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How could a restructured digital football platform, meeting new user expectations, with a focus on technological advances impacting football competitions, enhance the overall fan experience in comparison to existing applications?

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Declaration Regarding AI Tool Usage in Master's Thesis

principles of responsible use of AI:

- **Critical Evaluation :**
    - We critically assessed the AI-generated output, ensuring its alignment with our research objectives.
    - Any modifications or corrections were made based on our expertise and domain knowledge.
- **Transparency :**
    - We acknowledge the use of Chat GPT and DeepL transparently, emphasizing that it contributed to our work but did not replace human judgment.
    - Our commitment to transparency ensures the integrity of this thesis.
- **Ethical Considerations :**
    - We actively monitored for biases or unintended consequences introduced by the AI tool.
    - Our ethical responsibility guided our decisions throughout the research process.

Declaration

During the preparation of this master's thesis, the author(s) utilized Chat GPT and DeepL for the following purpose:

1. Literature review: we used AI to proofread our texts, formulate and structure our sentences.

2. After using Chat GPT and DeepL, the author(s) diligently reviewed and edited the content produced by the tool. We take full responsibility for the final content presented in this thesis.

By signing this declaration, we affirm that the content of this master's thesis reflects our original work, augmented by the responsible use of AI.

Acknowledgments

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Table of Content

1. Introduction

1.1 Foreword

Technology is a key component of modern living, changing each aspect of life from the approach to work and school to participation in sports and leisure. This project will investigate the relationship between football and technology and how it may improve the experience of football fans across all lines, meeting the needs of casual viewers as well as passionate fans. Platforms today demonstrate more adaptability to advancements in computer technology compared to competitions, which, while flexible, are also evolving. We can observe this adaptation in the football world, with innovations like VAR[1] coming into play. We will therefore explore this issue by attempting to answer the following question:

"Should the format of football competition evolve as digital platforms increasingly offer extended highlights of games?"

For our final year project, we decided to choose a topic linked to the class of Platform Strategies proposed by our teacher, Mr. Belleflamme. We were directly inspired by this topic after taking the Platform Strategies course taught by the same professor in our first year of the master's program, particularly because the research question centers on football, a sport that also really inspires us.

1.2 Thesis Statement

As described above, we have noticed gaps in the digital platforms of football media. Actually, supporters frequently turn to viewing highlights on broadcast television or throughout online channels like Facebook and YouTube. Post-match conversations and viewpoint sharing usually take place in small groups, whether by private messaging, in person, or on various social media sites. The absence of a centralized venue for these kinds of exchanges indicates a window of opportunity, which is what our project aims to open.

[1] Video Assistant Referee, is a system in football where off-field officials watch video replays of key incidents to help the on-field referee making better decisions.

In addition, the emergence of artificial intelligence (AI) has led to a revolution in application development, providing new opportunities to improve user comprehension and engagement.

Faced with these shortcomings, we quickly decided to explore our research question while at the same time proposing a platform that would accommodate the evolving environment of football, meet the demands of football highlights platform users, and obviously keep up with technological advancements.

In this way, we suggest creating an application that is sport-centric and has a primary focus on the football league as we begin a project with this level of ambition. This project is the result of realizing how many users are incredibly engaged in the subtleties of the game. Our in-depth research shows that, although fans of different sports from different areas actively use different applications to consume sport data (from player statistics and team line-up to past performances), the consumption of game highlights and the promotion of fan interactions are mainly dispersed.

The proposed application aims to serve as a central hub for everything related to football, combining the essential components of media consumption, data analysis, and community engagement into one user-friendly interface. By doing this, it hopes to provide a more fulfilling experience, inspire increased creativity, and create more intimate connections amongst its users, all of which will eventually be to their mutual advantage.

Through the utilization of data-driven artificial intelligence, our application will provide football fans with a deep and perceptive overview of the beautiful game, in addition to meeting their requirements. Our project is ready to add a new chapter to the dynamic story of football popularity, at the exciting intersection of football, community, and cutting-edge technology.

The objective is to answer the following question:

“How could a restructured digital football platform, meeting new user expectations with a focus on technological advances impacting football competitions, enhance the overall fan experience in comparison to existing applications?”.

1.3 Project structure

For the structure of this dissertation, we based ourselves on Professor Paul Belleflamme's Platform Strategies[2] course. This allows us to build our thesis on the construction of a digital platform with a logical sequence (Belleflamme, P. and Neysen, N. 2023).

The analysis of our work is divided into 3 distinct parts:

1. Value Proposition
2. Value Creation
3. Value Capture

The first part describes how the network effect is created between the various users of our platform and the value it brings them, particularly by facilitating interaction between them.

The second part is used to assess the platform's competitive position by analysing the competitors and complements of the user groups and the platform itself. It also highlights the major challenges in launching the platform, such as defining what constitutes a Minimum Viable Platform (MVP) and determining which group to attract first (the chicken and egg problem).

Finally, the last part is devoted to how the platform plans to earn money, how it will consolidate, and future development plans.

[2] Book reference: Belleflamme, P. and Neysen, N. (2023). Platform Strategies. A Guidebook for Entrepreneurs in the Platform Economy. Routledge (forthcoming)

2. Methodology

Firstly, we will begin by identifying user needs. This involves an in-depth analysis of fans' media consumption and community engagement behaviors in the context of football. In this way, we started by submitting a survey to football fans to review their expectations of the platforms, asking them about their habits, needs, and expectations. This helped us to understand their preferences in terms of content, interaction, and desired functionalities in a sports application, as well as specifically targeting the shortcomings of current platforms.[3]

Then, scientific literature research will be undertaken to enrich our understanding of emerging trends in sports technology, digital marketing, and fan engagement. This literature search will allow us to draw on relevant research to inform our design and development decisions, incorporating established knowledge and best practices from academic literature. Using this evidence-based approach, we aim to create an application that meets the needs and expectations of users while being grounded in the latest research and knowledge in the field.

We will then move on to designing the application's functionalities. We will propose value by setting up an intuitive, user-friendly interface, focusing on accessibility and an optimal user experience. We will also define the application's key functionalities, such as media content (messages from personalities and clubs, highlights, and user content), data analysis (player statistics, team performance), and community interaction (discussion forums, live comments, and content sharing). At the same time, we will explain the integration of content and artificial intelligence on the platform.

To create value, we will develop a detailed strategy for positioning our platform in the digital sports market. This will involve an in-depth analysis of the competitive landscape, as well as potential collaborators. We will then describe the major challenges for the launch of our application. We will detail effective strategies to ensure a successful market launch. We plan to explore different monetization techniques to capture the value of our platform, depending on the strategies chosen to generate revenue. In building a business plan, the aim will be to

[3] See Appendix 5 for the detailed results of this survey conducted by Arthur Roussaux and Tristan Denis in January 2024.

choose monetization methods that ensure a balance between financial profitability and user satisfaction, while supporting the growth and long-term viability of our platform.

Next, we plan to work with content partners to integrate live media feeds, match highlights, tactical analysis and other relevant content into the app. We will also negotiate partnerships with clubs, leagues and other players in the football industry to enrich the user experience and offer exclusive benefits to users of the app.

Finally, we will explain the application's evolution strategies and consolidation mechanisms. This part focuses on attracting and retaining our users, and we will put in place monitoring and evaluation mechanisms to track the application's performance.

3. Literature Review

3.1 Football and digital technologies

The revolutionary impact caused by digital technology in combining the domains of football and media into a single entity is explored in this section, which embodies the idea of sport as media (Hutchins and Rowe, 2012, cited by Petersen-Wagner and Lee Ludvigsen, 2023). Five major players have shaped the way sports and digital platforms interact over the last 20 years, driving this sector's progress. These organizations have a huge impact on the creation, distribution, and consumption of sports material. They are not simply household names but also leaders in their fields.

A major factor in this change has been Meta, previously Facebook Inc. It has created significant online communities where fans can connect with player engagements, club announcements, and live game updates via social media sites like Facebook and Instagram. Twitter is part of this ecosystem even though it is not controlled by Meta; it offers in-the-moment commentary and a forum for public discussion on football games. With Twitch, a service that was first geared toward the gaming community but has since grown to include live sports streaming, such as football, and engage viewers in new ways, Amazon has entered the market.

Alphabet has probably had one of the biggest effects with YouTube. YouTube has made it possible for football fans to share user-generated content and highlights from games, creating a forum where they can share their views and insights. Audience estimates for traditional media, like radio and television broadcasts, have decreased on this platform as consumers shift their sports consumption to these complementary and alternative sources.

Even though they do not produce the majority of the material in the sports industry, Apple and Microsoft have prodived the hardware and software infrastructure required to facilitate the use and examination of sports data. Their technological advancements have made previously unimaginable immersive watching experiences, tactical examination, and advanced statistical analysis possible (Petersen-Wagner and Lee Ludvigsen, 2023).

With more than 4 billion fans worldwide, football is leading the way in this advancement of technology. Previously restricted to a 90-minute match period, sports today use digital channels to interact with fans before, during, and after games. This ongoing interaction has changed the face of advertising, creating new opportunities for sponsorships and brand alliances while challenging the established broadcast model.

Moreover, the consequences of this digital change are significant for football-related economic actors. The development of digital platforms has required modifications to marketing plans, revenue-generating programs, and even the sport's management. Examining how various agents, from broadcasters and marketers to clubs and leagues, are managing the digital revolution will be the focus of this work. It will also take into account these platforms' future opportunities and how ongoing technological improvements will affect the most popular sport in the world.

This section aims to shed light on the complex relationship between football and digital technology and how it will develop as a worldwide hobby as well as a business in the future. It will accomplish this by analyzing these dynamics.

3.2 Impacts of digital platforms on economic agents

The new media (online platform) offers a new proposal by highlighting the games and giving the viewers the most important information with their secretive algorithms (Van Dijck et al., 2018).

Having a different value proposition, these platforms are the complementors of traditional media (such as television); however, as they are constantly evolving due to their algorithms and the efficiency to adapt to the viewers' needs, it has a direct impact on curation content[4] that platforms can manage on-demand and in real-time which is most difficult for traditional media (McQuail and Deuze, 2020, cited in Petersen-Wagner and Lee Ludvigsen, 2023). This impacts the already established media to compete for audience attention in the digital landscape, such as changes in content strategies, distribution methods, and engagement tactics to remain

[4] The practice of selecting, editing and sharing the most relevant content on the Web for a given query or subject.

competitive. It is important to note that these two, having different ways of acting in the sports environment, are complementors and not competitors, only employing their strategies in a dependent manner so as not to propose the same value proposition.

While talking of economic agents, the athletes who are the main actors of the industry got hugely impacted both positively and negatively. The athletes are active on these digital platforms too, and those were indirectly impacted by having to adapt their content according to the digital platform algorithms and the new trends of the users. However, they also gained visibility that allowed them to promote themselves, highlight and attract new sponsors, and generate stream revenues (McCarthy, 2021, cited in Petersen-Wagner and Lee Ludvigsen, 2023). They also have direct contact with the fan by bypassing the gate-keeping functions of journalists, publicists, and sports officials, only by ‘Tweeting’. Nevertheless, it also has consequences a negative impact on their popularity, as more transparency about their lives adds pressure that could affect both their private lives and their sporting skills.

Before digital platforms, clubs and leagues were used to communicating with the fans through conferences and interviews, which are still really frequent in the current world. With these new media, they are now able to have direct contact with all viewers by creating new content on platforms. It developed many benefits for them in terms of revenues from advertising, merchandising, promoting its players and sponsors, being able to speak with their fans directly, and therefore building a strong, loyal fan base and reputation (McCarthy, 2021).

In terms of the relationship between fans and the revolution of digital platforms, audiences are actively participating with content through likes and comments rather than just passively consuming it, as is usually the case while watching television. Moreover, this implies that these leagues' shared content is making greater use of the platform's capabilities by adding elements that encourage engagement. For example, they use calls to action to promote specific emotional reactions and click-based activities, including "liking," "disliking," "sharing," or "commenting" (Petersen-Wagner and Lee Ludvigsen, 2022).

Among all the sports agents there are, these cited are the main ones that were impacted by the new media, the digital platforms. The project will aim at improving the experience of all these actors and all users that are already active on the platforms, but also by attracting new followers that do not match current applications, by being more centralized, modern, and interactive.

3.3 Feasibility of the project

Assessing the project's feasibility and the attainability of its goals was a crucial first step before starting the process. Copyright and fair use have emerged as two crucial legal factors that must be taken into account for a successful launch. These issues are especially prominent in the context of elite men's professional sports because of how complicated "image" or "personality rights" are. Since Haynes (2004) defined it as "the commercial appropriation of someone's personality, including indexes of their image, voice, name, and signature" (cited in Hutchins 2011), it has become more important than ever to control these rights.

This complexity is made worse by the fact that in the digital era, independent online platforms such as personal blogs, websites, and social networking profiles are now able to communicate to the users visualy and to associate personality rights (Menon and Philip, 2018). Therefore, a key component of the application's basic strategy is making sure that it not only respects these rights but also successfully deals with the complex world of digital media consumption. As such, this project is being started with careful consideration of these legal aspects, providing a legal and ethical basis for its launch.

3.3.1 Copyright and Fair Use

For all football fans, the actions on the pitch are pure creations: players' skills, shots, runs, passes, and the entire game developed in a masterful show of athleticism and strategy that attracts millions. However, from a legal perspective, the question is asked: Is football a creation from a legal point of view?

European copyright legislation applies laws to works of art. The Court of Justice of the European Union (CJEU) analyses a work on two concepts: originality and expression. For this, the work must have been carried out with free and creative choices. The term choice is a little bit vague, but it must be totally free, without restrictions, neither insignificant nor too obvious. This is why the CJEU declared that football actions could not be considered works of art as they were supported by the rules of the game and therefore could not be protected by copyright. This is why people recording videos of the players performing do not need any permission to do it (Hugenholtz and Senftleben, 2011).

About the broadcasting rights of football games, the regulations get much more complicated. The battle between national and international television networks for the rights to broadcast major events like the FIFA World Cup has significantly intensified since 1960. Due to the high cost involved in the sport as well as its growing popularity, the value of these rights has significantly increased (Horne & Manzenreiter, 2006, cited by Lee Ludvigsen and Petersen-Wagner, 2023). The complex relationship between the sport broadcasting and the legal structures that control its commercial exploitation is highlighted by this commercial aspect.

Broadcasting rights holders, who have purchased the rights, are the ones who publish sports highlights. Consequently, an individual user does not have the right to republish any type of content that they have not personally filmed at a football match. However, there are certain exceptions to copyright law that allow users to republish video extracts or articles without needing the copyright holder's permission, known in America as Fair Use. Indeed, in the U.S., Fair Use introduces certain limitations to copyright, while in Europe, the concept remains relatively undefined. However, a recent and widely discussed ruling by the French Court of Cassation has paved the way for a judicial assessment of copyright limitations, therefore reinforcing the argument for the introduction of an open clause for limitations in European copyright legislation (Synodinou, 2022).

« The use of press publications by information society service providers can consist of the use of entire publications or articles but also of parts of press publications. Such uses of parts of press publications have also gained economic relevance. At the same time, the use of individual words or very short extracts of press publications by information society service providers may not undermine the investments made by publishers of press publications in the production of content. Therefore, it is appropriate to provide that the use of individual words or very short extracts of press publications should not fall within the scope of the rights provided for in this Directive. Taking into account the massive aggregation and use of press publications by information society service providers, it is important that the exclusion of very short extracts be interpreted in such a way as not to affect the effectiveness of the rights provided for in this Directive» (DIRECTIVE (EU) 2019/790 OF THE EUROPEANPARLIAMENT AND OF THE COUNCIL of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC, article 58).

