the importance of nurturing OBA in OBCs, as it can lead the brand towards the social and financial benefits that come from loyalty in a sports context. In an effort to understand the dynamics of the community, it is also important to consider if OBA correlates towards identification with the community as well.

5.4.2 Online brand advocacy and brand community identification

This study further found that H4b was retained, signifying that there was a strong positive correlation between OBA and BCI in F1 OBCs. As explained through Social Identity Theory, individuals can derive their concepts of self from their social relationships – including their identification with brands, or with others (Tajfel & Turner, 2004; Ashforth & Mael, 1989). In the case of an F1 OBC, identifying with it could simultaneously fulfill two types of relationships – a consumer with a brand, and a consumer with other consumers who are also interested in that brand. In practical terms, actively promoting, defending, and sharing information about F1 online can lead fans to further internalize the brands' values, narratives, and defining characteristics. However, it can also lead them to build strong bonds with others who do the same. This further strengthens their sense of identification and belonging with the community. The relevance of this finding lies in the establishment of a clear tie between fans' active online engagement and the

emotional attachment it can create to the F1 OBC. Examples of this engagement could be sharing content related to F1, participating in or moderating discussions related to F1, responding in defense of online criticism, and even answering questions that other fans may have. In short, fans' investment of their time and emotional energy intensifies the strength of the identification that they feel with the OBC as a whole.

5.4.3 Brand community identification and brand loyalty

This study found that H4c was retained, signifying that there was a strong positive correlation between BCI and BL in F1 OBCs.These findings aligned with Mills et al.'s (2022) empirical findings of positive effects from BCI to private and public BL. To contextualize this finding further, it is important to consider Social Identity Theory-based cognitive and affective elements which characterize BCI. On one hand, the cognitive aspect relates to the conscious recognition of community membership, which dictates how individuals classify themselves as in-group (brand community members) or out-group (non-members) (Algesheimer et al., 2005; Ellemers et al., 1999). In F1 OBCs, this classification of roles as part of BCI could lead to specific behaviors related to public BL. For instance, fans interested in solidifying their in-group status and garnering positive responses could engage in digital rituals and traditions such as sharing historic race results, engaging in discussions about legendary drivers, or answering questions that newer fans might be wondering about the sport. Similarly to Mills et al.'s (2022) reference to sports fans wearing jerseys, F1 fans might showcase their loyalty by wearing team merchandise, sharing sport updates, or sharing 'inside jokes' which are inherent to the community. Calling back to F1's exclusivity and high-ticket prices, fans who wish to distinguish their commitment to the sport and the community could do so by sharing that they have attended races, signaling their membership, identification, and loyalty through the financial sacrifice.

However, the affective aspect of BCI relates to being emotionally attached or committed to the group (Algesheimer et al., 2005). This could be manifested in F1 OBCs through in-group favoritism and motivating members to promote or run to the defense of the brand community when there is the presence of negative talk. Furthermore, these fans might take on a role of responsibility within the community, as suggested by Muñiz and O'Guinn (2001), to ensure the integration of others into the community, and securing the brand community's survival by encouraging new members to join (Woisetschlager et al., 2008). Nowadays, digital platforms

offer OBC members a plethora of avenues through which to show their identification, and further foster displays of public loyalty. For example, they could utilize social media features such as profile pictures to publicly show their affiliation with the brand community, echoing Mills et al.'s (2022) example. However, they could also use hashtags, emojis (positive virtual cues), and tags depending on the platform, in order to do so as well.

5.4.4 Mediation of Brand community identification in the relationship between Online brand advocacy and Brand loyalty

Finally, this study aimed to investigate the mediating role of BCI in the relationship between OBA and BL, within the specific context of F1 OBCs. This study found that H4d was retained, suggesting that BCI plays a significant partially mediating role in the relationship between OBA and BL. Theoretically, this can be looked at through the lens of social identity theory. OBA, the first variable in this relationship, is marked by the active defense, promotion, and endorsement of a brand in digital platforms (Wilk et al., 2018). This, in turn, contributes to a community member's identification with the brand community, which is furthermore grounded in an awareness of community membership and differentiations between in-group and out-group members (Algesheimer et al., 2005; Ellemers et al., 1999). When F1 fans partake in OBA in favor of their favorite teams or drivers online, they also signal their in-group status and subsequently reinforce their BCI. In a similar fashion, OBA can also contribute to BCI in an affective manner through the reflection of an emotional attachment to the brand community (Algesheimer et al., 2005). For example, as previously mentioned, spirited exhibits of OBA can, in turn, lead to an intense emotional bond with the OBC. This further contributes to in-group favoritism and intensifying the affective aspect of BCI.

Initially stemming from OBA, this increased BCI later is seen to directly influence BL at both the private and public level, leading to the various outcomes mentioned in the previous sections. Thus, these findings support the idea that BCI acts a mediator that partially translates OBA into BL within F1 OBCs. As members actively engage in OBA activities and solidify their identification with the brand community, this strengthened BCI leads them to display behaviors of both public and private loyalty. As previously suggested, the findings align with Mills et al. (2022), who suggested the role of BCI as a mediator – notably in the context of brand identification to brand loyalty – and further adds another variable to the landscape of

relationships which BCI is key in. Essentially, this mediation analysis offers some context clues into the psychological mechanisms that lie within the relationship between OBA and BL. It also shines a light on the relevance that BCI can hold to professionals in the sports marketing environment who are looking to understand the behaviors that lead to BL, and therefore that they should focus on nurturing.

