

Management of Globalization of Motorsport and Future Development

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Abstract. The motorsport industry has conducted a remarkable global transformation in the past few years and reach some success in terms of popularity and finance. Formula 1, in particular, has seen a boost in viewership thanks to innovative management and the influence of social media, especially the "Drive to Survive" series. However, this success has come with a set of complex challenges. One key issue is the choice of propulsion systems. While electric power gain traction in the automotive sector, motorsport faces a rather difficult choose. Traditional internal combustion engines, a hallmark of the sport, risk falling out of sync with environmental standards. Transitioning entirely to electric power might alienate loyal fans. A middle ground could lie in sustainable and synthetic fuels, reducing carbon dioxide emissions while preserving the essence of racing. Diversity, equity, and inclusion are pressing concerns. Underrepresentation of individuals from minority backgrounds persists, accompanied by racial discrimination. Female representation remains rare. Addressing these challenges requires systemic changes, starting with equal opportunities in education and support for aspiring motorsport enthusiasts from minority backgrounds. In conclusion, while the motorsport industry faces complex issues, it has a bright future if it makes informed decisions and embraces technological development. Sustainable fuels, equitable regulations, and diversity initiatives promise a more inclusive and sustainable motorsport landscape.

Keywords: Motorsport, social media, environmental, diversity.

1. Introduction

Over the past few years, motorsport achieved considerable success, both in terms of popularity and financial performance. Originating in Europe, this exclusive sport, which once symbolized bravery, chivalry, and nobility, has now evolved into one of the most popular sports worldwide. The motorsport market was estimated to be around \$56,035.69 million and was projected to grow to \$122,608.91 million by 2028 [1]. Within motorsport industry, Fomula1 witness growing interest form a global perspective, annually viewer increased from 70million in 2016 to 1.45 billion in 2022 since Liberty media take over F1. The alteration in the managerial structure has brought an end to Bernie Ecclestone's autocratic governance, resulting in the transformation of the sport into a globally renowned endeavour. This transition follows a period of deleterious management by CVC, characterized by decisions that compromised the long-term development of Formula 1 while pursuing immediate financial gains.

In the present era, social media plays a pivotal role in the widespread dissemination and globalization of motorsport. This influence is not confined solely to illustrious entities such as Formula 1 and Le Mans, but also extends to encompass diverse categories like GT racing as well as national touring car competitions. This trend is conspicuously evident in burgeoning regions such as China, where motorsport is expanding in various way, such as patriation, scale of the race and more social attention. However, with the expanding scope of the motorsport industry, the emergence of significant challenges has become increasingly pronounced. From a global perspective, the growing concern on environmental consciousness and sustainability has elicited heightened scrutiny, leading to an escalating opposition from environmentalists directed towards this sport due to greenhouse gas emissions associated with racing activities, transportation, and the construction of infrastructure.

Where consider form the industry point of view, one of the major challenges is how to attract future fandom. Motorsport fail to attract more young generation into this sport, children who were interested in motorsport at a young age is significantly lower than other major sport like football. A

survey conducted by Hamilton's commission [2] reveals this incongruity, elucidating that merely 9% of the youthful demographic express enthusiasm for motorsport, a figure substantially lower in comparison to football's robust 46% rate.

The rapid progression of technology has positioned motorsport at a critical juncture. This juncture is characterised by a dichotomy driven by advancements in sustainability and environmental conscientiousness. The pressing pursuit of environmental friendliness and the incorporation of renewable resources stand in opposite position of traditional motorsport. The envisaged transformation towards electric propulsion, as a replacement for conventional internal combustion engines, inevitably raises concerns regarding the potential reduction of the sport's follower. Enthusiasts who have savoured the distinctive resonance of v12 engines might abandon this sport. Simultaneously, if the industry reserve conventional internal combustion engine, then potentially igniting queries, and challenges to its compatibility with contemporary environmental standards and concerns. Furthermore, viewed from a business perspective, it is imperative to acknowledge that as the concept of Diversity, Equity, and Inclusion (DEI) gains broader recognition and public acceptance, the imperative for prompt action within this exclusive industry becomes even more pronounced in addressing this pervasive societal concern.