In this article, the concept of short extract is undefined; however, the platform will work in the same way as well-implemented platforms are already doing, such as TikTok or Twitter for the interaction's category.

4. Value Proposition

This section explains the added value proposition that our platform offers users, along with how it will activate network effects. It outlines the benefits that users will receive by joining and illustrates the mutually beneficial relationship between advantages and user participation. It also lists the platform's features in three primary categories: Information & Statistics, Highlights, and Interactive Platform. Additionally, it explores a specific chapter that explains how AI will increase user profitability.

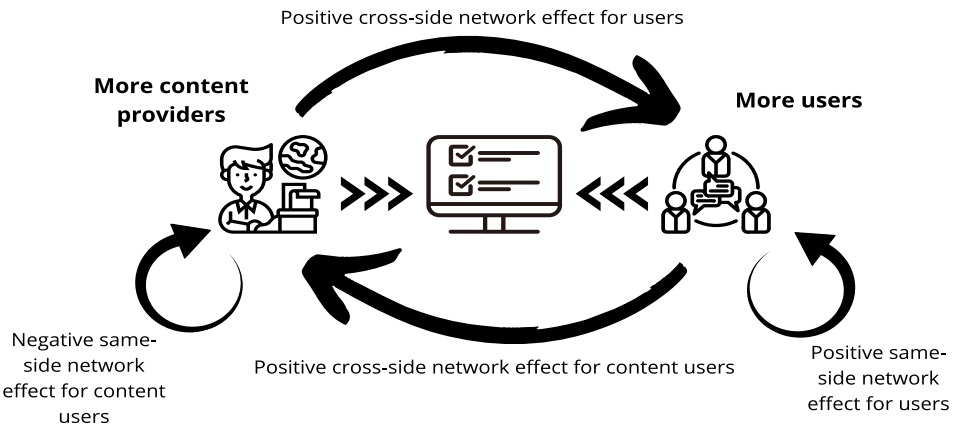
4.1 Network effect

To create an innovative digital platform, it is important to know what a platform is:

"A platform is an entity that brings together economic agents with complementary needs and facilitates interaction among them." (Belleflamme, P. and Neysen, N., 2023)

As mentioned previously, the platform will have a huge impact on economic agents. This section will focus on the agents mentioned above: on the one hand, the content providers (such as clubs, leagues, and other copyright and distribution holders, users), and on the other, the users who benefit from this content. These two parties, as the definition shows, have complementary needs, and the platform will facilitate interaction among them. The economic agents will benefit from the actions of other agents; that is called the "Network effect" (NE). Indeed, the more there will be users, the more they could publish content, the more they will interact all among themselves, that is called the positive **same-side network effect**. Moreover, on the other group, more content providers will also add value to the community by providing more content, more options, and more ways of interacting; this positive feedback loop is called positive **cross-sided network effect**. This also works inversely; if there are more users, content providers will benefit from more viewers on their publications ('Network Effects: Definition, History, and Examples', n.d.)

This schema clearly shows how NE works on the platform:



Scheme 1: Network effect

4.2 Information & Statistics

The aim of this first section is to provide users with the best possible means of obtaining pre- match and post-match information, including precise and detailed statistics. We will explain how we will provide fans with this data in a modern and efficient way, followed by a section reserved for external journalistic and media content and finally by a new feature on advanced statistics.

4.2.1 Data Collection:

Since the applications are currently in use, it was first essential to be able to provide football information, statistics, and a dynamic analysis of games in order to construct the application. Using an "Application Programming Interface" (API) was the only way to build this up in a modern manner with artificial intelligence assistance.
It is critical to understand an API's fundamental definition in order to follow its functioning and meaning: An API, or application programming interface, is described as "a software interface that facilitates the connection between one software or service and another, enabling the exchange of data and functionalities" by the Commission Nationale de l'Informatique et des Libertés (CNIL). In other words, an API is a structured set of protocols that facilitate the interaction of multiple pieces of software. In short, it acts as a link between separate software

components and enables the interconnection of digital environments. Currently, APIs have become indispensable for all applications because they avoid having to write redundant code that has already been done. Most enterprises, software applications, and other entities rely on a diverse range of APIs, for example Uber Eats, which simply integrates the Google Maps API into its platform without having to replicate the functionality of Google Maps from scratch, thereby avoiding the long and costly process of replicating the functionality of Google and empowering them to focus on enhancing their unique offerings instead of recreating what already exists.

Our platform can and must obtain real-time data, enabling users to obtain up-to-date information on events occurring on the football field. This function is now essential for all statistical football applications in the current context, and thanks to our API, we have the capability to have real-time data. This enhances the user's experience by making it more engaging and dynamic.

Now that we have grasped what an API is, it's important to note that there are various types of APIs, each with different objectives. Therefore, choosing the best API or combining different approaches is crucial, as it significantly impacts the success of our platform in terms of features, efficiency, and user experience.

First of all, there are four different categories or types of APIs, each suited to specific uses and application areas, as well as various protocols and architectures. Let's start by exploring the different types of API, and then look at the different API protocols.

Firstly, **partner APIs**, which are available only to API consumers (individuals, companies, developers, and other actors using the APIs) who are authorized by them, partner APIs generally incorporate more robust authentication, authorization, and security mechanisms to ensure that only authorized partners can access data and facilitate exchange between different players. **Composite APIs**, on the other hand, have the particularity of executing several API requests in a single call, thus reducing the number of round trips between server and client. This type of API is used for complex operations with closely related API calls. Then there are internal or **private APIs**, which are uniquely developed within organizations and used exclusively within them. And finally, the fourth type of API is called **Public APIs**, also called external or open APIs, are available to the general public, offering access to certain

functionalities generally via an API token. This allows third parties to develop apps that interact with your API. They can be free or chargeable, depending on their use. It's the latter API that we're interested in here.

Now, let’s dig into API protocols. On the one hand, APIs facilitate the integration of different components and allow existing services to be utilized without delving into the details of their implementation, such as coding something very complex. Secondly, the protocols used by APIs provide guidance for developers on the standards for using the API and many other aspects of API-related development, as well as guaranteeing interoperability and compatibility between different systems. There are many different protocol specifications: SOAP, RPC, WebShocket, and so on, but the API architecture we're most interested in is the REST API (Representational State Transfer). This type of API is widely adopted to facilitate the exchange of information between "clients" (users or applications) and "servers" (applications or databases) on the web. The RESTful API facilitates communication between actors through its four HTTP request methods (GET for querying, POST for updating, PUT for creating, and DELETE for deleting resources). These four methods are generally sufficient for the main applications. Rest API is based on five principles described by Roy Fielding in his 2000 dissertation, "Architectural Styles and the Design of Network-based Software Architectures". The aim of these principles is to provide flexible and robust communication between clients and servers. Let's look at these five principles to better understand the concept of REST APIs (Fielding 2000).

1) Client-server architecture

This first principle guarantees a separation of functionalities, enabling independent development of different system components and facilitating adaptability of the user interface to different platforms.

2) Stateliness

This second principle ensures that each request between client and server contains all the information required for its execution.

3) Cacheability

The principle of caching improves performance by enabling the server, client and other components to store data locally.

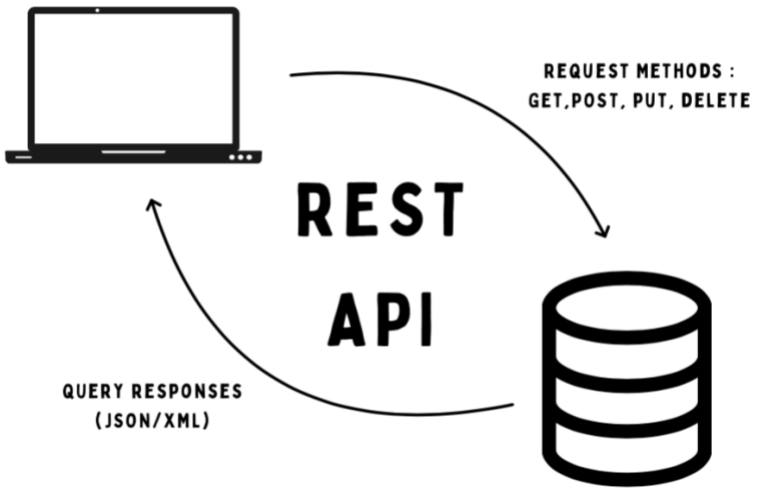
4) Uniform interface

The fourth principle ensures that all components follow the same rules when communicating with each other. This simplifies interaction and allows one to understand how the system works.

5) Layered system

This second-to-last principle describes how the architecture works: API calls and responses pass through different layers, with client and server not connecting "directly" to each other. Individual components cannot see beyond the level with which they interact in such a way that neither server nor client can tell whether they are communicating with the end application or with an intermediary component.

In short, Rest APIs offer great flexibility because they are language-independent, giving you the freedom to choose the technologies best suited to your project (PHP, Java, Python, etc.). Query responses are generally in JSON or XML format, standard interoperable formats that facilitate integration with other systems, as illustrated on Figure 1. And last but not least, REST APIs enable agile development, since the application components are independent (frontend, backend, and database) and can be processed independently of the other components. It's for all these reasons that we chose a REST API for our project.



Schema 2: REST API Design

Now that we've decided to use a REST API, we need to decide which API, Sport data providers, to use. In fact, there are plenty of football-based APIs available. Some are free, some are not.

At first, we looked for free APIs to reduce the costs of our project, but unfortunately, free APIs have some serious drawbacks: the number of requests is limited in time, and the data is not “live,” which is one of the most important conditions for having a competitive platform. Having a good API is essential, which is why we quickly moved on to the search for a paid REST API.

After much research and testing, we finally opted for Sportmonks' Football-API. It guarantees rapid deployment and complete flexibility thanks to its compatibility with various programming languages. With coverage of over 2200 leagues and championships, this API offers high-quality data at an affordable price compared to other APIs and is easily implemented on our platform. Another positive aspect of this API is the “include” feature, which enables us to obtain related data with a single query, thus obtaining an overview of the data we need without having to make several additional requests. Finally, the Sportmonks API ensures the reliability of your data, thus reinforcing the trust of our future users.

Sportmonks is well known in the world of soccer APIs. They collaborate with high-quality data partners to ensure that their sports data is reliable and always up-to-date They are trusted as a sport data partner by TXODDS (a global distributor of real-time sports betting odds), CityFootball Club, Jupiler Pro League, Red bull Racing, etc. But it has also helped create Elevenstats (a website that provides advanced soccer statistics and analysis), Fotbol (Sweden's most comprehensive soccer site), and more. We hesitated with other APIs, but each time there was a “default”. For example, API-Football by API-SPORTS seemed good; it wasn't very expensive, but their livescore is 15 seconds, which is too high. Other APIs were much cheaper, but we didn't know how to check the reliability of their APIs and data. That’s why we chose Sportmonks-API.

Now we're going to show you how the API enables us to collect the data we need for our digital platform. We're using the Postman site (https://web.postman.co), which makes it easy to request data from any API. We're using the free API token from Sportmonks. We only have access to the free version for this test, and we therefore have access to two small leagues: the

Scottish Premiership and the Danish Superliga, and to the standard data features.

Let's showcase the usage of our API in the Danish Superliga. We can have all the information we want with the "GET" function. For the request concerning the championships, we can have the names and a whole heap of information about each team in the championship, such as the date of the last match played. We can see that according to the API, the last match played by the "Brondby" team was on April 21, 2024 at 4 p.m. and that of FC Copenhagen was on April 21, 2024 at 2 p.m. and this information is confirmed via the internet[5] (we made these API requests on april 27,2024). We can then find out when these two teams will play each other, according to the API it will be on May 12, 2024 at 2 p.m.[6](see the "starting_at" line) and as we can see on the internet this information is correct.[7] You can see that we can access a large amount of data very quickly. To use the API properly, you need to have access to the database (coming from the Sportmonks API in our case) to know the "IDs." For example, here FC Copenhagen has a "team ID" of 85, the Danish superliga has a "League ID" of 271, the "Current Season ID" of 21644 (for the 2023-2024 Superliga season"), etc. Thanks to this, we can choose exactly the data we want, which is directly usable and well structured.

4.2.2 Journalism

The online web/application production has dramatically changed the way audiences interact with traditional media either on TV or in newspapers. The reason for that is mostly due to the technological developments that has affected public perception and reception (Hutchby 2006; Scannell 1989, 1996, 2000; Tolson 2006). From the production side, the role of media has seen the journalism part being more important and changing significantly due to an active engagement with co-creating, co-producing audiences requiring new skills (Malmelin and Villi 2016). From the reception side, nowadays, the audience has access to many different technological devices, increasing their means of watching and interacting with sports, this is called the second screening[8] which has become more famous these last years (Boyle 2014; Cameron and Geidner 2014; Galily and Ilia 2014; Giglietto and Selva 2014). While some

[5] See Appendix 1, Figure 2, 4, 5
[6] See Appendix 1, Figure 6
[7] See Appendix 1, Figure 3
[8] A computing device that provides additional information to enhance the viewing experience.

people argue that the Tv show will remain the main device to watch sport, and that the second screening will be more considered complementary to this medium (Boyle 2014), others argue that the second screening can offer a better experience to the audience (Selva 2016). The second screening will obviously reshape the format of the actual one; indeed, journalism is totally suited to remain or even to be more attractive online (Kroon and Eriksson 2019). Here are some examples of second screening that our platform will put in place in a dedicated section:

- Feature Articles: Include well-researched and engaging articles covering various aspects of football, such as player profiles, team dynamics, game analysis, and industry trends. These articles can provide valuable insights and background information to enhance the audience's understanding and appreciation of the sport. As we'll see later, the Sportmonks Football API we're using has a feature called ‘News’. This provides exclusive and reliable football news, with pre- and post-match articles for the top 6 competitions, written by experts and supported by AI, which helps us keep our users engaged with compelling content.

- Opinion Pieces: In our platform, we will have a section where we will repost editorials and opinion pieces that give experts, journalists, and football fans a forum on the platform to express their viewpoints, analyses, and forecasts on news, controversies, etc. This has the potential to spark arguments and conversations among the audience.

- Interviews: Thanks to shared interviews, users can access exclusive insights, and behind-the-scenes perspectives from interviews conducted with football players, coaches, commentators, and other football stakeholders. This can help, in the first instance, sports celebrities appear closer to the public, in the second instance, resulting in stronger fan connections.

- Live Coverage and Event Reporting: People like the sensation of immediacy that allows them to follow the action without delay. Thus, we also provide live coverage of sports events, press conferences, and interviews to keep the audience updated in real-time (for example, the commentators' transcript).

- Historical Context and Analysis: Present historical retrospectives, highlights of old football matches, and in-depth analysis of significant moments and turning points in

sports history. such as scores from the last 5 matches, interesting statistics such as the fact that the "A" team has never lost to the "B" team at home since the 2000s, etc. This can help educate the audience about the nuts and bolts, the heritage, and the traditions of the sport.

By incorporating these elements into a journalism section of the platform, it will enrich the user experience, provide valuable insights and analysis, and establish a comprehensive destination for football enthusiasts to engage with their favorite teams in a meaningful way.

4.2.3 Advanced statistics.

One of the main features of our FootballConnect platform, but also of competing applications, is the ability to monitor and analyse match statistics, whether during the match in real time or afterwards to analyse a match in greater depth. Thanks to our API, our application will offer a statistics section with a whole range of advanced and comprehensive data in real time without delay such as minutes played, balls touched, passes made, tackles, yellow and red cards, and so on. In short, all the interesting statistics that an ordinary user would want to know will be easily accessible with a single click.