5.5 Implications

Having discussed the meaning and relevance of the findings from this study, this section will now discuss the implications that they can bring to academic research, societal understandings of sports and fandom, and the media and business context. Firstly, it is important to highlight how this study advances academic discussions on consumer culture, sports marketing, and fan studies. To the knowledge of the researcher at the time this was written, this is the first study to test BCI as a mediator in the specific relationship between OBA and BL. Beyond that, it is the first to study these variables within the context of F1 OBCs. Therefore, this research contributes to these fields by expanding the theoretical understandings of these constructs and their interactions within OBCs. Furthermore, this research makes a contribution to the relatively under-explored field of F1 sports marketing within the academic context. By exploring the dynamics of OBA, BCI, and BL within this unique context, this study broadens the scope of OBC research, validating previous research in the context of a new domain and suggesting its further applicability into others. Thus, this research paves the way for further academic research into the specific behaviors, motivations, and brand relationships of fans within the fast-growing, and highly influential world of F1, as well as other sports or non-sports contexts. More importantly, this study also responds to the call by Wong & Hung (2022) for more research on consumer-initiated OBCs in platforms that are popular amongst Gen-Z individuals. It proposes empirical findings on four consumer-initiated F1 OBCs, two of which are in highly under-researched platforms with regards to OBCs: TikTok and Reddit. Thus, this also addresses Velotsou and Liao's (2023) call for the exploration of OBCs on new platforms beyond the highly-researched scope of Facebook and Twitter, and Instagram.

Second, this study provides a few contributions to societal understandings of fandom. Particularly, it provides a deeper look into how individuals interact within OBCs – specifically

F1 OBCs on Instagram, Twitter, TikTok, and Reddit. It further reveals the mechanisms through which brand advocacy translates into BL, mediated by BCI. These findings can drive a better understanding of how fans form identities within digital communities, and how these identities shape their loyalty towards brands. This is vital to understandings of consumer behavior in the contemporary digital environment, and to the role that fans play in a wider economic context.

Lastly, from a management perspective, the findings from this study provide valuable guidance for professionals in the media and business fields – particularly those involved in F1 or similar sports marketing environments. By shedding light on the mediating role of BCI between OBA and BL, this research suggests that initiatives aimed at strengthening BCI could lead to increased BL. Moreover, in light of the consumer-initiated nature of the OBCs explored in this research, managers can gain insights into how to foster and support such communities in order to later extract benefits from them. Given the strength of consumer-initiated advocacy and its impact on BL, brand managers are presented with the opportunity to tap into this resource, nurture it, and ultimately reap its benefits. In the context of a sport characterized by its exclusivity, such as F1, this is vital, as it allows for better understandings of how to extract the same benefits that could be extracted from in-person attendance, through digital engagement. In other terms, it provides the opportunity to harness social media platforms and turn them into digital grandstands, where fans' cheers are translated into long-lasting relationships with other fans, as well as the sports' brands.

5.6 Limitations and directions for future research

While this study provides key insights into understandings of OBA, BCI, and BL in F1 OBCs, there are several limitations which should be acknowledged. First, it is important to acknowledge that, as the wide majority of OBC studies has been performed on other sports, it is not possible to compare the findings of this study. Moreover, future research could address and minimize the limitations by exploring different sports or brand communities in other domains, but also by considering alternative factors in the study such as the gender, cultural background, language, or the economic background. Furthermore, while this research examined the mediating role of BCI between OBA and BL, the potential existence of other mediating or moderating variables was not examined due to size and time constraints. Nevertheless, future research could consider delving into factors such as the type and vividness of content which fans create or engage with in

the OBC, factors which contribute to BCI, and whether the type of relationships that fans create with other fans also have an influence in relational outcomes.

Furthermore, it should also be stated that the cross-sectional nature of this study can only serve to provide a view of the relationships as they were at one point in time, and therefore may not be able to fully capture the dynamics over time. In a sports context, fan relationships can change due to many factors such as rule changes, driver changes, team performance, etc. Thus, future research could benefit from the richer insights that longitudinal research designs could offer. Moreover, this study relied primarily on self-reported data for all of its four surveys. This could open the possibility for response bias. Furthermore, as it intended to undertake an exploratory approach into OBCs, this study employed quantitative methods with previously validated scales. Nevertheless, future research could find that qualitative approaches such as interviews, netnography, or qualitative content analysis offer possibilities for more in-depth exploration into the relationships at play in this context. Likewise, for quantitative methods, future studies could introduce other data collection methods such as behavioral tracking on participants' social media platforms to further validate and complement their self-reported data, or more comprehensive experiments with different variables and controls. Finally, taking into account the trend towards multi-platform social media usage, future studies could examine the interplay between different social media platforms in fostering OBA, BCI, and BL. In the context of sports, and particularly F1 which greatly overlaps with the Esports community, it might be interesting to check out platforms such as and Discord, Twitch, which are highly frequented by Gen-Z and Gen Alpha individuals. Adopting these approaches could further extend the understandings of OBCs and the effects of various social media platforms on OBA, BCI, BL, and other related variables.

6. Conclusion

The purpose of this study was to explore whether the type of social media platform in which F1 OBCs exist impacted the OBA, BCI, and BL of its members. Furthermore, it aimed to understand the relationships at play between these variables within the context of F1 OBCs. To the knowledge of the researcher at the time of writing, it is the first study to extend the OBC research into the F1 context, and part of the pioneering attempts to investigate sports marketing within this context.

The first question sought to explore to what extent the type of social media platform used for F1 OBCs influenced Online brand advocacy. First, this study revealed that the type of social media platform used in the context of F1 OBCs indeed holds a statistically significant positive effect on OBA thus enabling the acceptance of H1. The strongest effect was between Instagram and Reddit, followed by TikTok and Reddit, and Twitter and Reddit. However, no significant differences in effects were found between Instagram, Twitter, and TikTok, suggesting that OBA efforts by community members and subsequently the outcomes that can be extracted by brands are of a similar level on these platforms.