The current academic landscape lack of research focusing on the multifaceted influence emanating from social media dynamics and evolving management structures within the realm of study. Formula 1 (F1), in particular, has garnered considerable attention due to its capacity to attract an increasingly substantial demographic of new enthusiasts through social media platforms and televised productions such as "Drive to Survive" [3]. Appositely, the trend resonates with observations posited by The Guardian, since ESPN broadcast, F1's popularity correlates with the ascendant appeal of "Drive to Survive" Although people have the awareness of potential role of social media, it remains conspicuously evident that only a paltry volume of research have been embarked upon to the contribution of social media.

Furthermore, despite the widespread dissemination of the Diversity, Equity, and Inclusion (DEI) paradigm within contemporary workplaces, particularly in more developed Western nations, minimal scholarly attention has been directed toward the realm of motorsport. Evidently, within this context, an investigation undertaken by Hamilton's commission [2] underscores a stark reality: less than 1% of the workforce within Formula 1 comprises individuals of black or other minority ethnic backgrounds, and among this marginal representation, a staggering 83% have reported instances of racial discrimination. Regrettably, concerted efforts to enhance the representation of minority ethnicities within this domain remain conspicuously scarce. The prevailing dearth of research endeavours and pertinent data pertaining to the landscape of diversity in motorsport within the extant academic discourse exacerbates the challenge of addressing this longstanding and indeed significant issue.

The study aims to provide a comprehensive analysis of the methodologies and strategies that have contributed to the globalization of motorsport, as one of the fastest-growing segments within the sports industry. The research focuses on delineating the nuanced trajectories of regional and national motorsport industries, with a particular emphasis on the transformative evolution of Formula 1 (F1) post-2016. Which include alterations in management structures, shifts in marketing approaches, and the redirection of future direction. Central to this investigation is the incorporation of various financial data, engaging both established and nascent enthusiasts of the sport, thereby addressing the imperative of revitalizing its appeal. Moreover, the research also concentrated in lack of minority ethnic representation within motorsport, particularly evident within the context of F1. This exploration delves into the existing circumstances while devising strategic pathways to foster enhanced diversity and equity within the sport [4].

Furthermore, the study will offer suggestions and solutions including technological advancements, strategic media engagement, and the resolution of prevalent challenges. The research presents a range of potential solutions and strategies that will serve as essential guidelines for the future advancement of motorsport. This effort is guided by a future-oriented perspective, prioritizing inclusivity,

transparency, and innovative approaches. These aspects collectively contribute to the comprehensive and sustainable growth of the motorsport industry [5].

The rest of the paper will be divided into development of modern motorsport, current challenges, and problems, at last will give suggests and solution to resolve those problem.

2. Development, Globalisation of Modern Motorsport and F1

2.1. Development of Current Motorsport

The emergence of a new phase in motorsport has been ushered in through the globalization of Formula 1 (F1) and attracted a more fans into this industry [6]. This expansion has subsequently piqued interest in other less well-known racing series such as the British Touring Car Championship (BTCC), GT World Challenge (GTWC), and other smaller-scale competitions, facilitated by the dissemination of content through platforms like social media and online race replays. This has underscored the significance of comprehending the underlying drivers behind F1's global reach. Bernie Ecclestone (1980). Ecclestone, born in 1930, had a background as both a driver and driver manager, and in 1971 founded the Formula One Constructors' Association (FOCA) as a coalition of multiple teams advocating for their rights against the International Automobile Federation (FIA). Under Ecclestone's stewardship, F1 swiftly ascended to become a global sports sensation. However, this rise to popularity did not transfer into financial success, many teams faced bankruptcy and retirement, while Ecclestone himself amassed substantial wealth, ranking as the fourth wealthiest individual in the UK by holding a 23% share of TV rights revenue, amounting to over \$300 million. It is noteworthy that Ecclestone's autocratic leadership style garnered mixed reactions. By 2005, the ownership of F1 transitioned to CVC Capital Partners, subsequently transferring to Liberty Media in 2017 [7]. Today, F1 stands as one of the most renowned sports globally, he individual who set on the chair on ECO make little different to the development of this sport [6]. By the time liberty media takeover F1, they inherit \$44billion of debt [8]. Liberty Media's initial objective upon assuming control of Formula 1 was to address the declining viewership, whereas CVC, the previous owner, had primarily prioritized short-term financial gains. To revitalize the sport and expand its global reach, Liberty Media opted to increase the number of races held in newly emerging nations such as China and Russia [9]. These countries saw hosting Formula 1 as an opportunity to enhance their international image, resulting in substantially higher hosting fees compared to traditional European venues like the UK and France. For instance, in 2022, established European hosts like Britain and France paid a hosting fee of \$25 million, while newcomers like Saudi Arabia incurred fees as high as \$55 million annually [9]. Although the heightened hosting fees contributed significantly to Formula 1's revenue, this strategic shift had the unintended consequence of diminishing viewership, particularly in Europe. Between 2008 and 2017, Formula 1 witnessed a substantial decline in its viewership numbers, with a staggering reduction of 247.7 million viewers [10], which then lead to reduction in investment willingness for sponsors.