One statistic that is frequently consulted is the prediction of victory between two teams during a match. We wanted to set ourselves apart from other football tracking applications, which is why we have created an innovative tool, reserved for premium users, that allows our users to make predictions on football games with former statistics recorded by the platform. This advanced tool is based on Multiple Linear Regression, and will help premium users build an effective probability that the program will calculate with different variables chosen in advance by the user (Gudla et al. 2023). We will describe our innovative tool in this section, the formula can be written as follows:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots$$

$\mathbf{X_1}$**, …,** $\mathbf{X_n}$ are the **independent** or **explanatory** variables quantified in the program with historical data available, and that will be implemented to forecast the independent variable.

β_0 is called the **intercept**; it can also be interpreted as the probability if all the independent variables are ignored (X_1, …, $X_n = 0$).

β_1, …, β_n are the **coefficients** allocated to each independent variable by the program according to the historical data analysed, which quantify the impact of the independent variables X_1, …, X_n on the dependent variable Y.

Y is the **dependent** or **explained** variable that will be determined by the independent variables and the coefficients.

The system will provide the user with the predicted value of Y, which is the outcome they are interested in predicting based on the historical data and the input variables they have selected.

The database obviously needs to be cautiously defined by selecting which independent variables will determine the value of the dependent variable. It is important that each variable is quantified in a specific range (e.g., 1 for yes and 0 for no) and that each independent variable can be associated with each observation of the dependent variable Y. Note that the number of observations must be large enough to accurately determine the coefficients in the regression model.

In the application, the database will be structured according to the request of the user. Indeed, each request can be different, considering which independent variables and for which period of time have been selected.

For the selection of the database, the user will choose between a short database, which may result in biased coefficients due to insufficient data, or a longer database, which provides more consistent coefficients but may include games that are not entirely similar to the specific game being predicted.
The parameters will be offered to the users on the platform in a standard form, according to the type of request. (e.g., league, team, etc.) and all the options that can be selected by the users with the possibility of removing, adding, and/or modifying them.

For a better understanding of the probability calculation, an example will be presented.
It is essential to note that this example was constructed using found, calculated, and utilized data, but the “online” platform will have access to more extensive data, more powerful computing devices, and numerous options.

Creation of the model

Firstly, for constructing the linear model, we have chosen a dependent variable (Y) easily interpretable and quantifiable as the probability of team A winning the match (Y=1 for 100% winning, Y=0 for 0% winning). The estimation that the program Rstudio will give back will be in the range of [0;1] which is the probability of team A winning.

Secondly, relevant independent variables were selected for evaluating the dependent variable:

- X_1 = Team ranking
- X_2 = Whether the team is playing at home or away
- X_3 = Team state
- X_4 = State of the top-performing players of the season
- (X_5) = Results from previous matches against the same opponents

The next step was to allow the program “Rstudio” to estimate the coefficients (β_i) for a multiple linear regression. Therefore, a database containing all relevant historical data was necessary. The first step was to quantify the independent variables. For this purpose, data and statistics from the 2018-2019 season of the English Premier League were used as a base, including all results, the season's rankings, and a list of top-performing players according to their statistics.

Each variable below required a quantification:

- X_1 considers the difference in ranking between the team of interest (the dependent variable) and its opponent.
- X_2 is a binary variable, taking the value of 1 if the team plays at home and 0 if the team plays away.

- X_3 represents the current performance of the team. To calculate this, the program examines the team's wins, draws, and losses in their last 5 matches (1 point per victory, 0.5 per draw, and 0 for a loss) and compares it to the opponent's performance.
- X_4 relates to the actual fitness of the top-performing players statistically. These players were ranked based on their statistics for the 2018-2019 season in the Premier League, and points were assigned accordingly (e.g., in a list including the top 50 players, with 50 points for the first and 1 for the last). For example, if Chelsea has players ranked 2nd and 10th, they will receive 49+41=90 points. This variable accounts for the performance of players from both the team of interest and its opponent.
- X_5, finally, this independent variable considers the number of wins, draws, and losses, specifically against their actual opponent. However, since this example is limited to one season and thus two matches per team, it's not relevant to include this variable.

The number of dependent variables is limited in this example due to the limited database, but the application will be capable of considering more parameters and several other options, such as the number of matches to consider, all competitions combined, and more advanced parameters regarding previous matches (missing team starters, number of shots on target, ball possession, goal chances, etc.).

Computing the data[9]

A sample of 760 games had been reported to an Excel sheet in which all independent and dependent variables had been quantified. Data has been then imported into Rstudio to start the computing phase[10].

[9] See appendix figure 7
[10] See appendix figure 8 and 9

Results obtained

```
> lm1.X<- lm(Y~X1+X2+X3+X4, data = data1)
> coef1 <- coef(lm1.X)
> View(coef1)
> summary(lm1.X)$coefficients
                Estimate   Std. Error    t value     Pr(>|t|)
(Intercept) 0.4300739594 0.0193415602 22.2357429 1.201445e-84
X1          0.0233348905 0.0020389681 11.4444609 4.445649e-28
X2          0.1398520811 0.0273599895  5.1115546 4.052643e-07
X3          0.0037839691 0.0086847989  0.4357003 6.631788e-01
X4          0.0005913212 0.0001620097  3.6499112 2.804043e-04
> summary(lm1.X)$r.squared
[1] 0.3056697
```

Analysis of Results

For each independent variable, the regression analysis estimates a coefficient, which represents the expected change of the dependent variable for a one-step change in the independent variable, holding all other variables constant at the same time.

The intercept has a value of 0.43, which means that if all the independent variables are equal to 0, the team will have a probability of winning rated at 43%. This seems logical, because this result would consider that the team is playing away without benefiting from any other advantages, thus having a probability less than 50%.

The first independent variable is used for the ranking difference between the two teams. If team A is ranked 4th and the opposing team is ranked lower, the variable will be equal to 4 multiplied by the estimated coefficient of 0.023, which will increase the probability of winning by 9.2%.

The second independent variable is a binary variable, taking the value of 1 if the team is at home and 0 if it is playing away. The program has estimated a coefficient of 0.14, which will be a fixed value of 14% added to the probability of winning if the team is playing at home. This estimate seems logical in the world of football, giving a higher probability of victory to the team playing at home.

The variable X_3 represents the performance of a team compared to its opponent. If it has won only one of its last five matches and the other team has better performed by winning four out of its five matches, the variable will take a value of -3. Multiplied by the estimated coefficient of 0.0034, this will lower the probability by 1%. However, this value seems particularly low and must be reviewed to understand if it makes sense and has an impact on this equation.

Finally, the last variable differs depending on the fitness of the players on the team: if the team has fit players (say 100 points) against a team of less performing players by 20 points, the variable will take the value of 80. As we can see, this variable takes higher values than the others, and it is therefore entirely logical that the estimated coefficient is a smaller value. In the example above, multiplied by the coefficient estimated by Rstudio, this variable will add 0.0006 x 80 = 4.8% to the team's probability of victory.

Reliability of the Multiple Linear Regression

To validate the linear regression model, it is important to check the validity of each independent variable and the general linear regression model. For this, the easiest way is to perform the Student's t-tests on each variable to verify its relevance.

The Student's t-test is a statistical test used to compare the means of two groups or to compare the mean of a single group against a known value. In the context of a multiple linear regression analysis, the t-test is used to determine if the coefficients for each independent variable are significantly different from zero. This would imply that the independent variable has a statistically significant relationship with the dependent variable.

The T value for each coefficient is calculated by taking the estimated coefficient and dividing it by its standard error. The standard error measures the average amount that the coefficient estimate varies from the actual average value of the dependent variable.

T=Estimated Coefficient Standard Error of the Coefficient / Standard Error of the Coefficient

The P-value, Pr (> |t|), is the result, which indicates the probability of observing a t-statistic as extreme as, or more extreme than, the one calculated if the null hypothesis is true (the null hypothesis states that the coefficient is equal to zero, meaning the variable has no effect). The following cases are considered:

- If the p-value is less than the chosen significance level, we reject the null hypothesis and conclude that there is enough evidence to suggest that the variable has a significant impact on the dependent variable.
- If the p-value is greater than the significance level, we fail to reject the null hypothesis, indicating that there is not enough evidence to suggest the variable is significantly associated with the dependent variable.

As the P-value of X_3 is over 60%, this independent variable is clearly indicating that there is not enough evidence to associate it with the dependent variable and is therefore not relevant to keep it.

All the other P-values are below 1% and relevant to keeping it in the linear regression.

The model can be interpreted like this:

```
> summary(lm1.X)$coefficients
               Estimate   Std. Error   t value     Pr(>|t|)
(Intercept) 0.430263158 0.0193263211 22.263066 7.875840e-85
X1          0.023378226 0.0020354492 11.485537 2.949348e-28
X2          0.139473684 0.0273315455  5.103030 4.231916e-07
X4          0.000601187 0.0001603336  3.749602 1.906381e-04
> summary(lm1.X)$r.squared
[1] 0.3054951
```

Furthermore, to validate the model comprehensively, one should consider employing the Chi-Squared (χ^2) test to evaluate how well the regression model fits the observed data. This test can help in determining whether the observed frequencies significantly differ from the frequencies expected under the model in question. The coefficient of determination (R-squared) in linear regression is linked to the chi-square distribution through the use of ANOVA (Analysis of Variance) to test the overall adequacy of the regression model by comparing “explained” variance to “residual” variance.

A coefficient of determination (R-squared) of 0.31 means that 31% of the total variance in the dependent variable is explained by the linear regression model. This leaves 69% of the variance unexplained by the model, which could be attributed to unaccounted -for factors or random errors. A low R-squared (0.31) suggests that the model explains only a moderate to low proportion of the variance in the observed data, capturing only a portion of the dependent variable's variability. This is due to missing important variables in the model. Despite this, the model may still be useful for prediction, especially as the data is limited.

Conclusion

The model assesses the probability of a football team's victory based on the parameters described above and data from 760 results of the 2018-2019 Premier League season. However, this model remains limited but will undoubtedly become more effective and reliable as the application gathers additional data from API, including real-time data, which is crucial for predicting a match outcome (McNamara, 2023). Additionally, since users will be able to choose their independent variables, the program will also have the capability to identify which variables are more effective and provide advice to enhance their linear regression for improved performance.

4.3 Highlights

In the modern era, consumption and interaction with sports have been transformed by digital platforms, with Bourdieu's notion of an event being produced twice: once in the stadium and once as a media spectacle, now extending to the realm of digital transmission through smartphones, tablets, and laptops. This evolution has elevated live sports as “the most valuable form of premium content in the global media marketplace, supplying spectacular content for media events and reliably routine coverage of “elite” level leagues and competitions on all continents.” (Hutchins et al., 2019, p. 976)

Fans, previously reliant on television for highlights, now turn to the internet, more specifically on Youtube (the most popular broadcasting media) or Instagram, becoming a central hub for accessing such content. The new platform technologies have totally transformed how the sport is planned, mediatized, reported, and consumed (McGillivray, 2014) by attracting more viewers to the point of reaching 517 million TV viewers on the 2018 men’s World Cup (Statista, 2022).

Digital media, as discussed by Petersen-Wagner (2022), offers a suite of features that redefine the viewer experience: interactivity, on-demand access, and a blend of roles where users are both consumers and producers within a hybrid communication environment. The rise of YouTube as a reaction platform, particularly during the 2018 Men’s World Cup with the

introduction of VAR, highlights the socio-cultural engagement that now complements physical venues (Lee Ludvigsen and Petersen-Wagner 2023).

Furthermore, the adaptability of YouTube, with its technological enhancements, has enabled a more dynamic interaction with sports content. It allows for extended video posts, live event streaming, and various monetization strategies, aligning with the evolving demands of both content creators and consumers.

The case of the International Olympic Committee (IOC) utilizing “YouTube” to maintain relevance and viewer engagement between “Olympic Games” demonstrates the strategic use of digital platforms. By creating a historical archive and a continuous stream of content, “YouTube” services offer a cultural force that reshapes the traditional broadcasting framework (van Dijck, 2007 as cited in Petersen-Wagner and Lee Ludvigsen 2023).The case of the International Olympic Committee (IOC) utilizing “YouTube” to maintain relevance and viewer engagement between Olympic games exemplifies the strategic use of digital platforms. By creating a historical archive and a continuous stream of content, YouTube serves as a cultural force that reshapes the traditional broadcasting framework (van Dijck, 2007, as cited in (Petersen-Wagner and Lee Ludvigsen, 2023).

After many research, “Youtube” is the main broadcasting medium because it has certified economic agents (clubs, leagues, and various authors), the copyright holders, publishing their highlights on the platform, which is not the case compared to other online football platforms offering only short videos (TikTok, Twitter) or a transfer link to “Youtube highlights “(Livescore, Forza). The objective is to attract these economic agents by convincing them to join the platform, which is exclusively for football content, and benefit from a maximum number of relevant viewers. Also, there are many copyright holders inactive on “Youtube”, which would be really interesting and relevant to attract them to the new innovative and professional football platform.

To differentiate from “Youtube”, it is important to be aware of what the platform is already doing for the football highlight industry so that we can provide something new through our innovative platform to attract its users:

1. **Active Consumption & Youtube Shorts**: In today's fast-paced consumer world, Today's consumers get bored very quickly because they are surrounded by a dynamic, fast-moving environment. Short films on YouTube are becoming increasingly important. These short videos allow content creators to create engaging, concise videos that hold viewers' attention in seconds. That's why content such as Youtube Shorts, Reels on instagram and TikTok are so popular these days.
2. **Content Curation**: YouTube offers content providers with the opportunity to directly produce and curate their own selective and digital version of sports highlights, spectacles, and social ramifications, bypassing traditional broadcasters which gives them more control over what they show and how they present it.
3. **Algorithm Optimization**: This the process by which video producers modify their approach to maximize their exposure and interaction on YouTube. This means that in order for producers to stay relevant and visible, they must regularly publish content in order for YouTube's "gatekeepers" algorithm to spotlight it.
4. **Historical Repository**: YouTube serves as a historical repository or archive of content, allowing viewers to rewatch, like, share, and comment on past posts. People love to see exceptional moments in life again, such as videos, it makes them nostalgic.

To make the platform innovative, it will obviously take up the strong points mentioned above and add these ideas to make the platform more attractive, and thus more interactive.

1. **Interactive Highlights Platform**: A platform that turns passive users into active users by adding an interactive dimension, allowing users to interact with highlights, take part in match-related polls, etc. This would make viewing much more captivating and enrich their viewing experience.
2. **Personalized Highlight Reels**: A platform that uses AI algorithms to create true personalized highlight reels for viewers based on their preferences, interactions on the platform such as favorite teams, players, or moments of the game to stimulate and entertain users as much as possible.
3. **Social Media Integration**: A platform that integrates a section with social media services directly on the platform, so you can chat and share content with your friends, followers and other users

4. **Gamification of Highlights**: A platform that adds a gaming dimension, with quizzes and challenges linked to football highlights to enhance the user experience. Users don't just watch passively; they enjoy an entertaining experience.

In summary, the creation of a digital platform dedicated exclusively to football represents a major step forward in the way fans interact with the sport. By centralising the essence of football on this platform, this platform offers an unprecedented interactive experience that far surpasses general services like Youtube. We adapt ourselves to current trend, and desires and take advantages of digital benefits such as connectivity, interactivity, personalised content, which also enhance engagement by offering gamification elements. For example, users will not only be able to watch matches but also take part in real-time games and polls, access in-depth analysis of their favourite teams and players, and so on.