The second question sought to explore to explore to what extent this choice of social media platform influenced Brand community identification. This study found that there was a statistically significant difference between BCI levels on Instagram and Reddit. However, there were no significant differences between Instagram, Twitter, and TikTok, further suggesting that the level of BCI on these platforms is highly similar.

Moreover, the third question from this study sought to explore the extent to which the social media platform could influence Brand loyalty. This study found that there were statistically significant differences in the level of BL between Instagram and Reddit, and later followed by Twitter and Reddit, while no significant differences were found between Instagram, Twitter, and TikTok. The key finding from these first three questions was that, while there was a significant difference between the levels of OBA, BCI, and BL that could be extracted on Instagram, Twitter, and TikTok when compared to Reddit, there was no significant difference that was noticeable between Instagram, Twitter, and TikTok. This demonstrated that while choosing

which platform to focus the community-building efforts on could indeed have a strong influence on the outcomes the three aforementioned platforms, all ultimately offer environments which could produce similar relational outcomes for brands.

Next, the fourth question of this study sought to explore the relationships between OBA, BCI, and BL, as well as the potential mediating effect of BCI on the relationship between OBA and BL. The study found that all three variables exhibited positive correlations. The strongest correlation observed was between OBA and BCI, followed by OBA and BL, and ultimately, BCI and BL. This highlights the importance of OBA behaviors such as brand defense, information sharing, brand positivity, and positive virtual cues, in both driving loyalty and also fostering a sense of community among brand followers. Furthermore, the results from this study suggest that a strong sense of BCI can intensify the sense of loyalty that an individual feels towards the brand. Finally, this research established that BCI partially mediates the relationship between OBA and BL, indicating that fans' sense of identification with the F1 OBC is a crucial link between their advocacy efforts and the resultant BL outcome that brands can benefit from.

To conclude, the present study not only made important advances into a relatively unexplored territory of F1 sports marketing in academic contexts, but also contributed to ongoing OBC research with insights into the dynamics of OBA, BCI, and BL across different social media platforms. As social media platforms increasingly allow for the engagement of wider global publics, knowledge such as the one provided by this study can guide sports marketers and media professionals in effectively engaging with their relevant consumer-initiated OBCs in order to foster long-lasting loyalty. Future studies can build upon the findings from this research in order to further understand the complexities of consumer culture and consumer behavior within sports marketing contexts.

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Appendices

Appendix A - F1 Brand Hierarchy

Master Brand (League) Level	Sub-brand (Team) Level	Sub-brand (Driver) Level
Formula 1	Red Bull Racing	Max Verstappen
		Sergio Perez
	Aston Martin	Fernando Alonso
		Lance Stroll
	Scuderia Ferrari	Charles Leclerc
		Carlos Sainz
	Mercedes	Lewis Hamilton
		George Russell
	Alpine	Esteban Ocon
		Pierre Gasly
	McLaren	Lando Norris
		Oscar Piastri
	Alfa Romeo	Valtteri Bottas
		Zhou Guanyu
	Haas F1 Team	Kevin Magnussen
		Nico Hülkenberg
	Alpha Tauri	Yuki Tsunoda
		Nyck de Vries
	Williams	Alexander Albon
		Logan Sargeant