2.2. Action of Liberty Media

Liberty Media has undertaken a series of substantial transformations in the management and operation of Formula 1 (F1). Despite F1's substantial global fan base, which boasts approximately 500 million fans worldwide, surpassing sports leagues such as the NFL, MLB, and even the Premier League [11], the overall valuation of F1, however, still falls below of the New York Yankees [12]. Under Liberty Media's stewardship, F1 has undergone notable changes, including the adoption of a new logo and the introduction of a Formula theme [13], composed by Brian Tyler and now played prior to every race.

Moreover, Liberty Media has actively expanded F1's presence on various social media platforms, including YouTube, Instagram, and TikTok, thereby widening its reach and attracting potential viewers through diverse channels. The impact of this social media outreach is particularly significant in the context of F1's global popularity, especially in the interest of American market [14]. A pivotal

driver of this surge was the release of "Drive to Survive," a documentary series produced by Netflix. By employing cinematic storytelling techniques, "Drive to Survive" not only deepened the engagement of existing F1 enthusiasts but also leveraged Netflix's influence to captivate new viewers, especially among younger generations [14]. In fact, over half of F1's fans in the United States have acknowledged that they were initially drawn to the sport through "Drive to Survive". This success has left a profound imprint on the U.S. market, exemplified by the numbers of attendance at the U.S. Grand Prix rise from 264,000 to 400,000 between 2018 and 2021 [14]. By 2023, the United States is now hosting three F1 Grand Prix events in a single year, in Miami, Texas, and Las Vegas respectively, a historic development within the F1 calendar. Consequently, F1's trajectory is one of remarkable growth in terms of popularity, with a 36% increase in its audience since 2019 and nearly 100 million additional TV viewers [14] This transformative journey underscores the significant impact of strategic changes on F1's global standing and resonance among fans. This phenomenon can also be seen in other motorsport racing.

3. Current Challenges and Problems of Motorsport

3.1. Overview of Problems

While the motorsport industry is experiencing significant growth, with the expansion of fandom and market share. By 2022 the entire market value of motorsport worth \$56035 millions [15], a significant rise could be seen compared to 2022 with the figure of \$4.8 billions [16]. It is concurrently confronted with challenges arising from the process of globalisation. This sport finds itself at the intersection of tradition and modernity, characterised by the incorporation of advanced electronic technologies and environmentally sustainable fuels. Furthermore, it grapples with issues related to sportsmanship and the enforcement of stringent regulations, especially evident in regional motorsport contexts such as China. Beyond these considerations, within the evolving landscape of Diversity, Equity, and Inclusion (DEI), motorsport maintains its status as one of the most exclusive and elite sports globally.