This innovative approach will involve more network effects among users; indeed, the platform provides immediate, dynamic content focused on football and fosters a deeper sense of community. Moreover, by improving the network effect among users, FootballConnect generates a positive feedback loop that benefits all parties involved. On the one hand, users will have a customized experience that speaks to their football identity and tastes, and on the other hand, content creators will discover an engaged and enthusiastic audience.

The digital era is changing the face of sports media today. The new revolutionary platforms are changing the way we normally watch sporting events by offering us new perspectives and detailed information. We talk about the 'second production' as a wide array of additional content and interactive experiences designed to enhance overall fan engagement. Ultimately, our platform will contribute to the digital legacy of football and lead the charge in the next wave of sports media consumption.

4.4 Interactive platform

Following a study conducted by our team among football enthusiasts[11], it was easily identified that they tend to communicate their sporting reactions in private groups via social networks. The idea would be to centralize this part on the digital platform as either it is not

[11] See Appendix 5 for the detailed results of this survey conducted by Arthur Roussaux and Tristan Denis in January 2024.

accessible on certain applications either the users are not used to chatting on sports applications. It would therefore be interesting to give future users access to share their feelings in private or public discussions on the application while sharing content, information, or statistics available on the app. The problem is that football fans are taking information on different applications, such as highlights on Youtube, line-ups on sports apps, and odds-on bet apps, and then sharing it in private discussions on social media or even in group discussions they create. The new digital app will allow users to give access to all the content they are looking for while offering them the possibility to share this content in any discussion they create on the app quicker than any other currently available means (Hutchins 2011).

This study also allowed us to realize that football fans enjoy sharing information, whether in writing, by photo, or even by video excerpt. According to a survey, participants tend to share their opinions on a main social media site "X", previously called "Twitter." Twitter is a popular social media platform used by its users to post texts, photos, or short videos that align with the latest news.

As Silverman (2010) quoted: "Twitter has retrieved the telegram. It is a good telegram: short little sentences and things that are important for the next five minutes, but not so important after that."

This sentence shows clearly how his social media is perceived by its users. It allows all fans to post their feelings and reactions to an event which has just taken place a few hours or even a few minutes earlier just by the mention of the hashtag ("#") followed by the event concerned. This method allows users to match their research in a few seconds and to post a message called a tweet, as this word even changes meaning due to the famous platform 'Twitter".

It's important to know that this means of communication is no longer only used by tweeters (how people in the Twitter community are named), but also by sports agents to communicate directly with their community. This social network is now even used by online newspapers to republish tweets by celebrities, breaking news, or even video excerpts (take the example of a football goal).

Twitter, now called X, has revolutionized media sport by making communications between agents (such as newspapers, athletes, clubs, journalists, etc.) and fans more interactive. The professional football player "Karmichael Hunt" claimed that Twitter allows self-promotion and

representation by bypassing the layers of the mediating influence of journalists and sports officials. Twitter became a tool of communication with fans, enabling athletes to forge their own personal brand image. It became also a relevant tool for other economic agents, as journalists who are looking carefully every time for evidence that could be transformed into breaking news.

The most interesting part of Twitter that the platform aims to achieve is the part about interactions between users. To make this possible, the platform will include the following points to increase NE between users:

- **Real-Time Updates**: the platform provides users with real-time updates on sports news, scores, and events. Users could follow league accounts, teams, athletes, journalists, and content providers to stay informed about their latest posts.

- **Hashtags**: Users can participate in conversations about specific football news by using hashtags. Hashtags allow users to join discussions, follow trends, and engage with a broader community interested in the same news.

- **Reposts and Likes**: Users could comment and like posts to share them with their followers and show appreciation for content. This feature helps in amplifying important news and opinions within the community.

- **Direct Messaging**: Users will be able to message athletes, journalists, and teams directly through the app. This feature enables customized news-related interactions, feedback sharing, the platform's content sharing, and private conversations.

- **Polls and Surveys**: the app will allow users to create polls and surveys related to football news, games, or players (transfers, goals, injuries, etc.). This interactive feature encourages user engagement, gathers opinions, and generates discussions within the sports community.

- **Visual Content**: Users have the opportunity to share photos, videos, and GIFs related to football news directly on the platform. Visual information successfully conveys emotions and increases interest.

4.5 Artificial Intelligence

In order to improve the user experience on our digital platform, we will be using artificial intelligence to be at the cutting edge of technology.

The Sportmonks API we are using is already well established in the field of artificial intelligence; in fact, Sportmonks uses AI for two different API's: the football News API adds an extra dimension to our platform with pre-match news stories written by experts and post-match analysis written by their learning artificial intelligence in collaboration with United Robots, a renowned AI news provider. The prediction API uses advanced machine learning techniques and historical data to create a model that accurately predicts the outcomes of upcoming football games while taking into account a variety of factors, including the team's makeup, player injuries, etc.

In order to further improve the user experience on our football platform, we are focusing on advances in artificial intelligence to complement that already used by Sportmonks via their API and attempt to have the most powerful platform possible. With this in mind, we have chosen to implement two cutting-edge AI algorithms: K-means clustering and memory-based collaborative filtering (memory-based CFT). This combination will enable us not only to display ultra-targeted ads based on user preferences, but also to fine-tune the editorial and statistical content offered on the platform, to provide a tailor-made experience for each visitor.

Initially, we will segment our users using the technique of 'K-means' clustering, an unsupervised machine learning algorithm widely used to group data into clusters. K-means clustering works in four steps: first there is the initiation of centroids for each cluster in a random fashion (represented by the letter 'k'), then it's cluster assignment, each data point is assigned to the nearest centroid based on a distance measure such as the Euclidean distance. The third step is to update the centroids by recalculating the average of the data points assigned to each cluster. and the last step is simply to repeat the centroid assignment and updating steps until the centroids converge towards optimal values. This algorithm will enable us to group users into homogeneous segments based on their activities, preferences, or behaviour on the platform, which will be very useful to us in the future (Ecosystem (LEDU), 2018).

Then, FootballConnect will incorporate collaborative filtering techniques (CFT), an approach that has proven effective in recommending personalised content. This method will leverage known user preferences to deliver personalised recommendations. By examining users' preferences and choices, our system will be able to predict and recommend football leagues, teams, or even individual matches that best match users' interests.

According to Su and Khoshgoftaar (2009) there are different types of CFT, but the one we are interested in is memory-based collaborative filtering: "Memory-based CF algorithms use all or a sample of the user-article database to generate a prediction. Each user is part of a group of people with similar interests. By identifying the 'neighbours' of a new (or active) user, it is possible to predict their preferences on new items.".

Memory-based collaborative filtering relies on techniques used in recommendation systems to predict a user's preferences based on the preferences of other users with similar tastes. Among these techniques, we find neighbor-based CF with similarity metrics like the Pearson correlation which is a statistical measure represented by the correlation coefficient "r," which varies between -1 (for negative correlation) and 1 (for positive correlation). It assesses the linear correlation between two variables (in our case, these variables are users' interactions) and can be used to assess the similarity between user preferences. The second main representative technique for memory-based CF is user-based "top-N" recommendations that involve making recommendations based on the top-N most similar items or users to the target user. The system calculates the similarity between users based on past interactions and preferences stored in memory, then selects the top-N most similar items or users and generates recommendations by suggesting items that are highly rated or preferred by the top-N similar items or users (Su and Khoshgoftaar, 2009).

As we have said, the K-Means algorithm is used, on the one hand, to segment users in a homogenous way according to their preferences, creating typical user profiles and thus being able to personalise the user experience by adapting to each segment, thereby increasing engagement and satisfaction. On the other hand, we have memory-based collaborative filtering, which enables it to make personalised recommendations by detecting users' likes and interests, analysing the preferences of similar users to recommend content tailored to each user, and CFT, which adapts to users' interests by analysing preferences. By tracking changes in users'

preferences, CFT adjusts recommendations to include new areas of interest, such as different aspects of football.

Let's take an example to illustrate how all this will be of great use to us. Let's imagine that a user X on our platform is a big Manchester City fan and is particularly interested in the players' statistics and the club's news. Firstly, k-means clustering will analyse the behaviour of users (including X's behaviour) and then it will detect that there is a group of users who are Manchester City fans and are interested in statistics, news, etc. This group of users will then be clustered into a single group. We will therefore be able to create a typical Manchester City fan profile. Secondly, collaborative memory-based filtering (CFT) will recommend relevant content based on the preferences of the members of the group. In our example, it could suggest articles detailing the recent performances of Manchester City players, match videos, and in-depth analyses of the team's strategies. If the user's interests begin to evolve, for example, showing an interest in other aspects, such as transfers or player interviews, the CFT will adjust the recommendations accordingly. Finally, thanks to the information obtained by k-means and CFT, the platform can deliver highly targeted advertising. For example, advertisements for Manchester City shirts, match tickets, or subscriptions to sports channels broadcasting Manchester City matches. With these targeted ads, we will improve our retention rate, user engagement, and the effectiveness of advertising campaigns on our FootballConnect platform.

These two complementary approaches combined will provide us with a state-of-the-art personalization tool that lets us show highly targeted ads and customized content. This implies that each user is provided with a distinct and customized experience. With this creative approach, our dedication to providing a dynamic and adaptable platform, centered on the requirements and preferences of our community of football lovers, reaches a new level. FootballConnect transforms into a place for knowledge and fun as well as a potent instrument for learning about new facets of the game, all the while enjoying the best possible user experience and profitable and pertinent advertising.

5. Value Creation

After analyzing what the platform will offer to its users, it is important to consider how to create the value inside the platform by assessing the competitive position (competitors and complementors) and establishing the different strategies to launch the platform (the Minimum Viable Platform and how to attract users).

5.1 Competitive Environment

In order to make a competitive analysis, a business would rather use the well-known method: The Five Forces of Porter (1980): suppliers, substitutes, entrants, rivals, and customers. However, while talking about digital platforms, it is more relevant to talk about "The Platform Value Net" (Belleflamme and Neysen, 2023) : Competitors' block which is similar to rivals analyzing what makes it harder to attract and retain both groups of users (content providers and basic users), users' block which will replace suppliers and customers by being the two groups of the platform benefiting from the network effect, and finally, complementors' block, which is a new category showing how other businesses could attract and retain users of the platform, such as influencers, other platforms, partners,...

5.1.1 Users' block

Firstly, the users' block is how the network effects are working between users' groups: as written previously, the platform benefits from a positive cross-sided NE between both groups, which means that users will get benefits if there is an additional person in the other group. The users' group has a positive same-side NE; indeed, they enjoy more people in their own group as these users will post data, creating more interaction between them. The only negative NE is the one from the content providers which means they do not like when there is an additional person in their group. When another publisher posts the same content, they could get fewer viewers. However, these other highlights can also be complementary, resulting in positive cross-sided NE that far surpasses the negative to satisfy all users.

5.1.2 Competitors' block

Secondly, the competitors' block, which is complicated to define on the platform due to the different areas the platform will be operating. On the side of content providers, Youtube and Tv channels are probably inevitable broadcasting highlights that have been well implemented since for years. From the other side of users, they could use any other platforms or social medias to watch highlights and to interact such as Instagram, Tik Tok, Youtube, Facebook and many others. About the competitor of both groups, the rival of the whole platform, is closer to the statistics applications (such as LiveScore) that are developing more and more, offering links to highlights, match comments, forecasts, etc. The platform differentiates from all of these competitors by being the only exclusive football channel, offering previously unreleased highlights, advanced statistics, and more simple and efficient ways to interact, more dynamically.

5.1.3 Complementors' block

Finally, the complementors' block, as mentioned earlier, the platform will work with different application programming interface (API) to externalize certain services that are hard to manipulate, such as live football results. Then, the application will work cooperatively with bet sport applications that will show its odds and different offers on the platform with a direct link to their site. The platform also plans to work with social network influencers, who will be remunerated according to the number of users they attract. We'll be doing a lot of partnering with other businesses, making our platform more attractive with relevant content for our users, but also enabling our partners to target their promotions to the right customers.

5.2 The Big Challenge

The first big challenges of the platform "FootballConnect" for the release will be focus on the Minimum Viable Platform and the Chicken and Eggs problem which is the strategy to attract the first users, early adopters. Solving these problems is essential to the success and sustainable growth of the application

5.2.1 Minimum viable platform

To initiate this project, establishing a Minimum Viable Platform (MVP) is crucial:

"A version of a product with just enough features to be usable by early adopters who can then provide feedback for future product development." (Ries, 2011)

Recognizing the impracticality of meeting all objectives from the onset, we've delineated specific parameters for the application's launch:

- The application will exclusively feature football content.
- There will be a concentrated emphasis on the Big Five European Leagues.
- The initial release will target the European market.
- The primary language will be English, acknowledging that 38%[12] of Europeans are proficient in it.

Given that Europe stands as the world's leading soccer market in terms of revenue and competition level, it's strategic to prioritize this region. In the 2019-2020 season, professional soccer in Europe boasted a market size of approximately $25.2 billion (Statista Research Department, January 10, 2024). Soccer may not hold the same level of popularity or profitability in the U.S. as it does in Europe, but its growing fanbase cannot be overlooked.

Therefore, the app will concentrate on Europe, home to the majority of fans and businesses within the soccer ecosystem. This regional focus enables our programmers and developers to deploy a targeted approach and to captivate a concentrated audience effectively. (Kim et al. 2022)

The app's launch will be in English, the most language spoken in Europe (38%)[13], where a significant portion of the population possesses a functional command of the language. This is a tactical start, but we plan to swiftly transcend this language barrier to engage a broader European user base.

[12] See Appendix 3, Figure 10
[13] Statistic from Statista: https://fr.statista.com/infographie/5994/les-langues-les-plus-parlees-en-europe/

Our initial goal is to harness the enthusiasm of football aficionados, fostering a dynamic community where optimal interaction is the norm. Upon attaining full functionality, we envision broadening our scope to encompass additional sports, such as tennis and rugby, employing the same strategic framework.

"Europe's prestigious Big Five football leagues (the English Premier League, Spanish La Liga, German Bundesliga, Italian Serie A, and French Ligue 1) generated over 15 billion Euros combined in the 2019/20 season." (Statista Research Department, January 10, 2024)

Launching with a focus on these Big Five leagues prevents overwhelming the platform and ensures quality control. This is an intentional limitation to avoid saturation. As the application matures, the plan is to gradually include other European leagues and, potentially, leagues from outside Europe to ensure comprehensive coverage and to accommodate the growing interests of our user base.

The primary objective for the first year is to engage 1% of our defined market within the leading five European football nations, focusing exclusively on football enthusiasts. Research suggests a potential user base exceeding 130 million individuals in this segment. The one-year milestone is set to acquire 1.3 million users[14]. Taking into account Livescore's 40% bounce rate[15], our ambition is to cap our bounce rate at a maximum of 45%, aiming for at least 715,000 active users[16].

In conclusion, the release of our football-centric app is strategically crafted to tap into Europe's vibrant football scene, starting with the Big Five Leagues and an initial English-language offering. As we carve out our niche in this lucrative market, we will progressively broaden our horizons, enriching our platform with more languages and sports to captivate a truly global audience. Our mission is to grow a dedicated community of football enthusiasts and, in doing so, set a new benchmark in sports media consumption.