Appendix B - Frames from the survey videos

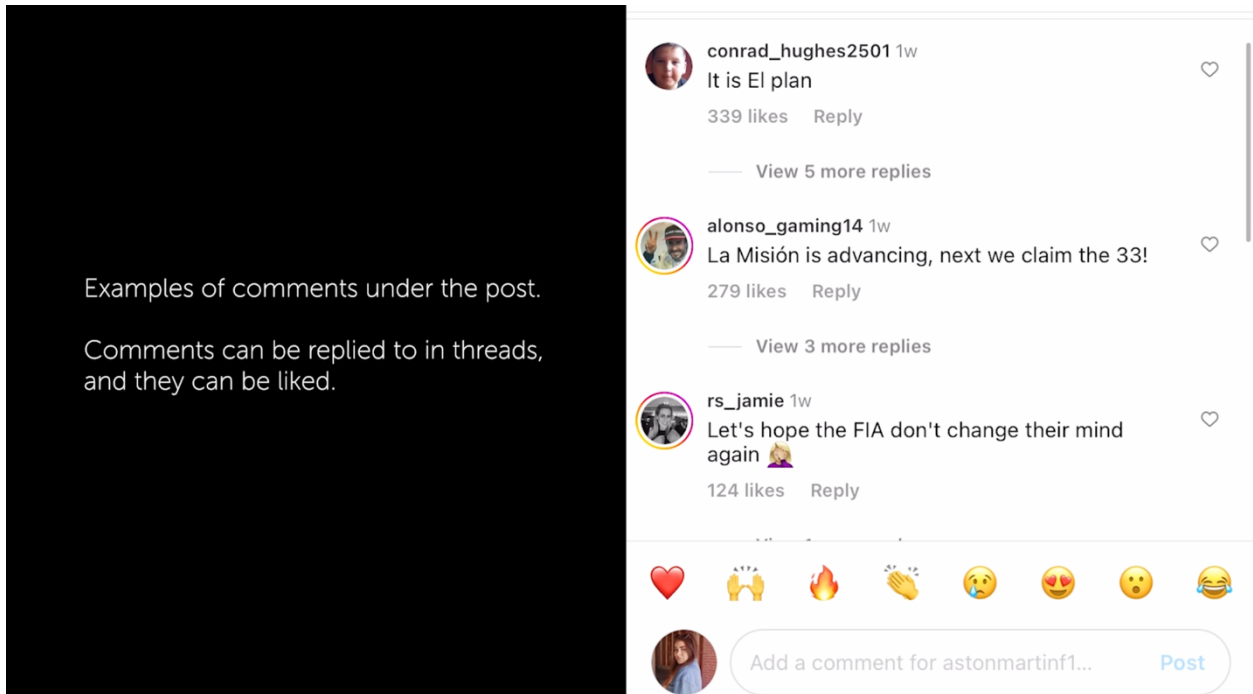## 1. Instagram

Figure B1.1

Example of content section from the Instagram video
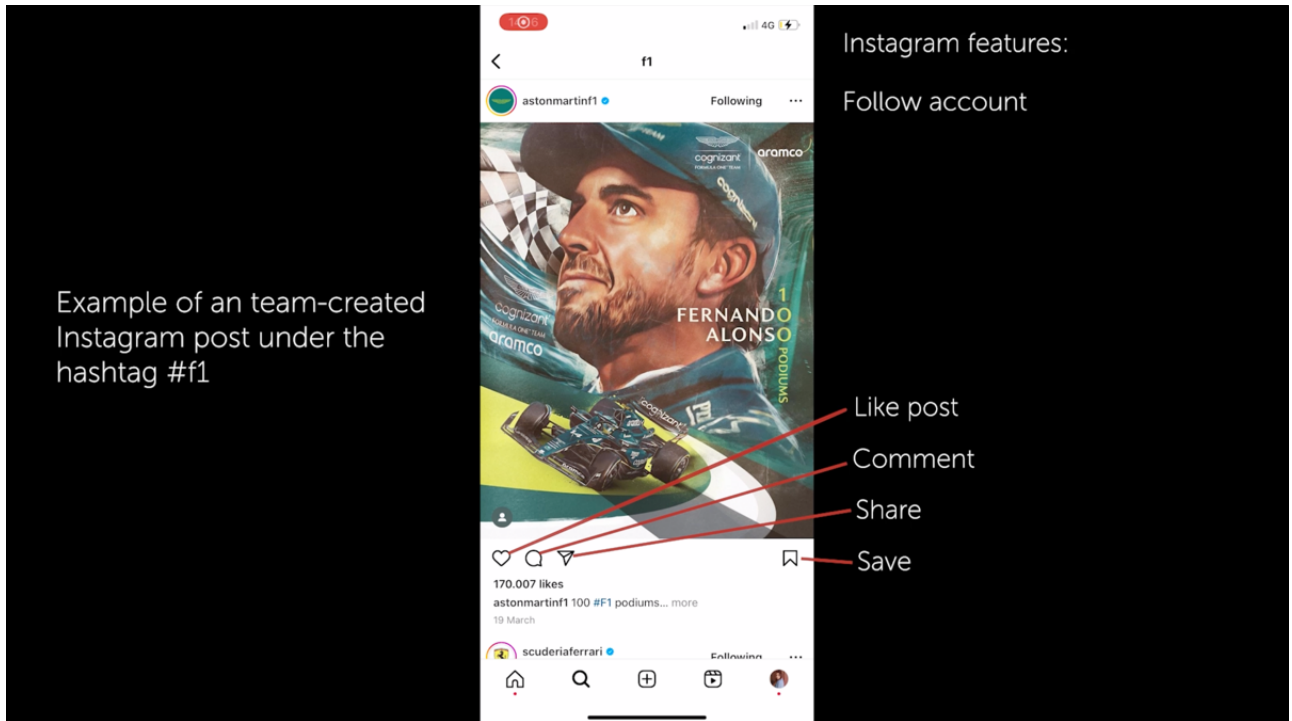
Note. The photo shows a frame of the video, from the section in which it shows the type of content which can be found in the F1 OBC, and the features for interaction on the platform.
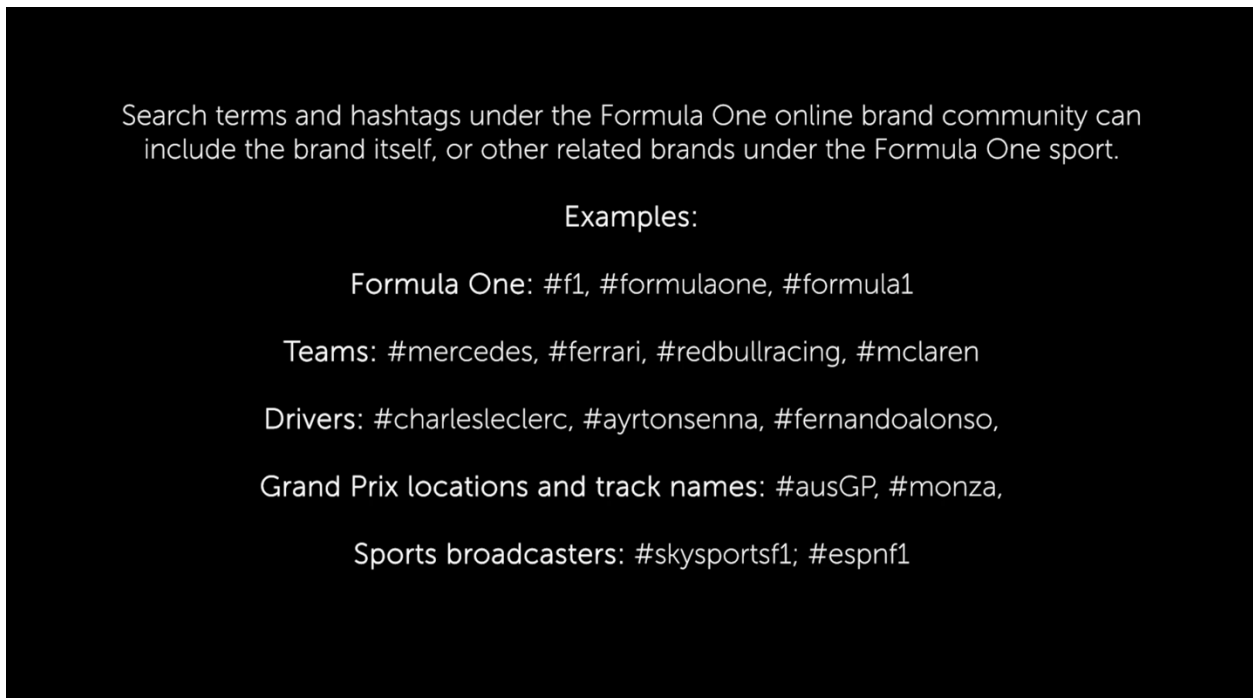
Figure B1.2