3.2. Junction of Tradition and Revolution

The replacement of internal combustion engines (ICE) with electronic power sources represents a prominent global trend. An increasing number of households are opting for electric vehicles, in 2022 over 52% consumer intended to buy an EV in the next 24 months, a significant rise in this figure can be seen. That's up 11% from 2021 and 22% in 2020 due to their environmental awareness and the relatively lower cost, attributed in part to government subsidies. However, it is essential to acknowledge that despite the perceived environmental friendliness of battery-powered cars, there are ecological concerns surrounding battery disposal. Furthermore, the electricity used to charge these EVs is often generated from non-renewable sources, such as fossil fuels. Even when assessing the reduction in carbon dioxide (CO₂) emissions, the impact of replacing traditional vehicles with EVs remains limited. The majority of CO₂ emissions come from industrial processes, power generation, and transportation rather than just the usage of personal vehicle.

The direct pollution from racing process may not pose a severe environmental threat, but it serves as a model for the broader automotive industry. Therefore, it is imperative for motorsport to lead by example and incorporate cutting-edge technologies within the context of an environmentally conscious world. Notably, pollution in motorsport primarily arises during the transportation of teams and the construction of racetrack infrastructure. Consequently, the motorsport industry faces a critical decision in addressing these environmental challenges. Different championships have adopted various approaches. Traditional and less technologically advanced racing series, such as GT cars and national touring cars, continue to rely on ICE. In contrast, more advanced racing categories like Le Mans prototypes (LMP) in the World Endurance Championship (WEC) have embraced hybrid power solutions and aligned themselves with Formula 1 [15-17]. An extreme example is the Formula E

championship, which has opted for exclusively electric power sources, setting an ambitious standard for the motorsport industry's sustainable future.

3.3. Rules and Orders

Furthermore, the globalisation of motorsport has engendered heightened national competition. Nevertheless, certain countries encounter challenges in the standardisation of regulations and the mitigation of illicit conduct during races. Sustaining equity and uniformity in the imposition of penalties represents a significant constraint, thereby impeding the progress of motorsport in emerging nations, as exemplified by China.

3.4. DEI in Motorsport

In the realm of motorsport, concerns pertaining to diversity, equity, and inclusion (DEI) have manifested as salient issues. Historically, this industry has not been characterised by inclusivity, rendering it a traditionally exclusive domain with limited representation for minority groups, female, and individuals hailing from ethnically diverse backgrounds. It is imperative to recognise that motorsport extends beyond the limelight enjoyed by drivers; it encompasses a myriad of roles, including engineers, designers, and administrative personnel. While strides towards diversifying the driver pool have been observable and commendable, with an increasing presence of individuals from minority ethnic backgrounds participating in various levels of competition [16], it is noteworthy that the broader workforce within this sector comprises a larger proportion. Paradoxically, their experiences of exclusivity have been considerably more pronounced. Consequently, the introduction of solutions to address these pervasive challenges within motorsport assumes heightened significance [18].

During an F1 Grand Prix event, the participation involves a substantial number of individuals, exceeding 10,000 in total. However, the representation of individuals from minority ethnic backgrounds remains strikingly low, accounting for only 1% of the participants [2]. Additionally, a considerable portion, over 85%, of these minority ethnic individuals report experiencing racism within their workplace [2]. Instances of racial discrimination have been distressingly commonplace, with some employees subjected to offensive stereotypes and derogatory comments based on their ethnicity. For instance, derogatory jokes, such as referring to someone as a "fire chicken" and unjustly attributing high crime rates in Africa to an individual because of their ethnicity, have been reported. Furthermore, even the illustrious seven-time world champion, Sir Lewis Hamilton, has not been immune to disparaging insults [20-22].

Traditionally, Formula 1 has not been known for fostering diversity and inclusivity; however, the contemporary paradigm increasingly emphasises the importance of qualifications and skills during the hiring process. One pivotal factor contributing to the underrepresentation of minority ethnicities in Formula 1 is the stringent entry requirements. Many roles within the sport, particularly in engineering and design, necessitate a background in Science, Technology, Engineering, and Mathematics (STEM). In 2019, within the STEM workforce, white individuals constituted the majority at 61.3% [17]. The scarcity of representation of minority ethnicities in motorsport can be traced back to educational disparities. In the context of the United Kingdom, where a significant portion of the Formula 1 industry is based, disparities emerge early in the education system. Despite a third of GCSE students being of black, Asian, or other minority ethnic backgrounds, opportunities for these students are disproportionately limited, despite their comparable or superior performance compared to white students. A significant hindrance lies in the process of applying to top-tier universities for STEM courses, where predicted grades are pivotal. Research has indicated that teachers often hold lower expectations for students from minority backgrounds, curbing their prospects of studying STEM at prestigious institutions and, consequently, restricting their entry into the motorsport industry.