[14] 1% of 130 million users
[15] Bounce rate is the percentage of visitors to a website who leave after viewing only one page.
[16] Active users = total users (objective) x (1 – bounce rate) = 1,300,000 x (1 - 0.45) = 715, 000 users

5.2.2 The chicken-and-egg problem

Considering the two groups in the platform, the problem can be defined as follows: should the platform attract first the “users” or the “content providers”?

The conundrum is that users will subscribe to the application only if content providers will come too, and otherwise. Therefore, both groups need to believe that the other group will participate, or the platform will not work. To know which group is firstly more relevant to attract, it is important to analyze which group costs less to attract (called the “user acquisition cost,” UAC) and which group could attract more persons in the other group (called the “attraction power,” AP) as recommended by Belleflamme and Neysen (2023).

User acquisition cost:

Taking into account that the NE between the two groups takes place exclusively via the highlights posted and the forum allowing interaction between them, there remains the information and statistics section, which does not include any NE. Thanks to this part of the platform, it's possible to attract one group without the users of the other group being affected by the number of users. The statistics and information section is of particular interest to ordinary users. It will therefore be less costly to attract those first to register on the platform.

There is clearly an important lower cost of prospecting users. Then, users are already accustomed to the statistics app, highlights (Youtube), and forum as social media. Indeed, the application will be created in such a way as to ease adoption for users. Once there are a sufficiently large number of users, it will establish trust between users by providing trustful information, statistics, and communication between them. Moreover, it will be easier to convince content providers to join and to trust the platform, and that will build trust among all users.

Attraction power:

Comparing both groups of users on the platform, content providers will clearly be in the minority, meaning that additional participants in this group will attract more users in the other group. Secondly, content providers can already interact with football fans through different channels, which is harder for fans to interact with broadcasters. Finally, content

providers with broadcasting rights are hard to replace on the platform. All these 3 points increase the attraction power of the content providers, meaning that one more provider will add more users to the platform.

Strategy

As there is a group with a lower UAC and the other group with a higher AP, the strategy that fits with this position is "buy up or replace.":

The platform has the objective to attract the most users possible, it is impossible to replace this group nor are content providers that are really hard to replace. Therefore, the application needs to do whatever is necessary to attract the group with the higher AP, which is the content providers' group. To attract this group, the best way is to already have on the platform a huge database with which a large number of users are interacting. Then, show them the reasons why they should join the platform.

Moreover, these users have no incentive to follow potential competing platforms once they have signed up, unlike sellers (content providers), who have a greater incentive to follow potential competing platforms once they have signed up, as they are looking for long-term profitability and behave more strategically than buyers. (Wu and Chamnisampan 2021).

The goal of the proposed football-exclusive platform is to revolutionize the way users consume football-related media. To achieve this, FootballConnect centralizes match highlights, detailed statistics, and various interaction channels for reacting and sharing opinions on a single platform, creating an immersive and unified experience. The aim is to prevent users from needing multiple applications to meet all their needs. Additionally, by leveraging cutting-edge artificial intelligence to enhance personalization, it will help the platform captivate and retain users by offering a comprehensive experience that includes exclusive, innovative content and options.

Furthermore, it will attract content creators, whose participation is crucial to the platform's dynamics and success. The application promises to enhance user interaction with content significantly, thereby offering content providers a powerful new avenue to promote their brand and deepen their engagement with fans. Enhanced interaction not only benefits the users but

also provides content creators with valuable feedback and data, enabling them to tailor their offerings and strengthen their presence in the market.

For content providers, the platform presents a unique value proposition: access to a targeted and enthusiastic football audience, more advantageous monetization options, and deeper analytical insights into viewer behavior. This dedicated focus aims to present a more compelling offering than broader content distribution channels, thereby attracting premier football content creators and their followers.

By nurturing a robust user base and clearly communicating these unique benefits, the platform can establish itself as a premier channel for football content distribution, creating a mutually beneficial ecosystem for all stakeholders. With the digital transformation of the sports media landscape, this platform doesn't just intend to join the existing market, it aspires to lead a new chapter in sports media consumption, where the legacy and the love of the game continue to flourish in the digital realm.

6. Value Capture

For the last section, after a clear comprehension of the techniques for attracting strategies, the platform needs consistent strategies to be viable in the long term. In order to do this, this part will outline the monetization strategies as well as the business plan's projections of future costs and revenues, along with methods for consolidating and expanding our platform.

6.1 Monetization

There are two different ways of monetizing a platform: pricing on users or complementary revenues. This pricing method consists of making users pay to access the platform. This is risky because it is the users who create the interactions on the platform and add value, notably through the network effect. It is therefore important to charge users in the right way and at the right time so that this monetization method does not become a barrier for them. In this method, considering the two groups (content providers and users) is crucial, as attracting users from one group affects the users of the other group thanks to the cross-sided network effect. There, the way a platform will charge a group will affect the other group. Prices are interdependent, and the pricing method to use is called leverage-based pricing structure. This method takes into account the cost of acquiring members of one group and the money saved by having attracted members of the other group with the same investment.

However, users of the soccer platform are already using different applications to carry out the various operations that will be available. Charging users is therefore too high a barrier to generating revenue in this way. It makes more sense to receive income via the complementary method in the first instance.

Advertising Model

The first method while thinking of an online application is obviously about “advertising.” Indeed, this method can be a lucrative revenue model for social media. As the platform has the objective to reach a large number of passionate football fans, it is really interesting to opt for this option as the audience can be easily segmented according to taste and geographical area, and the platform can offer targeted advertising opportunities to market. As a result, there is a higher chance of clicks and conversions from users when the advertising is

relevant and interesting to them. For example, local businesses may market to fans in their area, while sports equipment brands may target supporters of particular leagues.

However, this method should not be abused, as it could upset users. An oversaturation of ads could indeed lead to user dissatisfaction. It is crucial to strike a good balance by integrating advertising in a transparent way. This can be done, for example, by using native advertising (host endorsements where the host talks about a product or service as they narrate the show) or sponsorships (brands included in video content, rather than an ad running before the video) that match user interests and offer value.

Subscription Model

Putting in place a low-cost subscription model offers an additional potential source of income. With this strategy, subscribers might get access to premium material like in-depth research, advanced statistics, and ad-free experiences. The unique value that the low cost cannot be obtained on free platforms must be used to justify the charge. A small price multiplied by a large number of users could reach a huge income if the material is attractive enough.

These two models combined could form a hybrid model by giving access to free users basic content with ads, while subscribers would get more exclusive content with fewer and no ads. This concept serves both highly devoted fans who want an improved experience and casual fans who might not want to pay.

Partnerships

Forming partnerships with football leagues, clubs, and media outlets can provide the platform with unique content and enhance its credibility. This could also open up additional revenue streams such as merchandise sales, ticketing, and exclusive events.

Data exploitation

The next revenue-generating method is less widespread but very familiar to digital platforms, it involves data exploitation: a third-party will pay to have access to users' data on

the platform, which is also very effective thanks to the easy targeted user base of the platform. Third parties could be interested on these data such as a football merchandise shop that would be interested in knowing geographical distribution of football fans or a sports betting app that would like to know the value of insights into user preferences on team preferences or match outcomes.

However, this method has to be handled delicately, as users are increasingly concerned about their privacy. Transparency with users is paramount. It is therefore strongly recommended to warn users about data sharing practices and to obtain their consent before the collection of data. Clear privacy policies and a simple consent process that lets consumers opt in or out of data sharing are both important.

To align with data protection regulations like the EU's General Data Protection Regulation (GDPR), the platform must ensure that user data is handled lawfully, transparently, and securely. Moreover, users should have control over their data, including the right to access, correct, delete, or transfer their information.

In conclusion, the platform's business strategy is carefully designed to appeal to stakeholders in the economy as well as football fans. It provides a unique value proposition that is attractive and long-term by utilizing a methodical advertising strategy, an effective subscription model, and the creation of partnership agreements. This combination ensures an excellent user experience that keeps football fans captivated while also fostering a strong business model. A strong commitment to data security and privacy policies is essential to this strategy, guaranteeing that data exploitation is carried out ethically and without compromising user privacy while it generates cash and offers useful data to third parties. This careful methodology maintains the platform's efficiency and reliability for both partners and users.

6.2 Business Plan

With the launch of "FootballConnect" we combine financial expertise with technical innovation. This section describes the financial structure of our business, from the initial investment in our Minimum Viable Platform to the many revenue streams that indicate stability and growth, assuming that our objective of reaching 1% of the target audience and a bounce

rate below 45% is met. We'll look at the key investments that will launch our project and the revenue streams that will support its long-term viability.

6.2.1 Investments

The business plan starts by creating a Minimum Viable Platform (MVP) that serves the primary needs of early adopters, who are passionate football fans. The MVP will provide our users with three values: video highlights, real-time football statistics, and a social discussion area. The development phase covers the early costs for software development, design, infrastructure setup, and initial marketing campaigns aimed at penetrating into the world's largest football market, the big five of Europe. We expect our first development expenditures to be significant, but prudent, given the complexity of the platform and the quality of the data we hope to deliver. This will guarantee that our application not only meets, but exceeds, customer expectations.

The cost estimate to launch our football app was made by interviewing developers of another online platform designed to reach millions of followers and also by doing some online research. However, the price estimate is still very vague, and it's important to consider that the business project will undoubtedly face other costs, which is why a contingency reserve will be set aside. Here's the draft estimate for key costs in line with the platform's MVP and business strategy:

Product development

Nowadays, development costs for an application can vary from $50,000 to $500,000 depending on the type of platform being developed. Here is an estimate that suits the MVP:

- Cost of Strategy Stage[17]: This initial stage involves market analysis, business plan formulation, and documentation. This phase takes about 10% of the total app development cost and requires 50-100 hours to complete. The estimated cost for this stage is between €5,000 and €10,000.

- Cost of Design Stage[18]: The software prototype is represented by this stage, which also includes wireframing—the process of drawing visual diagrams that show the

[17] See figure 11 in Appendix 4
[18] See figure 12 in Appendix 4

fundamental components of a user interface—visual design (UI), and user experience (EX). Making sufficient investments in the design stage is crucial since it creates the initial impression of the application and has a big impact on its success. This stage costs between €10,000 and €15,000, or roughly 10% to 15% of the entire app development cost.

- Cost of Development Stage[19]: This development stage is the most important and, by the same token, the most expensive. In fact, it focuses mainly on the coding and programming part to allow the platform to function perfectly, this encompasses a whole lot of things, from the complexity of the functionalities, the structure of the application up to the integration of a third part. This stage can cost between €25 000 and €40 000 , thus constituting a large part of the overall budget.

- Cost of Testing and Deployment Stage[20] : This stage is crucial to the smooth running of the platform. It allows us to test the quality of the application and guarantee user satisfaction by putting in place tests to avoid any bugs, malfunctions of certain application features and unforeseen additional costs. The cost of this stage varies between €10,000 and €15,000.

Overall Estimated Cost: Adding up the costs from all stages gives an idea of the total cost of developing a mobile app. The overall estimated cost of developing the mobile app ranges from €50,000 to €80,000. This estimate provides a comprehensive overview of what to expect financially when embarking on mobile app development. However, this phase is essential, and a reserve of 25% will be allocated to safety, to reach a final budget of €100,000.

API Licensing[21]

We have to include our API license fees, which amount to **€1,500 per month**. This expense gives us access to the data we need to build our digital platform. We have selected all available functionalities to make FootballConnect as complete as possible. This includes:

[19] See figure 13 in Appendix 4
[20] See figure 14 in Appendix 4
[21] https://www.sportmonks.com/football-api/world-plan/

- Worldwide plan with advanced data (112 leagues, 129 statistics): ***€219 per month***
- International tournaments (14 leagues, including EURO and Copa America): ***€149 per month***

  in addition to the latest technology, we also pay for add-ons:
- Additional API calls: 50,000 calls in addition to the 3,000 basic API calls per hour per entity): ***€85 per month***. This can vary from 2,000 additional calls for €29 per month and 7,000 additional calls: €45 per month, but let's take the 50,000 calls to be sure not to underestimate the price of the API.
- Prediction: The Prediction API provides the most up-to-date and accurate predictions possible using advanced machine learning techniques and historical data: ***€99 per month***
- Premium odds feed for access to real-time odds from over 180 bookmakers and 42 markets: ***€699 per month***
- News to add an extra dimension to your application with exclusive and reliable soccer news for all leagues: ***€199 per month***
- Pressure Index: analyses key indicators such as possession, shots on target, dangerous attacks, etc., to measure which team is dominating the match***: €29 per month***

  That's a total of **€1479 per month.**

At the beginning, the platform will only need the European plan to make our MVP (Minimum viable Platform). However, we will already take all the options in order to collect all the data necessary to develop the advanced statistics part.

Infrastructure[22]

- Servers and storage: Initial costs can start from 500 to 2000 euros per month for scalable cloud services with AWS or Google Cloud.
- The bandwidth: this term describes an Internet connection's transmission capacity, or the volume of data that can be sent in a given length of time. Bandwidth is necessary for an online platform to control user traffic and guarantee reliable, quick service. High bandwidth is required if a large number of users are accessing the platform at once in order to avoid delays or interruptions in service. The estimated price for 120,000 active

[22] All the following prices have been discussed with developers wishing to remain anonymous

users is €10,000 on a social media requiring high bandwidth. However, our platform does not require this high level, with our objective of 715, 000 active users, we estimated a cost of €20,000 per month.

Marketing and Sales

- Advertising: The initial campaign can vary from 30,000 to 80,000 euros, depending on the social networks we use.
- Promotions and partnerships: we anticipate that allocating 20,000 to 40,000 euros for initial initiatives could be a good start.

Legal and Administration

- Intellectual property rights and regulatory compliance: Costs can vary from 5,000 to 20,000 euros, depending on complexity and the need for legal expertise.

Maintenance and Updates

- Ongoing maintenance: Approximately 10% of initial software development costs per year, meaning a budget of €12,000 per year.

Miscellaneous costs

- Insurance: A few thousand euros per year (estimation of €10,000 per year).
- Contingency reserve: 10-20% of the total budget is often recommended for the company as a safeguard, not an actual cost.

Human Resources

A developer can cost an average of €40,000 to €60,000 a year in Europe. The platform will require two developers in part time job at the release of the application, meaning a budget of €5,000 per month. Moreover, two part-time back-end developers are also needed, also worth €5,000. They are responsible for the IT side of the business, including programming languages.

Total costs

In average, the total fixed Initial costs (using the higher estimate for ranges): €100,000 (application development) + €80,000 (advertising) + €40,000 (promotions) + €20,000 (legal) + €10,000 (insurance) ≈ €250,000 for the application release.

Total Variable Monthly Costs: €1,500 (API licensing) + €2,000 (servers/storage) + €20,000 (bandwidth) + €1000 (maintenance) + €10,000 (developers) ≈ €34,500 each month.

6.2.2 Revenue Stream

Following on from the monetization method described above, we forecasted our revenues in chronological order, comparing them with existing platforms. Of course, these figures are only an estimate, provided we achieve our goals of attracting 1% of the targeted audience in the five big fives of Europe to the application.

Launch phase: Advertising model

Immediately after launch: Attract users with free access and begin monetization through targeted advertising. The revenue estimate of the initial advertising revenues could be modest, starting at a few thousand euros per month and rising to 50,000 euros per month as the audience grows and ad relevance improves. Indeed, the more the number of users increases, the more some partners are willing to pay to appear on our platform.

Growth phase: Subscription model

Six to twelve months after launch: After building a loyal user base and accumulating quality content, the subscription model will be available for ad-free premium content. We estimate that attracting 2% of the user base to a subscription of 3 euros per month. Indeed, this amount of money can look minimal, however, with 715,000 active users, it could generate 14,300 euros per month. This income is interesting because it is regular and proportional to the number of users.