Example of interactions from the Instagram video

Examples of comments under the post.

Comments can be replied to in threads, and they can be liked.

conrad_hughes2501 1w
It is El plan
339 likes   Reply

—— View 5 more replies

alonso_gaming14 1w
La Misión is advancing, next we claim the 33!
279 likes   Reply

—— View 3 more replies

rs_jamie 1w
Let's hope the FIA don't change their mind again 🤦
124 likes   Reply

Add a comment for astonmartinf1...   Post

Note. The photo shows a frame of the video, from the section in which it shows the type of interactions which can be found in the F1 OBC.

Figure B1.3

Example of the subbrand examples section from the Instagram video

Search terms and hashtags under the Formula One online brand community can include the brand itself, or other related brands under the Formula One sport.

Examples:

Formula One: #f1, #formulaone, #formula1

Teams: #mercedes, #ferrari, #redbullracing, #mclaren

Drivers: #charlesleclerc, #ayrtonsenna, #fernandoalonso,

Grand Prix locations and track names: #ausGP, #monza,
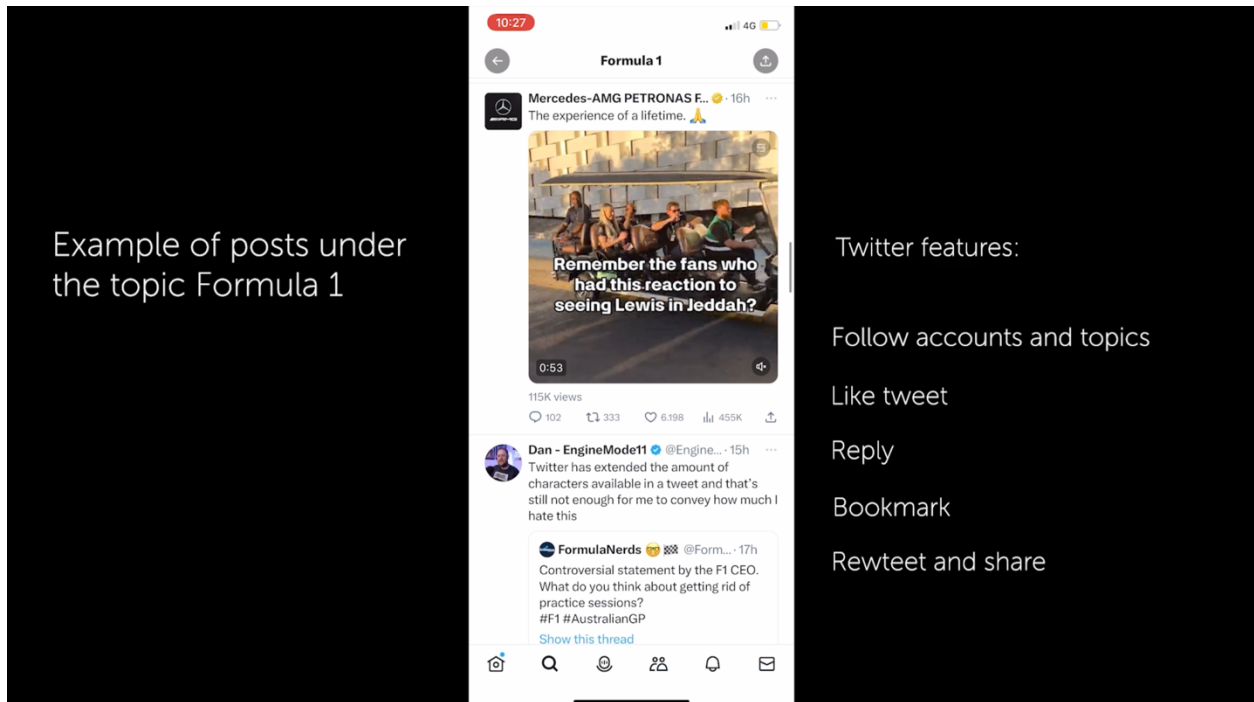
Sports broadcasters: #skysportsf1; #espnf1

Note. The photo shows a frame of the video, from the section in which it shows examples of the search terms related to the F1 brand and subbrands which can be found in the F1 OBC, and the features for interaction on the platform.