The lack of female representation is another concerning facet of motorsport. In 2019, the distribution of females within STEM fields was significantly lower, with only 34.1% compared to

51.5% in non-STEM domains. Examining this from a diversity perspective, while minority ethnic representation, though limited, still manages some presence across various racing tiers, female representation remains exceedingly rare, with virtually no presence in elite racing categories like Formula 1, Formula 2, and Le Mans Prototypes (LMPs) [23-25].

4. Solutions to Current Problems

4.1. Prevent the ICE in Motorsport

While this paper comprehensively addresses the challenges encountered during the globalisation of motorsport, it is essential to recognise that these issues may manifest in other burgeoning industries, underscoring their broader applicability. This section offers suggestions and recommendations to mitigate these challenges [26].

In terms of technological advancement, a complete transition to electric power is not a viable option for the motorsport industry. This assertion holds particularly true for sports with a rich historical tradition, such as Formula 1 (F1) and Le Mans, which have long relied on fossil fuels and internal combustion engines (ICE) to propel their race cars. The introduction of new hybrid engines has already raised questions and caused some disillusionment among longstanding fans. A wholesale shift to electric power would likely diminish the enthusiasm of existing fans. It is worth noting that the top eight most popular motorsports globally, including F1, MotoGP, and Rallying [18], continue to rely on conventional fuel-based propulsion systems and have not adopted purely electric power."

An alternative remedy that has recently garnered substantial attention is the exploration and utilisation of renewable and synthetic fuels [19]. Formula 1 presently incorporates E10 fuel, consisting of 10% renewable ethanol which reduce the level of greenhouse gases emission [26]. However, the motorsport industry is diligently pursuing a more environmentally sustainable approach, with aspirations to attain 100% sustainable hydride fuel by 2026 and achieve net-zero carbon emissions by 2030. Another viable avenue involves substituting traditional fuels with synthetic fuels, which also referred as e-fuels [24]. These synthetic fuels are generated by the reaction between carbon dioxide [20] extracted from the atmosphere and hydrogen gas obtained from water sources. The adoption of synthetic fuels holds the promise of enabling automobiles, maritime vessels, and even aircraft [25] to operate entirely free on net carbon emissions, while also extending the lifespan of internal combustion engines (ICEs) within the motorsport sector. However, it is important to acknowledge that the utilisation of synthetic fuels faces certain limitations. As this emerging energy source is still in the experimental phase, production costs remain relatively high, limiting its accessibility to the broader populace [21]. Nevertheless, the most optimistic projections suggest that by 2025, widespread transportation operations may achieve carbon neutrality through the adoption of synthetic fuels. Notably, Porsche is currently conducting tests involving synthetic fuel in the Porsche Super Cup championship. Historically, motorsport has consistently served as a testing ground for cutting-edge technologies. Consequently, the integration of these novel fuels not only holds the potential to address environmental concerns but also to prolong the presence of ICEs in motorsport, all while preserving the sport's existing fan base and viewership.

4.2. How Newly Emerge Counties Adopted Motorsport

For the healthy and positive development of any industry or sport, the imposition of fairness and strict regulations is imperative. The contemporary framework of regulations governing motorsport draws inspiration from established race series such as Formula 1, WEC, and GTWC. Therefore, for emerging motorsport markets like China, a viable strategy often involves adopting existing regulations from analogous race series in countries like the UK and Italy. However, the increased infusion of capital and the growing web of common interests have posed challenges in ensuring equitable competition within motorsport in countries like China. These actions, favouring wealthier drivers over more deserving ones, not only impede the industry's long-term growth but also precipitate a talent drain effect. When race winners are determined more by financial prowess than actual

performance, it not only discourages current participants but also erodes the confidence of potential newcomers. To rectify this issue, a robust government intervention becomes essential.