Expansion phase: Partnerships

One-two years after launch: Develop partnerships with leagues, clubs, and media to offer exclusive content and enhance credibility. The estimated revenues for Partnerships can vary widely but could potentially add tens to hundreds of thousands of euros per year, depending on contract terms and sales generated. We also plan to partner with sports betting sites that can pay according to the number of users redirected to their platform via direct links (0.03€ per user directed, for instance). This method of remuneration is important to consider because it can increase exponentially with a large user base to the point of even surpassing advertising revenues.

Maturity phase: Data exploitation

three years after launch and beyond: Start monetizing user data with strict confidentiality guarantees. The estimated revenue depends heavily on the data available and its value on the market, but it could add an additional revenue of €10,000 to €30,000 annually. Such data could be valuable for football-related businesses or stadiums in strategizing market entry or pricing according to consumer demand. This method of generating revenue is not guaranteed and can be intricate due to the difficulties in reselling data and securing buyers. This approach is considered a supplementary revenue stream.

Total Revenues

Based on the anticipated revenue streams, the platform's financial benefits will progressively align with its costs. In the initial phase, modest advertising revenue will begin to offset early costs, potentially reaching up to €50,000 monthly. During the growth phase, the subscription model promises a steady revenue stream, which, at the current user base projections, can contribute €14,300 monthly. With the expansion into partnerships, particularly in the betting arena, revenues could scale significantly. The data monetization strategy projected for the maturity phase could contribute an additional €10,000 to €30,000 annually. Assuming these revenue streams develop as forecasted, it is plausible that our platform may start to realize profitability within a few years post-launch, depending on the balancing of initial costs and the growth rate of these varied revenue streams.

6.3 Consolidating and Growing Strategy

6.3.1 Active trust-building by the platform

Screening and certification

In the context of an innovative football tracking application, the process of selecting and certifying content providers is crucial to guaranteeing the quality and reliability of the information provided to users. Indeed, content providers could be certified if they are sufficiently evaluated by users over a period of time. Furthermore, the economic agents who already hold the broadcasting rights are already known to users and trust them, since users

already know that they are not publishing fake news. On the other hand, clubs might tend to publish videos in their favour.

Warranties and insurance

It is important to clarify the limitations of liability with regard to guarantees and insurance. The application will provide users with football match statistics and forecasts based on the data collected, although the application offers this information, it cannot guarantee the absolute accuracy of forecasts or future results. The platform is not responsible for decisions made by users on the basis of these statistics and forecasts. In other words, the information provided is for guidance only and does not constitute a guarantee of results.

Ratings, Reviews & Recommendations

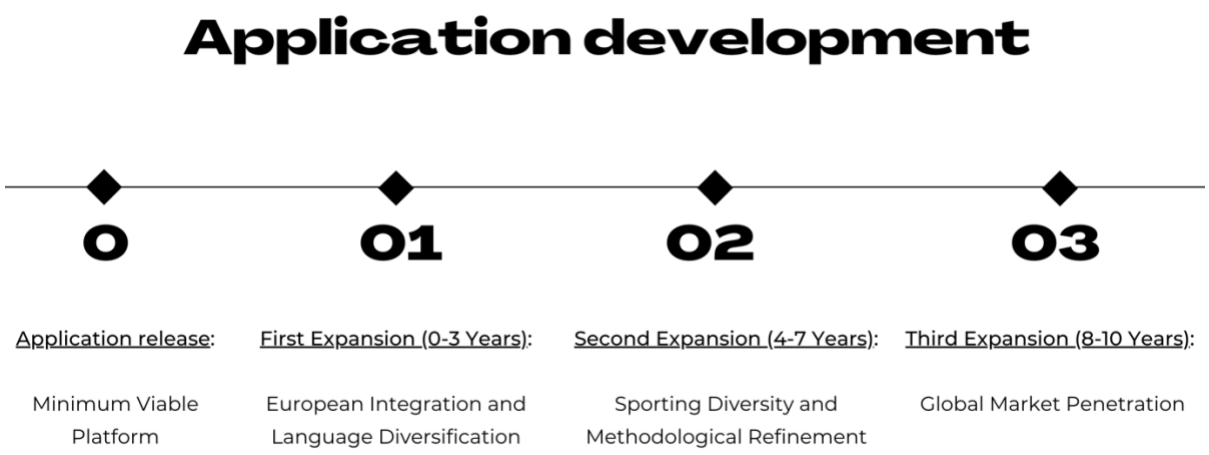
The system of ratings, reviews and recommendations is extremely important on the platform, as it will symbolize trust. Users of the application will be able to rate and review the platform, which will help to build trust among non-users and allow the platform to improve in its weaker areas. In addition, the platform will have a helpdesk available at all times to assist its users. Users will also be able to rate content providers and their publications, facilitating their certification.

In terms of recommendations, the platform will work with an intelligent algorithm that will advise users on new content, new content providers and the latest news about what they are following.

6.3.2 Densify your value proposition

Add features, categories, geographies

As previously mentioned, the platform will initially focus on Europe's top 5 leagues, and will only be available in Europe, so as not to overload the platform at the outset. However, the platform obviously intends to expand to other European leagues fairly quickly, which will help attracting new users. Once this stage has been completed, the plan is to diversify our value proposition by adding other sports such as tennis, rugby and baseball to attract all types of users, and finally, to expand on some other continents.



Application release:

Now finished, the minimum viable platform (MVP) is prepared to accept its initial wave of consumers. With features geared for the ardent football fan, our website is intended to deliver the excitement of the game to supporters around Europe. At launch, fans will have access to a wide range of dynamic and user-friendly content that has been carefully selected, with a primary focus on the beloved Big Five Leagues.

First Expansion:

The application's first expansion will be dedicated to inundating the European football market by methodically integrating all of the continent's professional leagues. It will take both the integration of leagues and the customized distribution of content in several European languages to achieve thorough coverage. The linguistic extension is of paramount significance as it guarantees that enthusiasts from all across Europe can interact with the app in their mother tongue, thereby cultivating a varied and welcoming community. The goal is to take the lead in Europe and become the preferred venue for football fans to watch all leagues of professional football.

Second Expansion:

Firmly established in European football, the application will enter its second expansion. Over the next four to seven years, the platform will rely on its proven methods and the strong infrastructure it has put in place to diversify into other sports. Prudently, this diversification

will be achieved by choosing sports that align with the interests of the application's user base and the market's potential. The application aims to replicate its success in other sports domains by utilizing the same strategies that have proven effective with football fans (such as interactive content, personalized visualization, and community interaction).

Third Expansion:

The application will want to expand its reach outside of Europe after honing its features and developing inside the European market. After reaching this 10-year milestone, the app will start to expand globally and adjust to the likes and preferences of users from different continents. This will be a strategic adaption that takes into account the regional and cultural subtleties of sports consumption around the globe, rather than just a copy of the European model. With ten years of expertise under its belt, the platform will be well-equipped to negotiate and break into a variety of foreign markets in order to realize its goal of being the global leader in sports media.

7. Conclusion

7.1 Overview

The aim of this project is to embody the convergence of football, community, and cutting-edge technology, ready to redefine the landscape of sports engagement by attempting to answer the research question:

"How could a restructured digital football platform, meeting new user expectations, with a focus on technological advances impacting football competitions, enhance the overall fan experience in comparison to existing applications?"

After reviewing the shortcomings of existing applications, we described the steps involved in creating an innovative sports platform with a focus on the football context, aimed at meeting a need identified through our research: this platform centralises in one place everything to do with football, from media and data analysis to community interaction in a user-friendly interface. And by using artificial intelligence on our data, the application aims to provide users with an in-depth understanding of the sport while meeting their diverse needs. By encouraging a sense of community and creativity, it aims to enrich the user experience.

7.2 Results obtained:

The conclusion outlines the results obtained, highlighting the facilitation of network effects thanks to the predominantly positive cross-side network effect between the two groups of users and content providers. In addition, the platform relies on real-time and historical data obtained via an API integrated with AI, guaranteeing an innovative response to user queries. It is also committed to providing second-screen information in a comprehensive and modern way, while benefiting from a new analysis tool based on vast statistical databases and AI. The aim of FootballConnect is to attract a wide range of content providers to offer its users the best match moments and an enriched interactive experience. By concentrating interactions between users on a single platform, FootballConnect offers a significant advantage by centralizing exchanges and enabling existing content on the app to be shared.

In terms of the platform's strategic positioning, the aim is to attract 1% of football fans (active users) by taking advantage of its sophistication in terms of Big database, and then to convince content providers and various partners and sponsors to cooperate. The strategy for attracting content providers is to offer them access to a targeted and enthusiastic audience, more advantageous monetization options, and in-depth analyses of viewer behavior. To get started, the platform will adopt a phased approach with the introduction of an MVP (Minimum Viable Platform) focusing on the five biggest European football leagues, available only in English and in Europe.

In terms of revenue generation, the platform initially plans to rely on advertising, given its community of shared interests, offering precise targeting opportunities for different types of users. It then plans to introduce a premium subscription model for its users. In the longer term, the platform plans to explore strategic partnerships to diversify its revenue streams, such as product sales, ticketing, and exclusive events. In addition, the sale of data to third parties represents an additional revenue option thanks to the ease of targeting offered by the user database. In terms of the business plan, the platform anticipates a significant initial investment for the development and promotion of the application, with monthly variable costs of around 15% of the initial investment to ensure its maintenance. However, by achieving its user acquisition targets and thanks to the diversified revenue streams mentioned, the platform should become profitable over time, while guaranteeing an optimal user experience thanks to a dedicated support service.

In addition, the content providers already recognized by the target community will give users extra confidence. These users will also have the opportunity to rate the platform and give feedback, fostering a sense of trust among non-users and enabling the platform to proactively target and improve its weak points. In terms of expansion, the platform is taking a phased approach, starting with MVP and then gradually extending to all European professional leagues within the first three years. Thereafter, it plans to diversify its offerings to include other sports and finally conquer the global sports media market, demonstrating an ambitious and strategic vision for the future.

7.3 Self-reflection:

During this dissertation, we became aware of the complexity of developing a platform, which is far greater than we initially thought. Firstly, it is crucial to assess the impact on all the economic players, both positively and negatively. It is essential that both groups of users benefit from joining the platform, while ensuring that non-user economic players are not harmed by its development. From a legal point of view, there are several laws that need to be respected. Our work has focused in particular on the rules governing the platform's core activities, notably copyright and broadcasting. However, it would be essential to review all the policies to be respected by a qualified professional.

We then developed the concept of a platform that we consider to be an innovative idea in the field of sports media, bringing together the needs of consumers in a single application. Each idea still requires further refinement and, most importantly, thorough testing to ensure its feasibility. In addition, it is clear that launching such an application requires collaboration with other professionals, given that we lack practice in certain skills, especially in the IT aspect of this project, which is crucial to its realization and requires a professional review and revision before full implementation. With the integration of the APIs and artificial intelligence that we plan to integrate into the platform to collect all the data, the programming requires a high degree of sophistication to guarantee the smooth running of the application and the safety of all users' data.

We have high ambitions for the strategic positioning of the platform, with very optimistic targets and an expansion plan. This plan was drawn up following market research and has served as the basis for our estimates and forecasts. It will obviously have to be reviewed and adjusted once the application has been launched on the basis of the results obtained, users' opinions, and their feedback, to constantly improve the services and functions offered.

Given the difficulty of estimating investment costs for the creation of an application, we have undertaken research and consultations with developers to obtain more information. This figure, while important, remains an estimate, as it also depends on the activity and number of users of the application. Revenue forecasts are even more uncertain, as they will depend primarily on the number of active users. However, the revenue generation methods have been developed strategically and rigorously to ensure the long-term profitability of the project.

Despite the constraints we encountered during the project, we have gained valuable experience by exploring the different strategies for launching a new platform. Designing an innovative idea and defining a particular niche is essential, but it is all the more important to consider all aspects to be prepared for any eventuality.

The rise of technology flips the world upside down, and sports media do not make an exception. All this gives us reason to believe that the future of digital sport is light.