2. Twitter

Figure B2.1

Example of content section from the Twitter video

Note. The photo shows a frame of the video, from the section in which it shows the type of content which can be found in the F1 OBC, and the features for interaction on the platform.
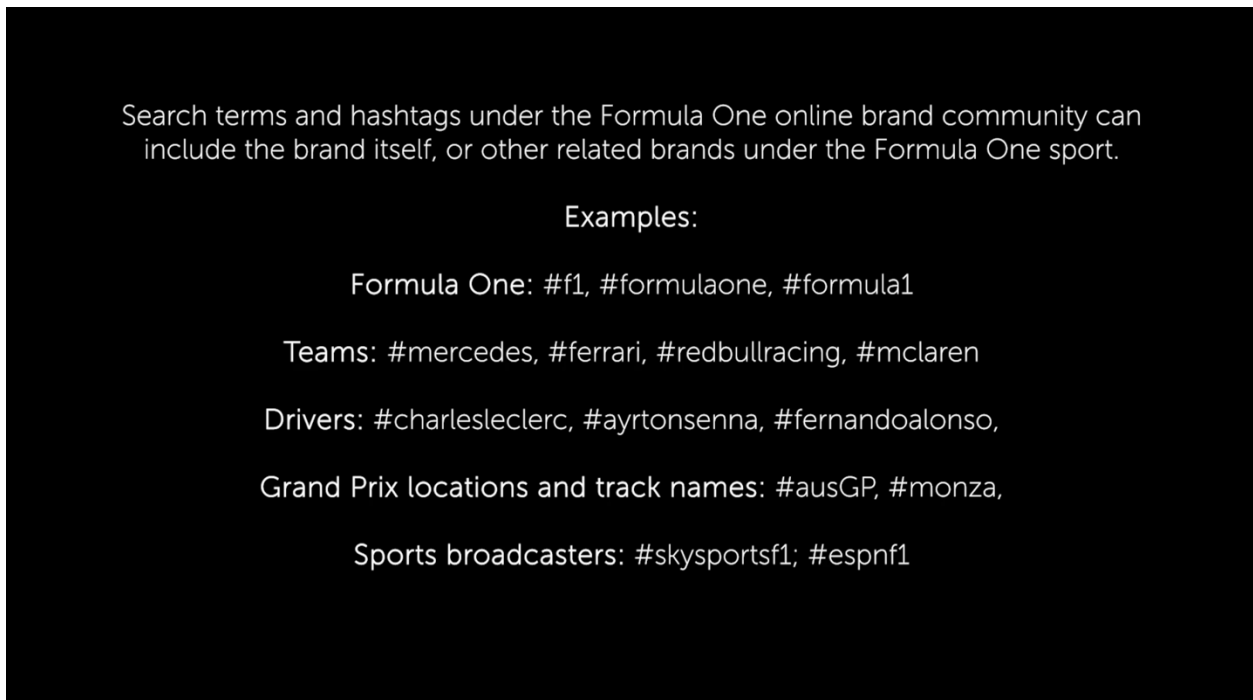
Figure B2.2

Example of interactions from the Twitter video

Examples of comments under the post.

Comments can be replied to in threads, they can be liked, and disliked.

Motor Magnet ✔ @Motor_Magnet · 12h · · ·
Think of it purely from a spectator's view though. Would you rather come through on a Friday to watch cars drive around "aimlessly" or watch them compete?

18   17 4   ♡ 26   18K

Show replies

Simon Jefferies ✔ @olivegamestu... · 1h · · ·
No practice sessions just more media

Note. The photo shows a frame of the video, from the section in which it shows the type of interactions which can be found in the F1 OBC, and the features for interaction on the platform.

Figure B2.3

Example of the subbrand examples section from the Twitter video

Search terms and hashtags under the Formula One online brand community can include the brand itself, or other related brands under the Formula One sport.

Examples:

Formula One: #f1, #formulaone, #formula1

Teams: #mercedes, #ferrari, #redbullracing, #mclaren

Drivers: #charlesleclerc, #ayrtonsenna, #fernandoalonso,

Grand Prix locations and track names: #ausGP, #monza,
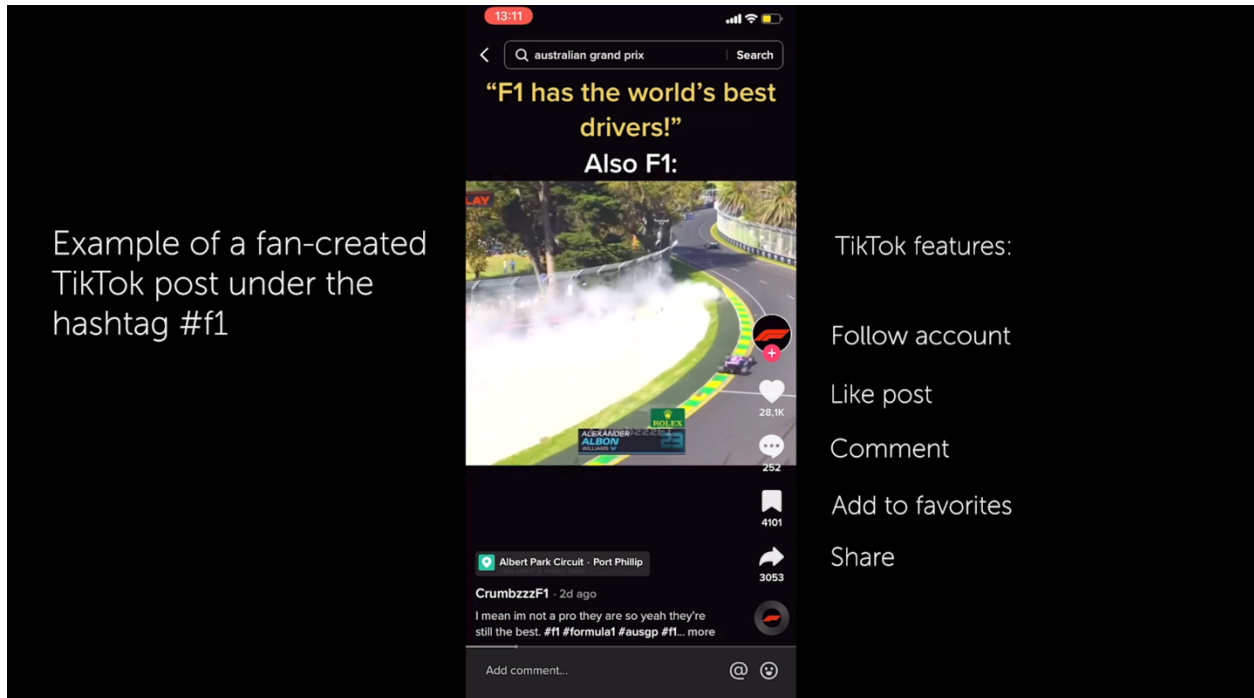
Sports broadcasters: #skysportsf1; #espnf1