4.3. Solutions to Rise Diversity in Motorsport

Regarding the imperative issue of Diversity, Equity, and Inclusivity (DEI) within motorsport, immediate action is warranted. Motorsport, boasting an annual turnover of £6.0 billion and providing livelihoods for 38,500 full and part-time employees, plays a substantial role in UK employment [2]. However, the matter of diversity has long been overlooked, starting at its roots with the underrepresentation of students from minority ethnic backgrounds in STEM programs at leading universities, often a consequence of teachers harbouring lower expectations for these students. To address this foundational issue, it is paramount that teachers treat all students with absolute equality, focusing solely on their performance rather than relying on stereotypical predictions. Furthermore, extending opportunities for *in silico* microbial training and providing scientific and career mentorship can offer pathways for those who may not currently attend top-tier universities but are committed to acquiring advanced knowledge [22]. This, in turn, can increase the likelihood of students from ethnic minority backgrounds entering the motorsport industry upon graduation. From the perspective of aspiring motorsport professionals, research reveals a lower level of interest among young individuals from minority ethnicities compared to their white counterparts at a similar age [2]. Interviews with potential entrants often cite lack of funding as a primary barrier, especially in the context of national-level karting races, which can cost upwards of £30,000. To enhance diversity, it is essential to allocate additional funding to support children from minority backgrounds who express interest in motorsport, thereby fostering a more diverse grid. Furthermore, it is vital to recognize that diversity represents the end goal and achieving diversity within motorsport necessitates a commitment to equity. Equity entails providing support to populations facing greater challenges, differing from equality, which implies equal treatment for all. Cultivating an inclusive mindset and acting equitably are essential steps to realising diversity in motorsport across various roles and positions.

5. Conclusion

The motorsport industry has undoubtedly evolved into a global juggernaut, attracting fans from all corners of the world, and amassing significant financial success. Formula 1, in particular, has seen remarkable growth in viewership and engagement, thanks to innovative management strategies and the influence of social media, epitomized by the "Drive to Survive" series. However, with this meteoric rise comes a set of pressing challenges that demand attention and action. This market became increasingly attractive for both new investment and old traditional car manufactures like Audi and Ford.

One of the central issues facing the industry is the choice of propulsion systems. While electric vehicles have gained traction in the broader automotive sector, the transition to electric power in motorsport presents a complex dilemma. Traditional internal combustion engines, which have been a hallmark of motorsport, carry with them the risk of falling out of sync with environmental standards. Yet, a wholesale shift to electric power could alienate fans who cherish the roar of combustion engines. A middle ground might be found in the adoption of sustainable and synthetic fuels, which offer the promise of reduced carbon emissions while preserving the essence of traditional racing. Moreover, as the motorsport industry expands its global footprint, it must confront challenges related to fair competition and equitable regulation. Instances of favouritism based on financial prowess rather than skill threaten to undermine the integrity of the sport, particularly in emerging markets like China. Government intervention and the enforcement of stringent regulations are essential to ensure that motorsport remains a level playing field, fostering long-term growth and retaining talent. Perhaps one of the most pressing issues facing the motorsport industry today is its lack of diversity and inclusion. Despite efforts to diversify the driver pool, a substantial underrepresentation of individuals from minority ethnic backgrounds persists, and racial discrimination remains a significant concern.

Similarly, female representation in motorsport, particularly at the elite levels, remains exceedingly rare. To address these challenges, systemic changes are needed, starting with reforms in education that provide equal opportunities for students from all backgrounds. Funding and support should be made available to aspiring motorsport enthusiasts from minority backgrounds, nurturing talent, and creating a more diverse grid. Furthermore, a shift from equality to equity is crucial, ensuring that those facing greater challenges receive the support they need to succeed within the motorsport industry. We can already see some success in the U.S. STEM workforce gradually diversified between 2011 and 2021, with increased representation of women and underrepresented minorities [27]. Despite all those problems we observe, will correct decision making and following the path of technology development the future for motorsport was indeed bright and promising.

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