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9. Appendix

Appendix 1: API

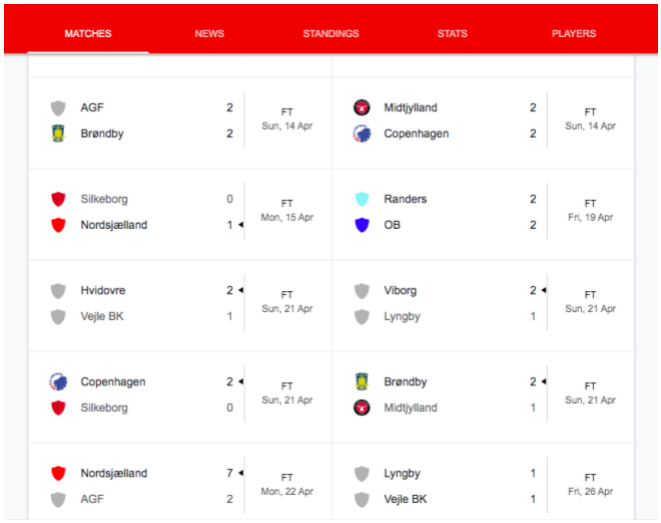


Figure 2: Superliga internet data: former Coppenhagen and Brøndby matches

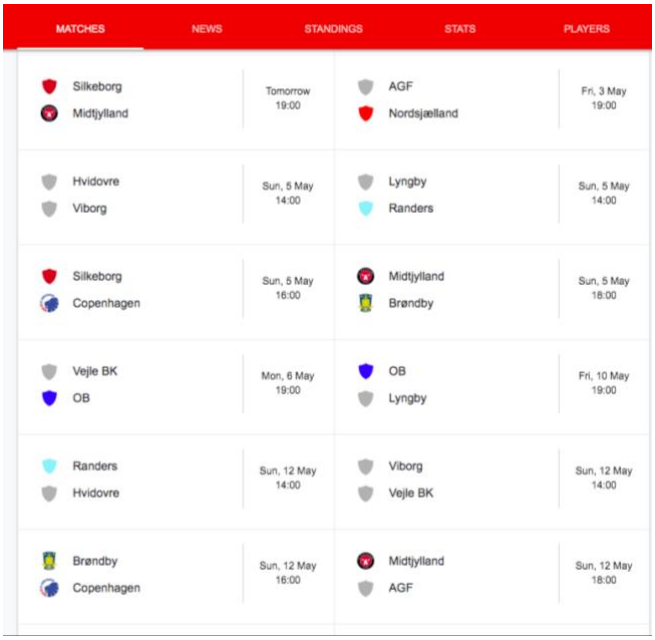


Figure 3: Superliga internet data: next match between Coppenhagen and Brøndby

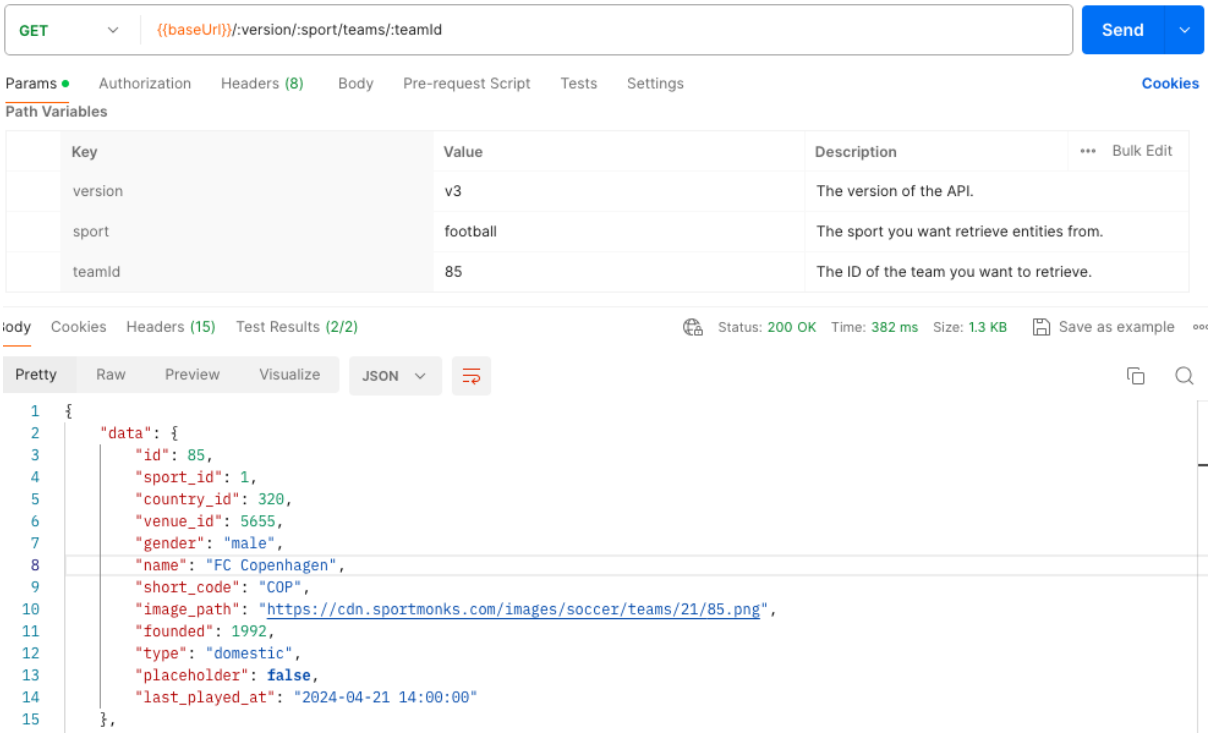


Figure 4: Data from API, last Coppenhagen match played

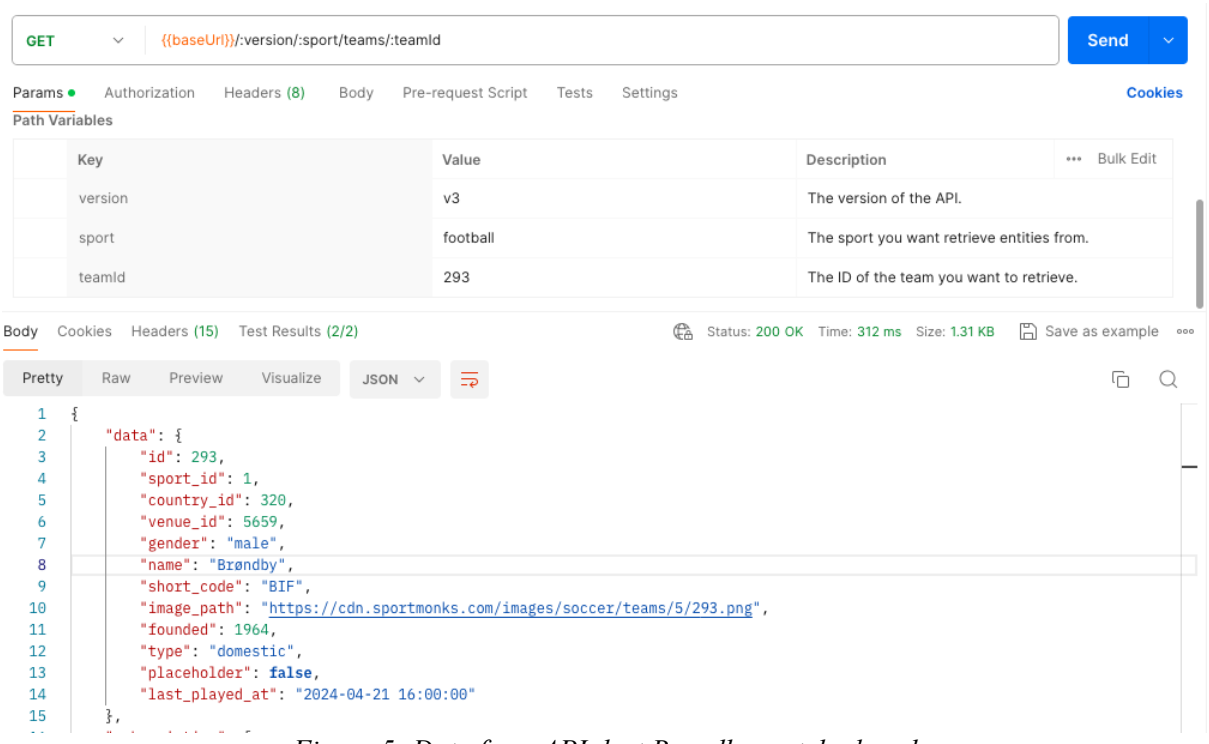


Figure 5: Data from API, last Brøndby match played

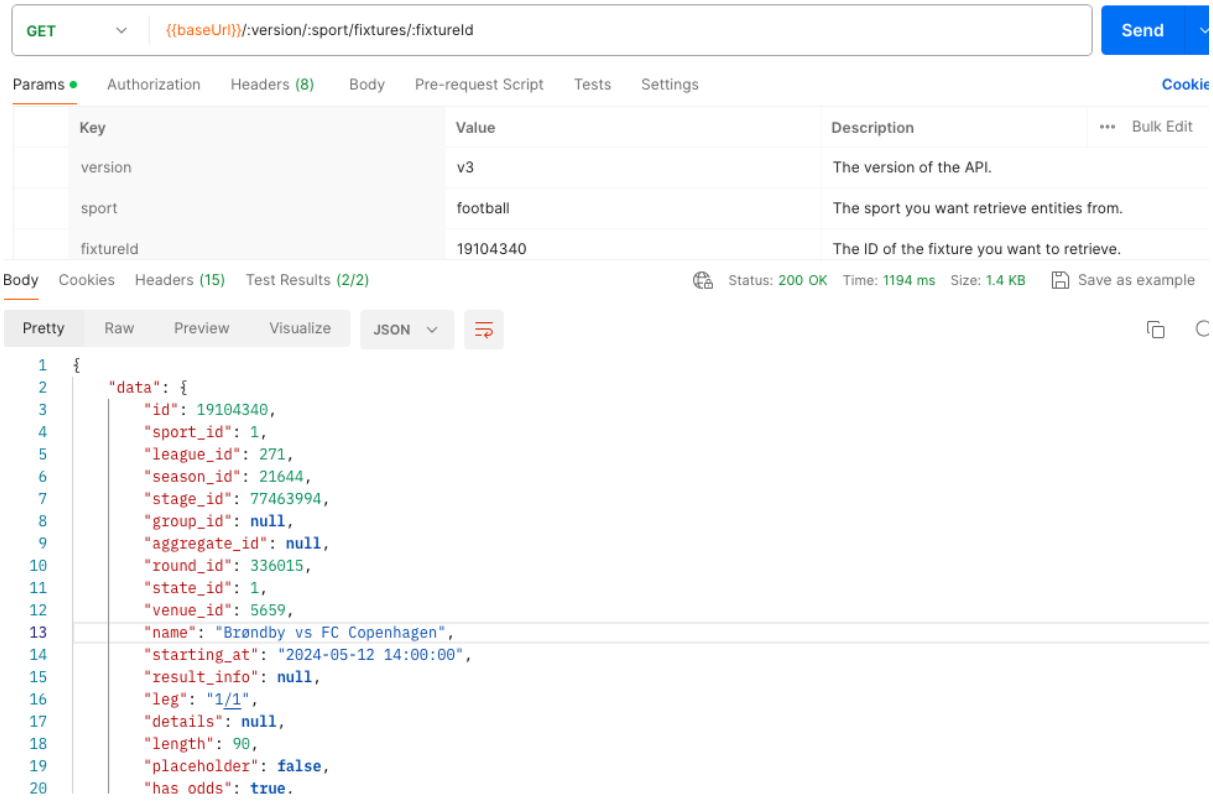


Figure 6: Data from API, next match between Coppenhagen and Brøndby

Appendix 2: Advanced statistics

	A	B	C	D	E	F
1	Y	X1	X2	X3	X4	X5
2	1	3	1	0	-40	
3	1	4	1	0	66	
4	0	-7	1	0	-53	
5	0	-17	1	0	-45	
6	0	-9	1	0	-70	
7	1	6	1	0	-58	
8	0,5	1	1	0	-66	
9	0	-4	1	0	-200	
10	1	8	1	0	279	
11	0,5	-1	1	0	-38	
12	0,5	-5	1	0	-3	
13	1	2	1	0	32	
14	1	8	1	0	96	
15	1	-2	1	0	33	
16	1	15	1	0	89	
17	0	4	1	0	-56	
18	1	-11	1	0	30	
19	0	-4	1	0	43	
20	1	19	1	0	213	
21	0	-10	1	0	-252	
22	1	5	1	0	-13	
23	0,5	-6	1	0	-29	
24	0,5	-2	1	0	-16	
25	1	15	1	0	237	
26	0	-7	1	0	-63	
27	0,5	-6	1	0	-168	
28	1	-4	1	0	-53	
29	0	-10	1	0	-26	
30	1	1	1	0	-43	
31	0	-2	1	0	-51	
32	0,5	2	1	0	68	
33	1	11	1	0	-37	
34	0	4	1	0	38	
35	0,5	12	1	0	111	

Figure 7: Data computed on Excel

Untitled5* | matchfoot | Untitled3.R*

Filter

	Y	X1	X2	X3	X4
1	1.0	3	1	0.0	-40
2	1.0	4	1	0.0	66
3	0.0	-7	1	0.0	-53
4	0.0	-17	1	0.0	-45
5	0.0	-9	1	0.0	-70
6	1.0	6	1	0.0	-58
7	0.5	1	1	0.0	-66
8	0.0	-4	1	0.0	-200
9	1.0	8	1	0.0	279
10	0.5	-1	1	0.0	-38
11	0.5	-5	1	0.0	-3
12	1.0	2	1	0.0	32
13	1.0	8	1	0.0	96

Showing 1 to 13 of 760 entries, 5 total columns

Figure 8: Data exported to Rstudio

```
1  library(readxl)
2  matchfoot <- read_excel(file.choose())
3  View(matchfoot)
4  Y<- matchfoot$Y
5  X1<- matchfoot$X1
6  X2<- matchfoot$X2
7  X3<- matchfoot$X3
8  X4<- matchfoot$X4
9  data1= data.frame(Y,X1,X2,X3,X4)
10 View(data1)
11 lm1.X<- lm(Y~X1+X2+X3+X4, data = data1)
12 coef1 <- coef(lm1.X)
13 View(coef1)
14 summary(lm1.X)$coefficients
15 summary(lm1.X)$r.squared
```

Lines 1 and 2 transfer the Excel document to Rstudio.

Lines 3-10 correspond to a variable in each table column.

line 11 corresponds to the entire analysis of all the data used to construct this linear regression.

lines 14 and 15 display a summary of these analyses.

Figure 9: Coding on Rstudio

Appendix 3: Business Plan Cost details

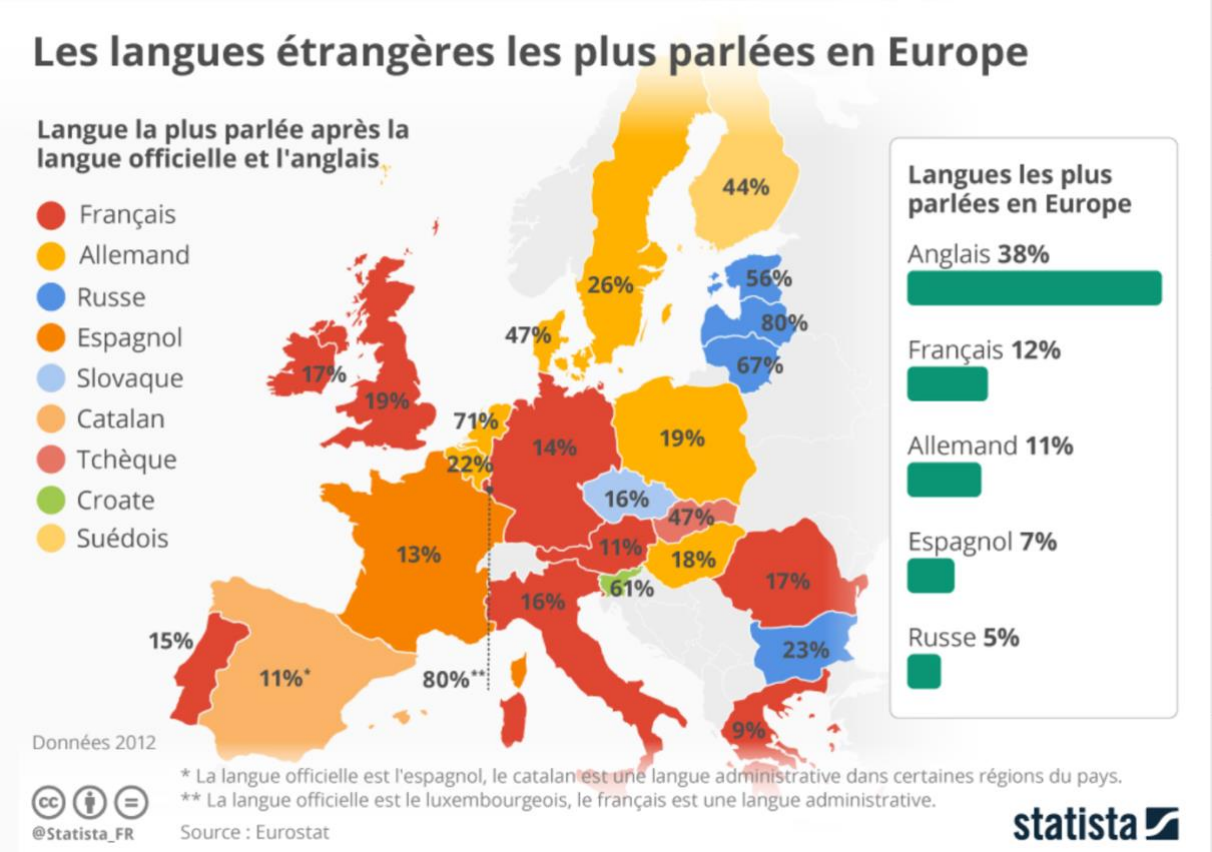
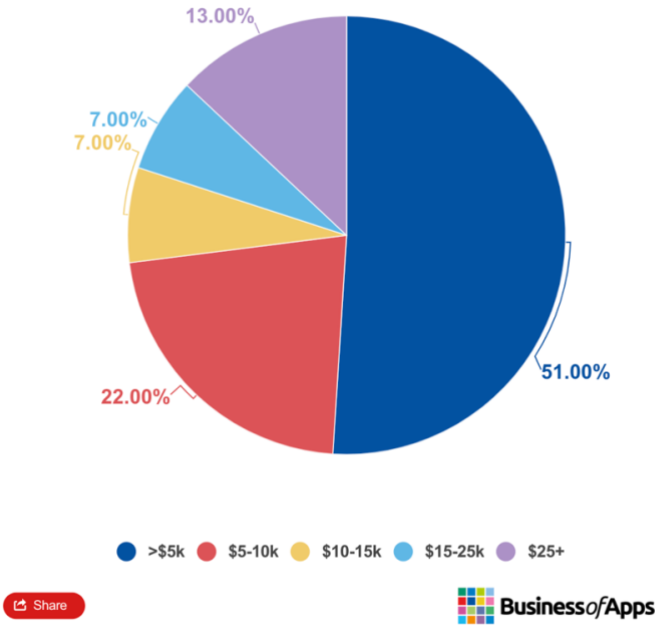