Note. The photo shows a frame of the video, from the section in which it shows examples of the search terms related to the F1 brand and subbrands which can be found in the F1 OBC, and the features for interaction on the platform.
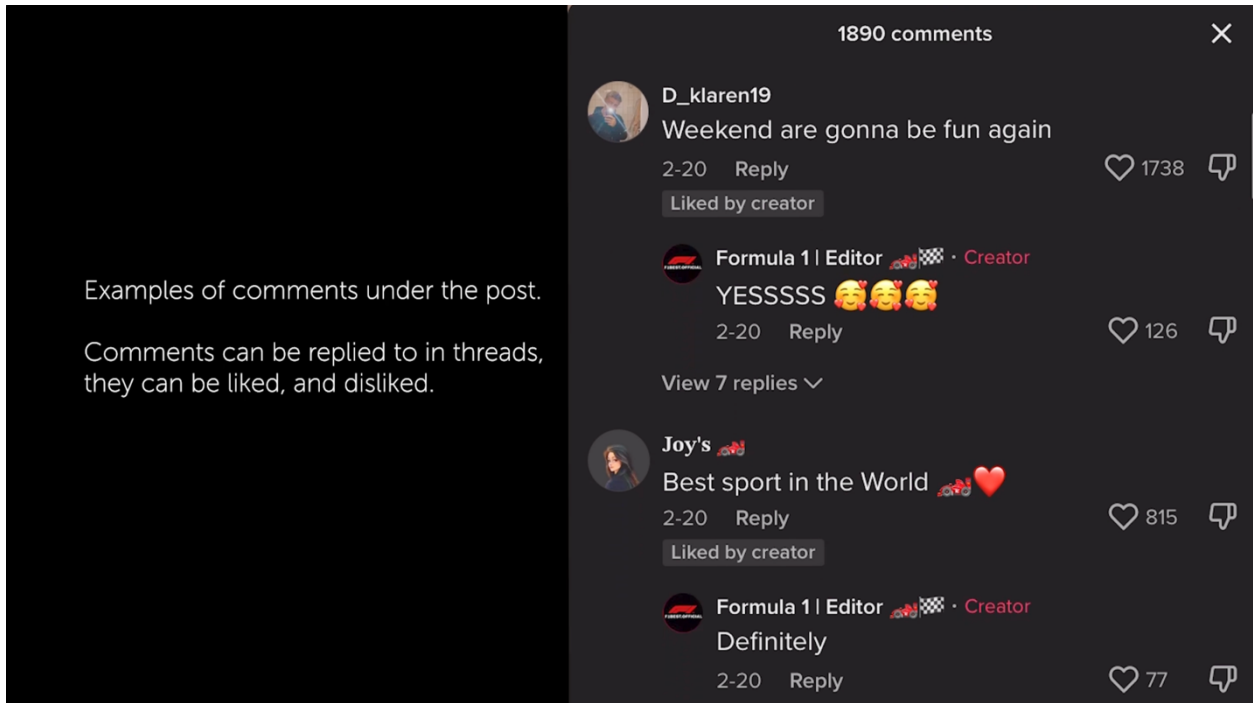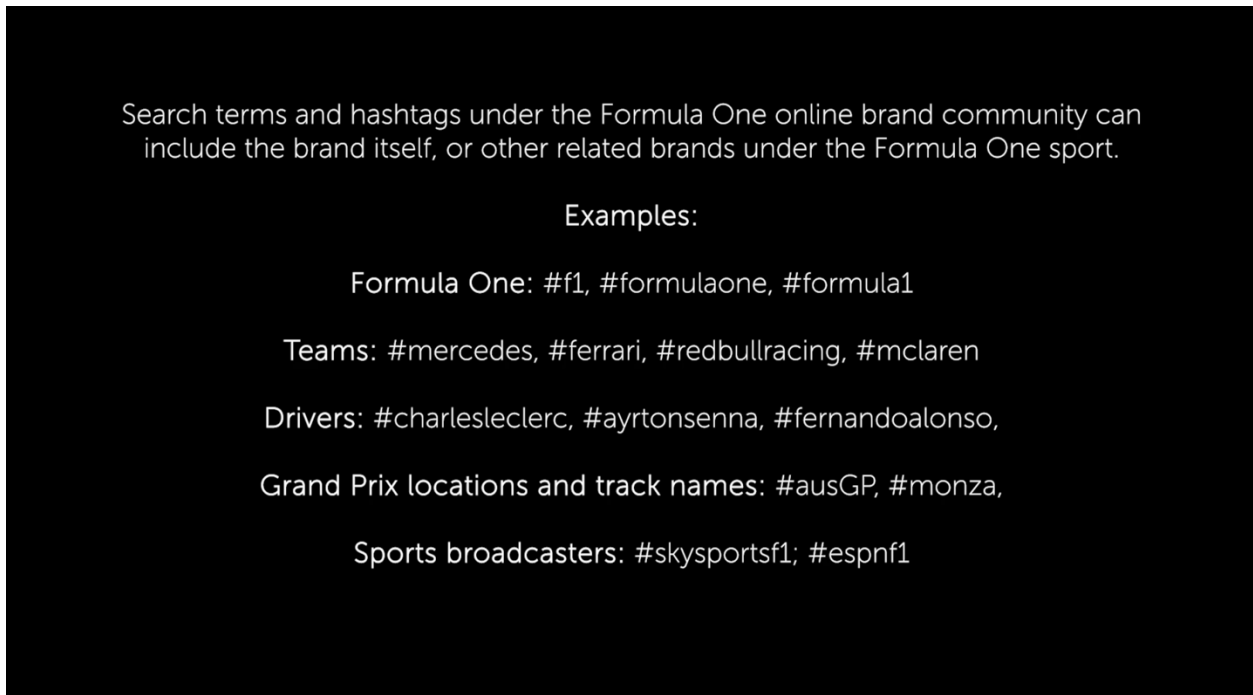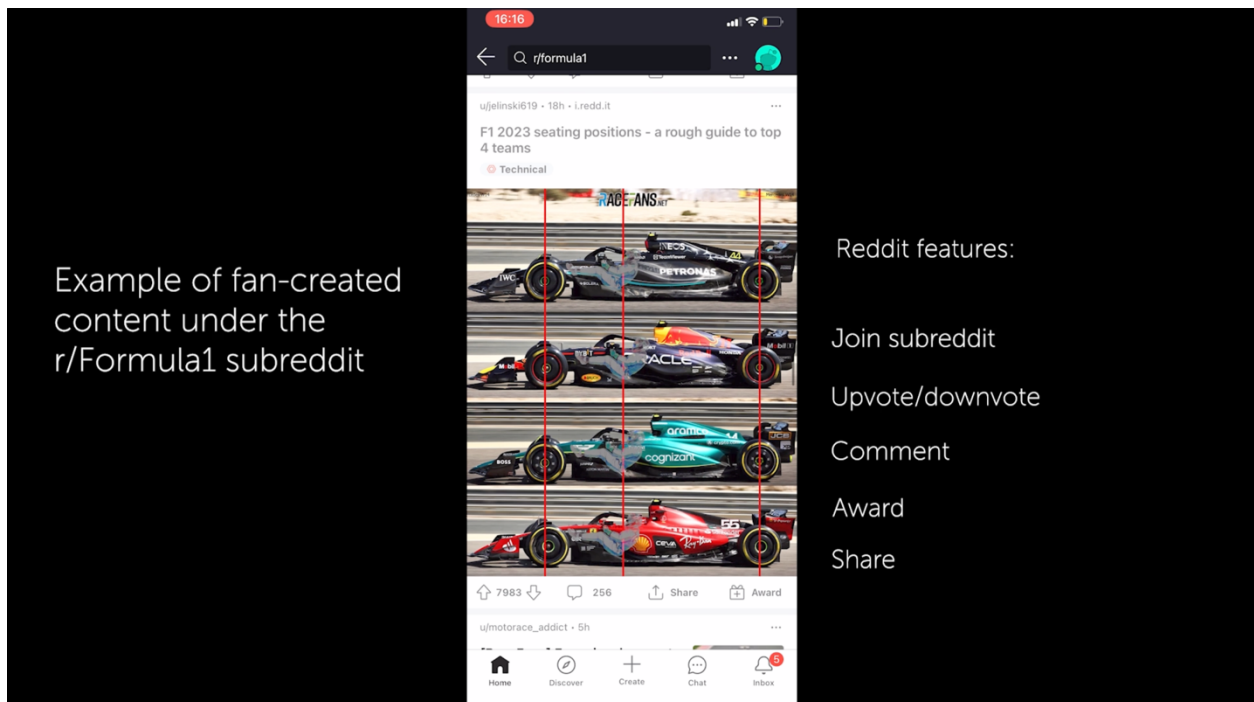
3. TikTok

Figure B3.1

Example of content section from the TikTok video

Note. The photo shows a frame of the video, from the section in which it shows the type of content which can be found in the F1 OBC, and the features for interaction on the platform.

Figure B3.2

Example of interactions from the TikTok video

Note. The photo shows a frame of the video, from the section in which it shows the type of interactions which can be found in the F1 OBC, and the features for interaction on the platform.

Figure B3.3

Example of the subbrand examples section from the TikTok video

Note. The photo shows a frame of the video, from the section in which it shows examples of the search terms related to the F1 brand and subbrands which can be found in the F1 OBC, and the features for interaction on the platform.

4. Reddit

Figure B3.1

Example of content section from the Reddit video

Note. The photo shows a frame of the video, from the section in which it shows the type of content which can be found in the F1 OBC, and the features for interaction on the platform.

Figure B3.2

Example of interactions from the Reddit video

Examples of comments under the post.

Comments can be replied to in threads, they can be upvoted or downvoted.

Note. The photo shows a frame of the video, from the section in which it shows the type of interactions which can be found in the F1 OBC, and the features for interaction on the platform.

Figure B3.3

Example of the subbrand examples section from the Reddit video

Note. The photo shows a frame of the video, from the section in which it shows examples of the search terms related to the F1 brand and subbrands which can be found in the F1 OBC, and the features for interaction on the platform.