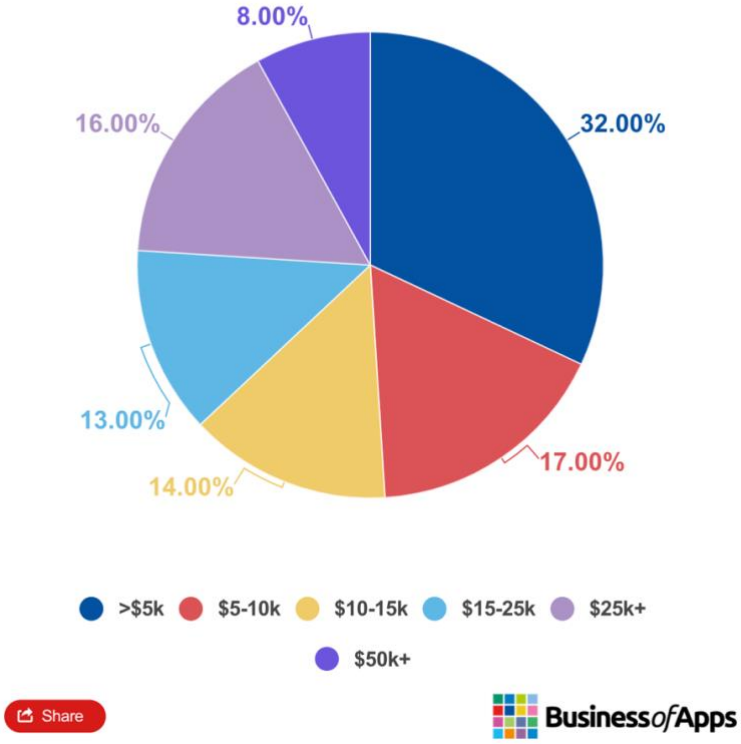
Figure 10: Europe's most widely spoken foreign languages

Appendix 4: Business Plan Cost details



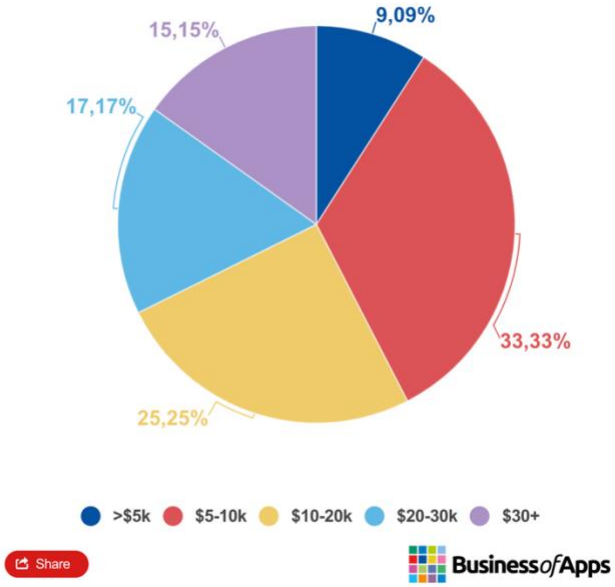
(Jaydeep Patadiya 2022)

Figure 11: Cost of Strategy



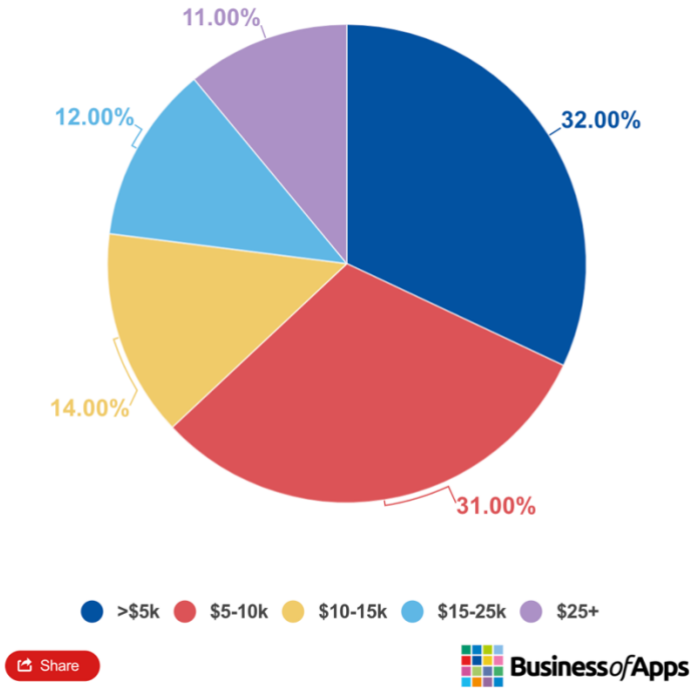
(Jaydeep Patadiya 2022)

Figure 12: Cost of Design Stage



(Jaydeep Patadiya 2022)

Figure 13: Cost of Development stage



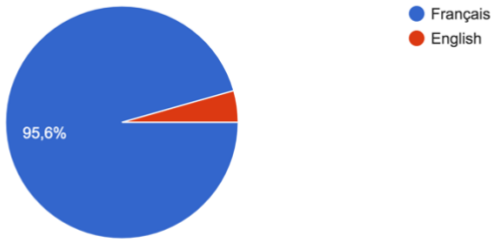
(Jaydeep Patadiya 2022)

Figure 14: Cost of Testing

Appendix 5: Results of the survey on the use of football tracking applications

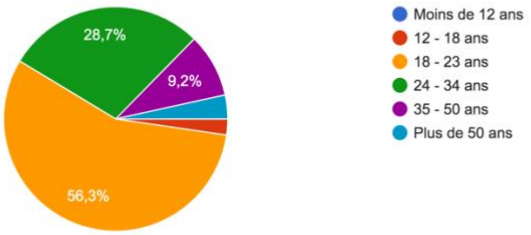
Sélectionnez la langue dans laquelle vous préférez répondre à l'enquête : Select the language in which you would prefer complete the survey :

91 réponses



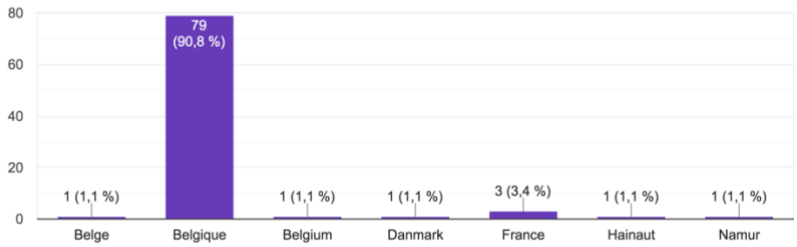
Dans quelle tranche d'âge êtes-vous ?

87 réponses



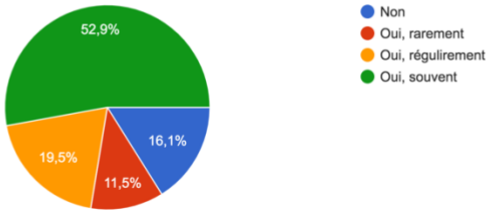
De quelle zone géographique venez-vous (Pays) ?

87 réponses



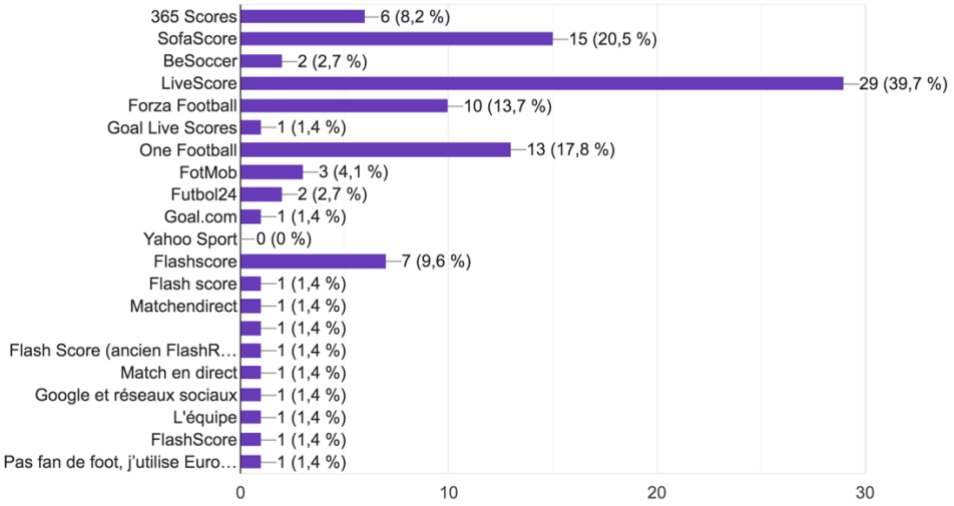
Utilisez-vous une application/site internet afin de pouvoir suivre les résumés (ou statistiques) de rencontres sportives ?

87 réponses



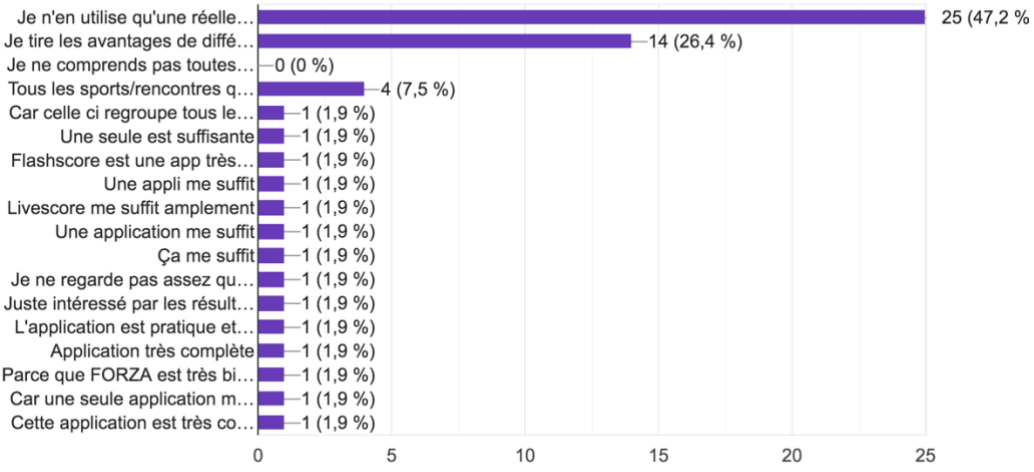
Pour analyser des statistiques de rencontres sportives, quelles applications utilisez-vous ?

73 réponses



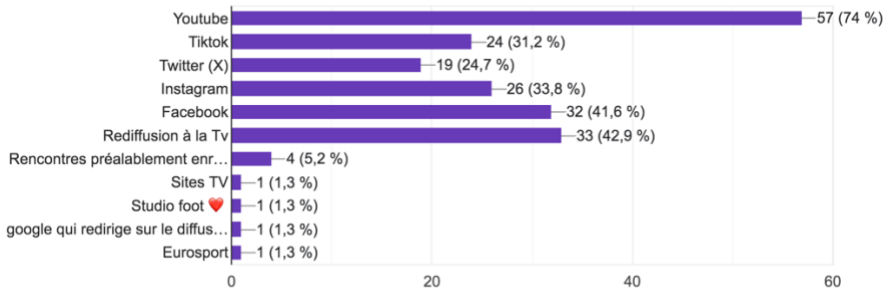
Si vous avez coché plusieurs cases à la réponse précédente, précisez pour quelle raison ?

53 réponses



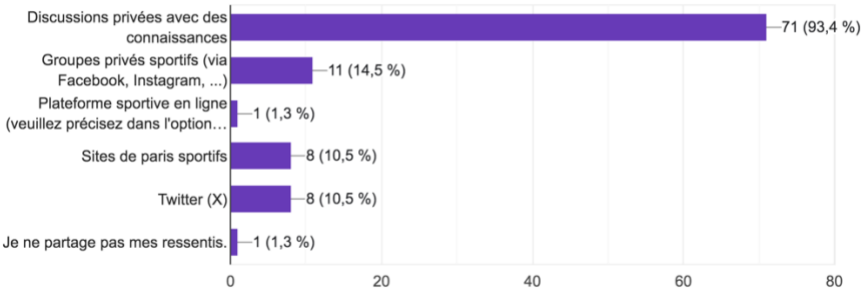
Quels moyens de rediffusion utilisez-vous afin de regarder les temps forts d'une rencontre sportive ?

77 réponses



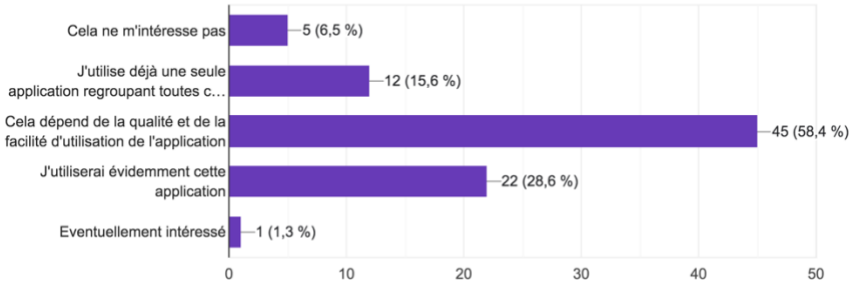
Comment partagez-vous vos ressentis face à une rencontre sportive ?

76 réponses



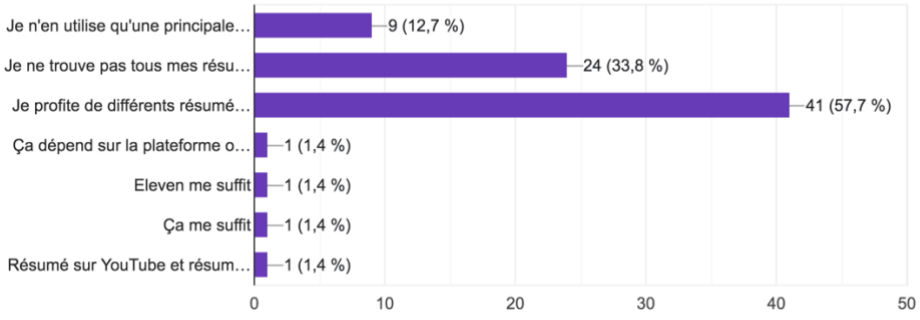
Que pensez-vous d'une plateforme en ligne permettant de regrouper toutes ces compétences (temps forts, statistiques et interface) en une seule application ?

77 réponses



Si vous avez coché plusieurs cases à la réponse précédente, précisez pour quelle raison ?

71 réponses



Abstract :

Social networks have become important actors in our economy during the worldwide technological boom, impacting many aspects of society. Digital platforms are essential to this technological transformation due to the facilitation in communication between all parties. Social media has the power to democratize information sharing, link people, and change perspectives from various sectors.

This dissertation explores the enormous effects that social networks are having on sport media, examining how these platforms are changing the game and proposing appropriate modifications by creating an application designed to facilitate interaction in the world of football.

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